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Characterising the Quality Journey of Total Quality Management in Relation to the Financial Performance of SMEs under crisis conditions: the case for Greece.

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Relevant Publications

- Sainis, G., Haritos, G., Kriemadis, A., Papasolomou, I., (2018). TQM for Greek SME. An alternative in facing crisis conditions. *(In the peer review process)*

- Sainis, G., Haritos, G., Kriemadis, A., & Fowler, M. (2017). The Quality Journey for Greek SME and their Financial Performance. *Production and Manufacturing Research*, Vol.*5*(I.1), pp.306–327. http://doi.org/10.1080/21693277.2017.1374891

- Sainis, G., Haritos, G., Kriemadis, T., & Fowler, M. (2016). The quality journey of Greek SME. In Y. M. Goh & K. Case (Eds.), *International Conference on Manufacturing Research: Advances in Transdisciplinary Engineering* (Vol. 3, pp. 508–513). Loughborough: IOS Press. http://doi.org/10.3233/978-1-61499-668-2-508

- Sainis, G., Haritos, G., Kriemadis, A., & Fowler, M. (2016). TQM practices adopted from Greek SME under an economic crisis environment. In *EMCSR 2016* (pp. 122–122). http://doi.org/ISSN: 2227-7803

- Sainis, G., Haritos, G., Kriemadis, A., & Fowler, M. (2016). The willingness of ISO certified Greek SME to continue their quality journey to TQM under crisis conditions : a systemic approach. *Int. J. Applied Systemic Studies*, Vol.*6*(I.4), pp.327–348.

Abstract

During the last few years Greece is coping with severe economic and financial crisis conditions. Since the Greek SME are the largest productive and economic sector in the Greek economy, they bear the brunt of consequences for these adverse conditions.

This thesis investigates the role of the total quality elements in improving or otherwise the financial performance of those SME.

Ratio analysis is used as a mean of measuring the SME financial performance and specifically the level of their liquidity, profitability, efficiency and solvency.

Furthermore the thesis tries to identify the role that each quality element and quality as a whole, have on different size SME and their financial performance.

A data-triangulation methodology was developed to examine the influence of the above factors (use of a questionnaire and a set of semi-structured interviews) and the results and the conclusions derived have shown that:-

- All the Greek SME have the intention to continue their quality journey to TQM.
- Small SME give more emphasis in implementing the TQM elements, followed by the micro and the medium size SME respectively. However each group of SME prioritises differently the various quality elements.
- The ratio analysis revealed that the group with the mostly improved financial performance was the micro SME followed by the small and the medium SME.
- The worst financial performance of all the SME occurred between 2008 and 2010.
- Amongst the SME that have managed to continue to operate, the ones characterised as TQM SME have shown an improved financial performance. Measuring the SME financial performance, efficiency and solvency were revealed as the most significant variables. The smaller in size the SME were, they pay a greater attention to efficiency while the larger SME pay more attention to solvency.
- Utilising the Z-score rate as a criterion, the largest number of transitions among different levels of financial sustainability was revealed from the micro SME. Lower variability was identified from the TQM SME group in comparison with the other two groups of SME (ISO+ and ISO) that have also shown a very similar behaviour.

In conclusion SME's that have followed the ISO to TQM journey during the harsh financial conditions they were facing, they have managed to harbour themselves better in conditions of financial crisis.

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Abbreviations

A/R	Accounts Receivable
AQA	Australian Quality Award
ASE	Athens Stock Exchange
BEP	Basic earnings power
CN	Understanding of customer needs.
CSFs	Critical Success Factors
EADP	European Association of Database & Directories Publishers
EDCC	Economic design control chart
EFQM	European Foundation for Quality Management
ELOT	Greek Organization for Standardization
EQA	European Quality Award
ESOMAR	World Association of Opinion & Marketing Research Professionals
EU	European Union
FI	Focus on internal customers
FP	Financial Performance
GESEVE	Hellenic Confederation of Professionals, Craftsmen & Merchants
HA	Housing Authority
IP	Interview Participant
I**SO**	International Organization for Standardization
LSD	Least significance difference
MBNQA	Malcolm Baldrige National Quality Award
O	Organization and its systems
OAEE	Social Insurance Organisation of Freelance Professionals
OC	Organizational Culture
OLC	Organizational Learning Capabilities
OME	Owner-Manager entrepreneur
OP	Understanding of the organizational process.
P	People
PA	Performance Appraisal
PAF	Prevention-Appraisal-Failure
PDCA	Plan-Do-Check-Act
PMM	Project Management Model
QC	Quality Culture
QP	Quality Processes
QTT	Quality Tools and Techniques
ROA	Return on Assets
ROE	Return on Equity
SBA	Small Business Administration
SEV	Federation of Greek Industries
SME	Small Medium Enterprise
SP	Supplier partnership.
T	Technologies and tools
TEAIEK	Ancillary Insurance Fund for Retail Store Employees
TI	Understanding of the techniques of improvements
TP	Use of team process
TQM	Total Quality Management
TSAY	Medical Profession Pension and Insurance Fund
TSMEDE	Engineers' and Public Contractors' Pension Fund
UD	Emphasis on the use of data.
UQ	Common understanding of quality.
VAT	Value Added Tax

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Chapter 1
Introduction

Chapter 1. Introduction

1.1. Introduction to the thesis

SME in Greece represent approximately 99.9% of the Greek economy in market share (SBA, 2014b). Due to the current economic crisis conditions for the last eight years Greek SME have suffered and have reduced in their numbers. They have also experienced a decline their value. The austerity measures imposed by the Greek Government and by Troika (European Central Bank, International Monetary Fund, European Council) together with the weakening of the Banking sector (liquidity shortage), made the Greek SME even more vulnerable and uncertain of their future (Hellenic Chamber of Commerce, 2014).

The level of implementation of quality in different type and company sizes, varies a lot. This observation is particularly true for all SME irrespective of whether they implement a quality procedure or not. However the decision to implement or not to implement quality has financial consequences for SME (Almansour, 2012)

SME face many difficulties when attempting to implement quality procedures/elements. This is due to their limited resources which are mostly related to their size, the type, nature and number of personnel in their HR departments, their funding needs, their know-how and expertise. These limitations could cause an increase in their operational costs and hence reduce their value (Desai, 2008).

People, continuous improvement, processes and customers are the main elements/ factors used in order to establish a Total quality Management (TQM) system and a quality environment (Price and Chen, 1993a). These elements should be supported from top management with an unswerving commitment to the quality standards procedures. These include methods used for measuring quality performance, process management improvements, product design based on quality standards, training and empowerment of personnel for the achievement of the quality goals (Kumar et al.,, 2008). The supplier's quality management control procedures also play an important role in achieving quality goals (Sinha, et al., 2016) . Those are the elements that would eventually lead the company to achieve its quality goals, and customers' satisfaction and involvement in the purchase process. They would contribute and support the successful implementation of TQM in an SME (Motwani, 2001).

It is argued that the utilization of people involved in quality, the technological innovations being developed and appropriate structure of organization and management of a company's operating systems would contribute to the successful implementation of a TQM system (Hafeez et al., 2006). Top management, employees and suppliers support are the means, and the vehicles, through which the quality tools

and techniques would lead an SME to the successful implementation of TQM (Fotopoulos and Psomas, 2009; Moccia, 2016).

When compared to their European counterparts, Greek SME are specialized in goods rather than services (with the exemption of education). The Greek SME mostly focus on high technology manufacturing products and education.

Since 2000 the European commission has supported the development and expansion of SME through the “Lisbon” strategy, the “Europe 2000” strategy and the SBA (Small Business Act) policy (Hellenic Chamber of Commerce, 2014). Those strategies and policies were designed so that the Greek SME developed the capabilities to survive under the economic crisis conditions they were facing.

Literature review, revealed the gap in knowing the elements of quality and their role in financially sustaining the SME that are experiencing economic, as well as social and cultural crisis conditions (Bourletidis and Triantafyllopoulos, 2014; Commission, 2013). This was also revealed from a number of key members’ surveys representing quality auditing firms in Greece, like Bureau Veritas Hellas and TUV Hellas, who openly accepted and supported the aims of this survey, when the researchers disclosed their research intentions.

1.2. Scope of the thesis

This thesis investigates the role that quality plays in improving an SME’s financial performance. It further investigates how a more comprehensive TQM implementation contributes to their financial sustainability and survival given in different crisis conditions.

The scope of this thesis, it to identify the quality elements that have enabled Greek ISO Certified SME, the SME that have awarded a quality certificate i.e. ISO-9000, ISO-33000 or ISO-14000, to attain financial sustainability in an unstable economic environment, and at which level these same quality elements have been implemented to contribute to this effect. As SME is considered the enterprise that its full time labour force is between 1 and 250 employees.

A proven financial correlation between quality elements and performance, will improve the Greek SME entrepreneurs’ perception regarding quality and TQM implementation overall; and more specifically would enhance their perception of quality and TQM implementation as a means of coping more effectively with the financial crisis conditions they experience.

It is vital for a country like Greece, where the majority of the active entrepreneurships are SME, to identify the contribution of quality as a means of dealing with the financial,

social and cultural difficulties, they have been facing, since 2008 and are still combating today.

The thesis examines the degree of confidence Greek SME have, regarding the contribution of quality in their overall value. This is understood by investigating the extent to which SME continue their quality journey and is measured by the level of each quality element's implementation in their operations. Literature mentions, a number of quality elements that could lead a company to the TQM implementation. Among those elements most applicable to SME are the "Quality tools and techniques", the "Quality processes", the "Quality culture" and the "Performance appraisal" elements (Gupta et al., 2014; Hunt, 1993; Psomas et al., 2014; Sashkin and Rosenbach, 1996; Sousa and Aspinwall, 2010)

In an effort to understand the quality journey of a Greek SME, a survey was undertaken. The thesis and the supporting survey identifies and measures the level of the quality elements and practices adopted by the Greek ISO certified SME and their willingness to continue that journey leading to the TQM level.

The contribution to knowledge of this thesis, is the establishment of a set of measurable quality elements and financial criteria applicable on different sized groups of SME. This enables the determination of the impact that quality elements adopted by the Greek SME, have on their financial performance in a period afflicted with severe economic crisis conditions.

Different quality elements have been examined by different researchers in order to establish the level of quality implementation by Greek SME (Fotopoulos and Psomas, 2010; Kampouridis et al., 2015). What characterises the uniqueness of this thesis is the use of quality elements denoted by different authors such as Sashkin and Kiser (1993), Hunt (1993), Sousa & Aspinwall (2010) and Sashkin & Rosenbach (1996 /2013), with emphasis on the "Quality tools and techniques" and "Quality processes elements" and on the "Quality culture" and "Performance appraisal" elements, to evaluate financial performance. In addition, the use of a set of selected financial ratios entailing not only the core financial performance criteria (Profitability, Efficiency, Liquidity and solvency) but also the risk (probability to default) criterion makes the thesis and its conclusions a valuable contribution to knowledge.

The thesis identifies the benefits or otherwise on the SME financial performance and specifically on their profitability, efficiency, liquidity and solvency rates, which have resulted from the implementation of quality improvements.

1.3. The thesis Aims, Objectives and its Research Questions

Considering the financial, social and cultural difficulties that Greece is experiencing in recent years, the aim of the thesis is to support the knowledge and understanding regarding the decision the ISO certified Greek SME entrepreneurs need to take, that is to continue their journey to quality. This decision is related to the enrichment and enlargement of the quality elements they need to introduce in their operational and cultural environment, in order to accomplish the TQM level that would add value to their SME. Continuous improvement and customers' satisfaction, the aims of TQM; are what will enable them to confront the consequences of the financial crisis.

The thesis's objective is to identify and understand the role of quality and its elements, those that mostly contribute to how the SME cope financially under the economic, social and cultural changes incurred due to the crisis conditions.

An added objective of this thesis is to make Greek SME entrepreneurs understand the contribution of quality and TQM implementation in improving their financial performance as a means of supporting their financial sustainability and survival.

The aims and objectives of the thesis,, its conceptual framework, its sampling strategy, the data collection process and the analysis and evaluation of the results derived were the main components of the research design (Robson, 2011).

1.3.1. Aims:

The aims of the thesis are:

- To establish the quality elements and assess their adoption level in the Greek ISO certified SME and in each group (formed based on size) during a period of economic crisis conditions.
- To establish the financial criteria and assess the financial performance of the Greek ISO certified SME and each group (based on size), also valuing them in relation to their identified quality level attributes.

1.3.2. Objectives:

The scope of the thesis is to add value and knowledge to a research area that quantifies the contribution of quality and TQM specifically regarding the financial performance of SME when those operate in an unstable economic environment.

The objectives that support the first aim of the thesis are:

- To undertake a thorough literature review that would reveal the type, kind and the role of quality elements in the transition process from ISO to TQM implementation for companies and for SME in particular.
- To review literature regarding the type, kind and the role of financial ratios as a methodology used to measure a company's financial performance and SME in particular.
- To identify and analyse the role of SME in the Greek economy (as a member of the European Union) in a period of financial crisis conditions.
- To conduct a pilot study that examines the applicability of the methodology designed in a wider context i.e. the collection and analysis of 180 questionnaires completed from Greek ISO certified SME.
- To collect primary data (using a structured questionnaire and a semi-structured set of interviews following the triangulation approach) regarding the Greek ISO certified SME. Data is needed in order to identify the quality level that all SME and each group of SME are implementing, as well as data related to selected financial ratios.

The objectives that support the second aim of the thesis are:

- To collect secondary financial data (using i-Mentor Hellastat database) for all SME registered in the database that the survey's questionnaire was distributed to. To relate the sampled SME and the whole database's population financial performance, further verifying the derived results.
- To develop a methodology in which the established set of quality elements and financial ratios could be plotted and to recognize any added value to the Greek ISO certified SME.
-
- To identify and construct different mathematical and statistical equations that will derive the added value related to the SME level of quality implemented and the equivalent level of their financial performance.
- To handle a comparative study among the different groups of SME (in terms of their size) in relation to the level of quality implemented and their equivalent financial performance.
- To show the applicability and transferability of the analysis conducted to other economies within Europe whose SME face similar financial problems to the SME in Greece.

1.3.3. The research questions and sub-questions:

The research questions are:

A. “Have ISO certified Greek SME continue the adoption and implementation of total quality management practices, in times of an economic crisis?”

B. “Have ISO certified Greek SME improved their financial performance in proportion to the level of Quality they have implemented in times of an economic crisis?”

The sub-questions that support the research questions are the following:

For the research question A’ its sub-questions are:

1 Do Greek ISO certified SME, further implement the quality tools and techniques?

2 Do Greek ISO certified SME, further implement the quality culture practices?

3 Do Greek ISO certified SME, further implement the quality processes?

4 Do Greek ISO certified SME, further implement the quality performance appraisal techniques?

For the research question B’ the sub-questions are:

1. Have Greek, ISO certified SME, improved their Profitability level?
2. Have Greek ISO certified SME, improved their Efficiency level?
3. Have Greek ISO certified SME, improved their Liquidity level?
4. Have Greek ISO certified SME, improved their Solvency level?

1.4. The SME and the Quality Level.

In Table 1 that follows, the criteria for classifying SME in different industry sectors are shown. The table shows the classification of the criteria that companies take into the account including the number of employees employed and the industry in which they operate.

Table 1: Classification of Businesses by number of Employees, Turnover & Total Assets *(Lukacs, 2005)*

Size		Turnover	Total Assets	No. of Employees		
				Industry (Number of Employees) **(Selected)**	**Commerce** (Number of Employees)	**Sector Service** (Number of Employees)
SME	Micro business	<2 m.	<2 m.	0-10	0-10	0-10
	Small business	<10 m.	<10 m.	11-50	11-30	11-50
	Medium-sized business	<50 m.	<43 m.	51-250	31-100	51-100
Large company				250 or more	101 or more	101 or more

The criteria broadly used for the SME classification are based on an objective set of measurements regarding the company's characteristics (i.e., number of employees, level of sales, total assets) as well as a set of different SME characteristics related to their development (i.e., growth, value, expertise) (López-Ortega et al., 2016). Though the ones that were mostly used for their classification were the measurable and quantifiable characteristics i.e. the number of their employees and/or their total assets. This classification is also adopted by the European Union. The European Commission with the act 2003/361/EC that was published in the European gazette EE L 124 of 20/5/2003, approved the new and replaced the old definition and classification of SME as this was defined from the 96/280/EC act.

The classification specified in industry, as this is shown below is the one applied for the Greek SME (Grammelis and Pedioti, 2014; Kumar et al., 2009) and the one adopted by the author of this thesis. SME are specifically classified as:

- **Medium SME:** The companies that employ fewer than 250 employees,
- **Small SME:** The companies that have fewer than 50 employees but more than 10,
- **Micro SME**: The companies that have at most 10 employees.

Considering that SME function mostly as subcontractors and suppliers to the large size companies, both at local and international levels, the role of SME in the Greek economy becomes crucial and vital. Their strategic role demands for them to follow and support the decisions taken by the larger sized companies. For the large companies that have more resources to use, their decision to continue their "journey" for TQM implementation is considered a given (Duh et al., 2012; Youssef et al., 2002).

Structural differences between large companies and SME, together with their inability to see quality as a continuing improvement process and the inability they face to utilize formal evaluating techniques, creates the need for the development of a simpler model. This model would manage to self-assess the actions taken and not just score them, that would give directions on what should be done simultaneously offering support of what is needed for their implementation (Sturkenboom, et al., 2001).

Since the limited number of resources is the main characteristic of SME's, there is a belief that Quality and TQM in particular, could not be easily implemented. However literature extensive research has shown that the key TQM elements could be successfully implemented in an SME at affordable cost in terms of time and in terms of the resources used (Carlos Pinho, 2008; Ghobadian et al., 1996; Sinha, Garg and Dhall, 2016; Temtime et al., 2002) Amongst quality gurus like Ishikawa (1962), Juran

(1941) and Crosby (1967), Deming (1950) was the one who opened the road for researching quality from a different perspective. All identified the need for a system that could establish and appraise a company's quality (TQM) level and performance. This has led to the development of different quality awards like the Deming Prize in Japan (1996) the European Quality award in EU (1994), the Malcolm Baldrige Award in USA (1999). The common aim of all those awards that constitute the concept of TQM is:

a. to improve the awareness of quality that would improve a company's competitiveness,
b. to support the self-assessment process that would encourage their market awareness,
c. spread information that would support the development and implementation of quality strategies,
d. make the quality characteristics needed for the quality excellence understandable and
e. support the on-going improvement process (Gitlow et al., 1989; Zhang, 1963).

The first step for the implementation of a quality system to a company is to become an ISO certified company. ISO certification confirms that a quality system is capable of satisfying the organizational standards being installed. The following step should be to implement a Total Quality Management System. From the implementation of such a system a company can further improve its quality strategy and its strategic plan. The company would accomplish this through a higher level of customer satisfaction (Goh, 2000), by improving product/ service quality, cost, distribution and flexibility (Lambert and Ouedraogo, 2008; Terziovski and Guerrero-Cusumano, 2009).

ISO certification managed to positively change the perception SME had for TQM practices and organizational performance. The ISO certification for SME has contributed positively in facilitating the TQM implementation process. This was achieved through the use of an action tailor-made evaluation instrument for all the quality practices established. That tailor-made TQM framework should be cost effective and focused on the needs and the critical success factors of an SME. Examples could be the employees' training and job description and the way they could deal with different quality problems, the relationships between the company's functional groups or the suppliers' relationship and involvement (Hansson, 2003). The quality elements considered were the quality evaluation, the customer's focus, the participation and teamwork as well as the continuous improvement element. For an SME to have the ability to determine the quality level implemented and realize its

maturity status, the measurement and appraisal of the improvements accomplished over time is needed (Sohail and Hoong, 2003; Sturkenboom et al., 2001).

Enriching the existing operational processes with the appropriate quality improvements, has become an even more unstable task, given the environmental and economic instability SME are recently facing. The need to impose higher control over the operational processes and quality improvements implemented, as well as improvements of relationships among the participants (suppliers, customers) is considered vital. Psychology supports that imposing control on these relationships, would make the participants become motivators of that behaviour and through that manage to change the overall cultural environment of the company (Philip & McKeown, 2004; Regan, 2000; van der Wiele, et al., 2011).

In the process of implementing quality, the more technical elements, i.e. the Quality tools and techniques and the Quality processes, are and will continue to be of great importance. It is their contribution in measuring and controlling the company's operations through identifying and reducing any abnormal variations that make them so valuable (Sashkin and Kiser, 1993).

For implementing a quality management system (TQM) in a company, the need to consider and if necessary adjust its organizational culture is crucial. The development of a quality cultural environment would guarantee the successful implementation of TQM elements, imposing any required quality improvements efficiently (Corbett, et al., 2005). The "Quality culture" element, supporting an SME's strategic and quality plan is also important given that the cultural style adopted would be focused on the human resources and on the continuous improvement orientation (Pun and Jaggernath-Furlonge, 2012; Regan, 2000; Sinha, Garg, Dhingra, et al., 2016). The "quality culture" element refers to a company's management style, its achievement style and its self-actualization and affiliated style. However, the willingness of a company's leadership to accept such structural changes in its cultural environment would constitute the beginning of the establishment of a quality environment suitable for TQM implementation.

Being mutually complementary TQM and the learning organizations in their attempt to renew their processes and their environment (Chang and Sun, 2007), innovative leadership is what could bring to an SME all those learning capabilities that would support the development of a quality cultural environment. Having established these capabilities in its environment, a company has the chance to be transformed from a traditional vocational education unit, focusing on tools, techniques and processes to a learning unit that can search for organizational excellence and TQM (Pool, 2000).

In addition, the successful design and implementation of the quality tools and processes elements and the establishment of a quality cultural environment should be supported and from the adoption of an organizational performance appraisal system. This would assess the reliable and accurate implementation of all the needed adjustments and/or corrections made in order to lead an SME to a higher level of quality.

Considering that a measurement control system is needed in order to keep track of the quality progress and ensure that all the necessary quality improvements have been effectively implemented, the development of a Performance Measurement Management (PMM) system could accomplish this. That is a set of management processes and tools used from a company's management in order to establish its strategy, make it operational and examine and improve its effectiveness (Kaplan and Norton, 2008).

It is agreed that the use of just the six sigma or the Balance Scored Card (BSC) or any other Project Management Model (PMM) tool as a means of enriching the quality of specific operations and functions on their own are not adequate. The lack of a formalized and complete strategy, together with the lack of an entrepreneurial behaviour, the limited management capabilities, the lack of operational focus and the limited available resources (human and monetary) is what makes the implementation of a quality system in an SME a difficult task (Garengo and Biazzo, 2013).

The main goal for the successfully implementation of a TQM system is to develop a differentiation strategy which would enable an SME to attain an improved organizational performance. In turn having an improved organizational performance supported from a set of innovative ideas and actions and from utilizing the improved quality level as a facilitator, would lead a company and an SME in particular to get what it really needs; "a competitive advantage" (Prajogo and Sohal, 2006).

1.5. The Role of Quality in an SME's Financial Performance

Extensive research has been conducted regarding the use and the benefits that different sized companies derive from implementing TQM. Companies from sectors, like construction, merchandising, servicing have recognised different types and kinds of benefits from implementing TQM. Those benefits refer to the fields of higher product quality, increased efficiency and improved business performance. Companies who managed to show a remarkable performance and were awarded the US Malcolm Baldrige National Quality Award, or other kind of excellence awards, were questioned

if they also performed better in other areas like their profitability, market share, productivity, efficiency and solvency, as well as their quality costs and employees relations. What they supported is that those “Descriptive models” cannot be used extensively, because of their inability to clarify the benefits they get from implementing TQM, as well as who will grant those benefits (Saunders & Preston, 2006).

TQM and its contribution to operational and financial performance is accepted from the market and the entrepreneurs as a means of adding value to a company. However its relationship with a company’s overall improved financial performance has not yet been verified. Researchers have worked on this issue using different variables and different models. Their attempt was to identify possible deficiencies in the way financial and quality data were statistically processed and correlated. They have also tried to identify the consequences from TQM implementation to a company’s overall financial performance (Wayhan & Balderson, 2007). From their analysis it was initially found that the market’s tendency is to find ways to improve their quality. The companies that operate in those markets see these improvements as a means of adding value to them. This is mainly achieved through improving their financial performance (Hendricks & Singhal, 2000).

In a study conducted by Herzallah et al., (2014) the indirect relationship among the TQM practices and the SME’s financial performance was established. The factor that mainly influences this relationship was the competitive/differentiation strategies adopted by the SME. Those were the strategies that have shown a direct and significantly positive relationship with the technical (hard) elements of TQM, like flow charts, relations diagrams, Pareto analysis, control charts, balanced scorecards, quality function deployment (QFD) (Fotopoulos and Psomas, 2009). They were positively related to an SME’s cost leadership strategy and because of this to its financial performance. On the other hand indirect was the relationship between the soft (i.e. continues improvement, management by objectives (MBO) and teamwork) and the hard TQM elements. This was the reason why the significance shown in the relationship between the SME differentiation strategy and their financial performance was shown as weak. That means that differentiating only on an SME’s cultural environment does not mean that its financial performance will be improved, for the moment the hard or technical elements were not equivalently improved and vice-versa (Herzallah et al., 2014; Hendricks & Singhal, 2001; Douglas & Judge, 2001). The characteristics of the SME that were examined in this survey were similar to the characteristics of the Greek SME. That is, they were family-owned companies that were focusing more on profits and not as much on customer’s satisfaction.

Eighty percent (80%) of the surveys conducted focusing on the linkage between TQM and financial performance, are subjective. Most of them were focused on the implementation process and the outcomes derived. They tried to compare the quality initiatives undertaken from different companies, creating nonetheless doubts on the accuracy and reliability of the outcomes derived. Those doubts were usually caused by the inability of the research design and methodology used, to provide definite proof of an existing relationship between TQM and financial performance (Wayhan and Balderson, 2007)

What really matters, is to understand that TQM is adopted not just because of the company's internal needs (cost minimization and quality improvement) but because of its external tensions. As external tensions are considered the strong level of competition and the higher level of the performance evaluation criteria used like the profit, turnover, and productivity rates. A "self-assessment" technique used by the researcher that could lead a survey and its conclusions to non-biased and subjective results is needed, given the availability of the required financial information (Watson et al., 2003). However, financial information is not easily accessible especially from the non-listed companies.

The most traditional, quick and reliable method used in measuring a company's financial performance is the ratio analysis. In almost all articles studied and among the ways different researchers have attempted to measure a company's operational and financial performance, financial ratios were the criteria they used. Measuring and analysing the financial ratios gives stakeholders and analysts the opportunity to evaluate the operating and financial performance of a company (Hirt et al. 2013).

Ratio analysis offers a company the opportunity to obtain a clear and unbiased representation of the environmental conditions it has to deal with. It also supports management in the decision making process. It is used as a tool to identify possible abnormalities in a company's behaviour and predict future corrective actions (Voulgaris et al., 2000).

The ratios mostly used in ratio analysis, are return on assets, return on equity and profit margin ratio. In another set of surveys, researchers have also incorporated into their models a number of qualitative variables, such as the customer's satisfaction and the company's competitiveness (Klingenberg et al., 2013).

Altman's z-score is a unique ratio that identifies the level of a company's financial distress. It has been accepted and used in the market for many years, but the

recognition of its role in influencing a company's strategic plan has not yet been established (Calandro, 2007).

The Z-Score ratio values could determine the financial distress of a company at different zones.

If Z-score > 2.60, the company is not at risk (safe zone).

If Z-score < 1.10 the company is most likely to go bankrupt (distress zone) and

If Z-score is in between these two values (>1.10 or <2.60) the company is at a risk of financial distress and bankruptcy (grey zone) (Calandro, 2007).

Different examiners have proposed different financial ratios, but the ratios mostly used are the ROA (Return on Assets) and ROE (Return on Equity) ratios, the current ratio, a set of turnover ratios (i.e. Inventory turnover, account receivable turnover, sales turnover) and the Debt to Equity ratio. In a number of surveys the Altman Z-score ratio is used. The contribution of Altman Z-score, used in this survey, has been statistically tested and its contribution in measuring a company's financial performance has been proved, although it has attracted criticism.

1.6. The Scope and Methodology of the thesis.

Given the economic and social crisis Greece has been facing for the last eight years, uncertainty characterises the environment of all the Greek companies, especially that of the SME. The need to incorporate corrective actions into their strategic plan could be seen as a chance to search for new opportunities. What Greek SME really need, is to be proactive, have good leadership, quality culture, clear situation awareness and immediate decision making. Vargo and Seville (2011) support that SME need to have an available and efficient strategic plan that should incorporate a quality plan in an attempt to face the uncertainty and the continuously changing environmental conditions.

This thesis in addition to contributing to the recognition of the role of quality and TQM to Greek SME, also offers guidance to Greek entrepreneurs and managers to identify and recognise the quality elements they need to support in order to become a quality structured company. The thesis contributes in recognizing the role of each quality element i.e. the Quality Tools and Techniques, Quality Culture, Quality Processes and Performance Appraisal Techniques in the TQM implementation process. It gives guidance to SME entrepreneurs, of all different sizes (micro, small, and medium) to effectively implement the TQM elements and recognize the existence of any possible inter-relationships. The opportunity to relate the level of the quality elements implemented to their equivalent financial performance over the years of a financial

crisis, is what would motivate the SME entrepreneurs to compose an operational "unit" (Division, Department or office) that would take them and their companies to a higher level(s) of quality (TQM).

A preliminary (pilot) study was conducted by the authors, using the first hundred and eighty (180) questionnaires collected. Its purpose was to verify the reliability and validity of the questionnaire distributed. The 180 questionnaires represent approximately 40% of the expected size of the survey's sample size as per (Hannee, 2011; Hertzog, 2008). No major problems were found in the process and analysis of the data collected. This led to the upload of a slightly modified questionnaire (financial data section) to the e-teacher platform and to re-sending the invitation e-mail to the SME registered in the i-Mentor Hellastat database. From the analysis of the data collected, the conclusions derived support the belief that Greek SME continue their quality journey giving greater emphasis on the TQM's cultural dimensions. Instead less emphasis is given to the Quality tools and techniques and Quality processes elements. The costs that the Greek ISO certified SME are asked to bare in supporting the "continuous improvement" idea, needed for implementing TQM, is what causes this behaviour (Sainis et al., 2016).

The next step is to identify the financial performance of all the SME that participated in the survey and identify the quality level they have decided to implement. Ratio analysis was used and selected ratios from the four groups of ratios that examine an SME's financial performance, namely the liquidity, the profitability, the efficiency and the solvency ratios, were examined.

The ratios used in evaluating the SME financial performance were, the Acid Test, the Asset turnover, the Inventory turnover, the Accounts receivable turnover, the Return on Assets, the Return on Equity, the debt to equity and the Altman Z-score ratios. All those ratios exist in finance literature and some of them are selectively used in different surveys conducted. But, in the literature review conducted no one has used all those ratios in evaluating the SME efficiency, profitability, liquidity and specifically solvency level, incorporating into them the Altman Z-Score function.

In order to investigate the quality implementation process in depth, the data collected was sorted into groups based on the number of employees each SME employed. This criterion for categorizing the SME into the "Micro", the "Small" and the "medium" sized groups was used, similarly to the criterion used by the European commission for categorizing the European SME.

The consequences of further implementing or not implementing the TQM elements would reveal the SME capability of coping financially and in terms of their liquidity, profitability, efficiency and solvency, in light of the uncertainty that characterises the Greek market and the globe-economic environment in recent years.

The findings and responses on the quantitative survey and the questionnaires that were fully completed and returned were used in developing an analysis based on the scoring method in research (Robson, 2011). The scores assigned to each question were used in order to identify the level by which each TQM element and TQM in total, was implemented from the SME. The quality elements that characterise the TQM implementation level and are identified in literature, are the Quality tools, the Quality processes, the Quality culture and the Performance appraisal elements. Equal weight was assigned to each quality element for determining the total TQM score. The SME would be characterised as “TQM SME” if the score was above average, “ISO+ SME” if it was close to average and as “ISO SME” if it was below average.

The analysis followed on the qualitative survey was based on the qualitative phenomenological approach. This is an approach the objective of which is to describe the perception that SME quality managers have regarding TQM implementation and the actions they follow or want and can follow in order to achieve it. For each element, different themes were identified supported from a set of questions each one having a distinct code. For example for the quality element “quality processes”, one theme associated is the job analysis. The codes and the questions related to that theme were (a) use of surveys to identify needed improvements and (b) use of periodic reports from established team members.

Ten interviews were conducted and the scores from each question, group of questions and the total score derived valued the implementation level of each quality element and TQM.

Following the triangulation approach, a technique that tries to cross examine the results derived from two different research approaches, namely the Qualitative and the Quantitative approach, their scores were compared. Similarities and differences on the quality level implemented from all and from each group of SME were identified.

Continuing the analysis on the SME financial performance, a preliminary statistical analysis was conducted testing the normality, the equality of means and the homogeneity among all groups of SME and for all the financial ratios. All the statistical tests applied, confirmed the reliability of the data used and consequently the results derived. The commonly used statistical tests (i.e. Jarque-Bera test, F-test, Levene’s

test) were carried out and the EViews and the SPSS software packages were used as being the only ones adopted by almost all the surveys examined (Bryman, 2004)

From both sets of financial data collected and tested, the sample population SME (1,245) and the sample SME (392), a trend analysis in all financial ratios was conducted for the years 2008 till 2014. Its purpose was to show how each ratio behaved over the years for all SME and for each group of SME. Their behaviour in a period of severe economic conditions, would show the degree to which the Greek ISO certified SME managed to sustain, improve or worsen the level of the different group of ratios. It would act as an indication that the Greek SME and each group separately managed to improve, sustain or worsen their liquidity, profitability, efficiency and their solvency level over the years that the analysis was conducted.

Given the level of quality implemented by the Greek SME, derived from the quantitative analysis already conducted, their financial performance could be related, focusing on their liquidity, profitability, efficiency and solvency level.

From the SME financial ratio trend analysis and the quantitative analysis on the quality elements implemented, a comparative analysis contributed in ranking the Greek ISO certified SME based on their size, their quality level implemented and their attained financial performance during the period examined.

To support the results derived from the comparative analysis conducted, a multivariate analysis, a MANOVA analysis was also conducted. The analysis examined the significance in the correlation among the four quality elements and the financial ratios as well as the correlation/relationship existing among the financial ratios.

The conclusions derived were also supported from the development of a Canonical variate that was developed with the MANOVA syntax function. From that function, a coefficient was assigned to each ratio variance, indicating the importance of each one for each year, of the period examined, for the total number of SME examined and for each different sized group of SME.

1.7. Thesis Structure

The thesis is composed of seven chapters.

Chapter one introduces the thesis, its contribution to knowledge, the motivation, the aims and its objectives. A set of research questions were defined as a means of bridging the gap identified in literature regarding the quality elements used in measuring the TQM implementation level to ISO certified Greek SME. Two research

questions were also identified in order to identify the quality elements contribution in improving or not improving SME financial performance, under an economic and financial crisis environmental conditions.

Chapter two, refers to the literature review conducted. Each section defines and elaborates on the environment and the elements that characterise quality. The quality certification and the total quality management implemented in companies and SME in particular is extensively researched. It refers to the description of quality and the TQM philosophy and its dimensions. It continues with researching the contribution of quality in a company's value and how it influences its costs. The chapter ends with a summary of the findings.

In Chapter three, the results of the survey conducted in literature regarding the transition process of a company, from the ISO certification to the TQM implementation are presented. In this chapter, all the elements that characterise the implementation of TQM in an SME are explicitly investigated. Different approaches and models that have been developed for the efficient and effective implementation of quality and TQM in relation to SME are presented. Special attention is given to the characteristics of the S-P model, a quality model specifically designed for implementing TQM in an SME.

In Chapter four, the role of SME in the European and Greek economy is shown. The special characteristics that surround the European SME and the position which Greek SME have among the European ones, is presented. How the SME behave when trying to cope with economic crisis conditions is also investigated and presented. The role that quality plays in companies' and more specifically in SME' financial performance was examined. The factors that determine an SME's financial performance and the role of the financial ratio analysis in determining the level of their financial performance, was explicitly investigated.

In chapter five the methodology used for collecting, processing and analysing the necessary data,, in order to come to reliable and realistic conclusions is presented. The research approach, the research methods (qualitative and quantitative) used and the respective procedures followed in order to collect and analyse the data are described.

In chapter six, all the necessary steps followed in order to generate the results from both the qualitative and the quantitative survey and to analyse those results under the triangulation approach, are presented. A description of all the preliminary statistical tests conducted in order to organize the data collected and render it process able, generating reliable and valid results, are described. All the different type of analysis conducted, like a financial ratio analysis, a descriptive analysis, an ANOVA analysis

and the development of the extra variable, as well as the analysis conducted in order to analyse the relationship between the level of quality implemented in different sized SME and their financial performance for the period examined, are included in this chapter.

In chapter Seven**,** the survey's findings are presented. This chapter tries to relate these findings to what has been shown in literature up to now as well as showing and evaluating their contribution to knowledge. In this chapter, a summary of what has been completed and what conclusions have been derived from this survey are illustrated. It presents the implications and the limitations of the study and the opening of new doors for further research. It additionally shows possible ways and approaches on how the survey can be transferred to other countries or markets that are also facing crisis conditions, composing new comparative or non-comparative research surveys.

In Figure 1, the structural representation of the chapters and their sections is shown.

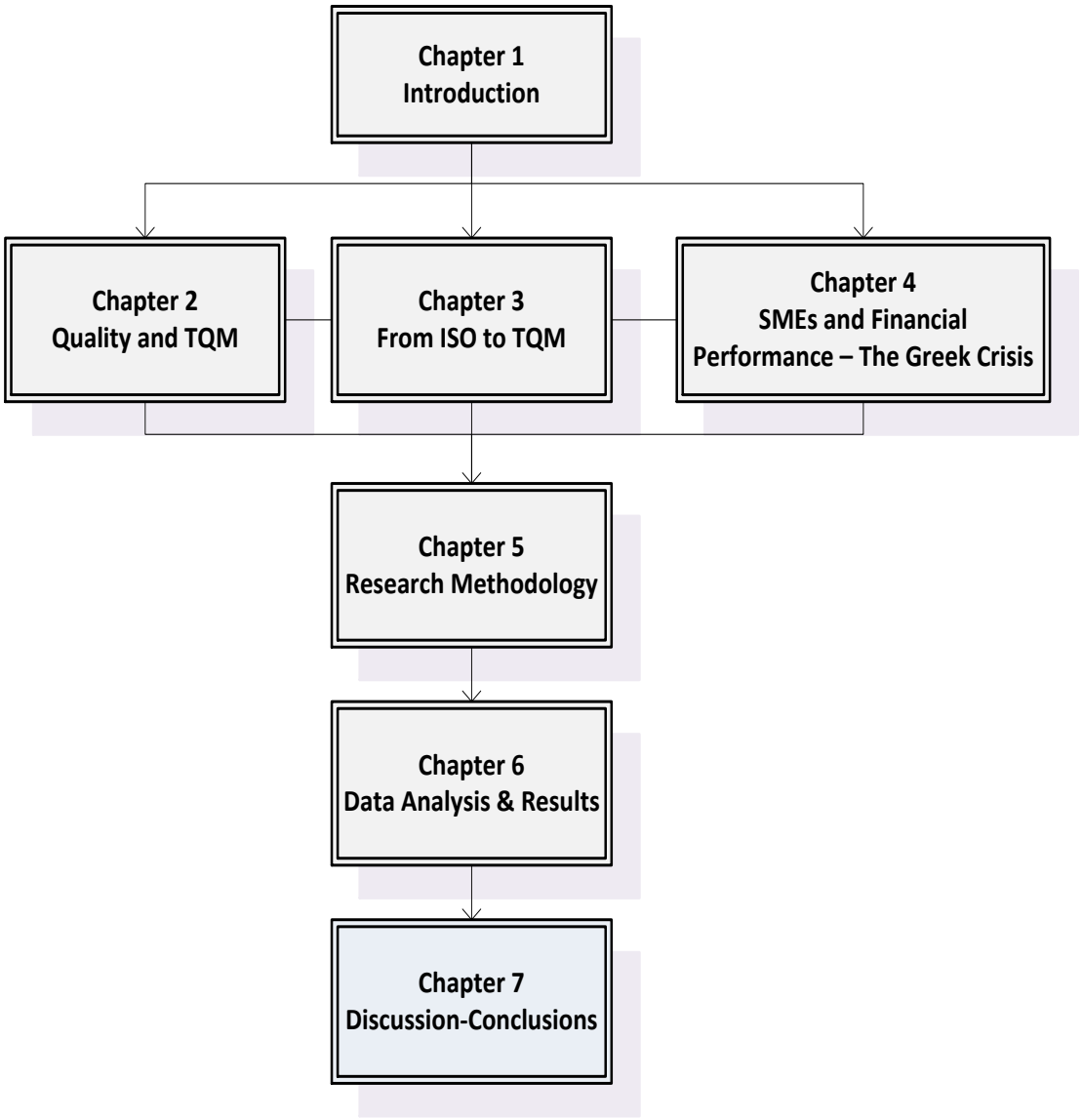


Figure 1: The Structure of the Thesis

Chapter 2
Quality and TQM

Chapter 2. Quality and TQM

2.1. Introduction to Chapter 2

This chapter, refers to the literature review conducted. Each section defines and elaborates on the environment and the elements that characterise quality. It refers to the description of quality and the TQM philosophy and its dimensions. The chapter ends with a summary of the findings.

To provide a standard definition for quality, having an intuitive understanding of the idea and its role within a company, has been proven to be quite complex. "Quality" is often used as an adjective, and has become synonymous with the words “elegance” and “luxury” as Crosby (1979) has stated (Ree, 2009). A more accurate use of the term “quality” refers to a comparative degree of excellence with which products and services can be compared or judged (Allen and Kilmann, 2001).

Quality for our survey is defined as the optimum and ultimate combination of all four quality elements that are implemented to a company and to an SME in particular, trying to accomplish customers’ satisfaction. As quality elements we refer to the quality culture, the quality tools and techniques, the quality processes and the performance appraisal.

Max Hand and Plowman (1992) tried to define quality, using the phrase: “delighting a customer by consistently meeting and continuously improving his requirements” Gitlow.G et al., (1989) defined the term as the “never-ending improvement of a firm’s extended process”.

Whereas Quality Management is considered as an eclectic mix of management ideas (Ehrenberg & Stupak, 1994), quality can be explained from a collective intellectual output derived from numerous contributors/gurus including Shewhart (1933) the Grandfather of TQM, Deming (1950), Juran (1941), Ishikawa (1962), Crosby (1967), and many others

Total Quality Management (TQM) is seen as a business management approach that received great popularity from the US private sector in the early 1980s. It is defined as a system approach that has as an aim to add value to a company’s customers by continuously improving its systems and processes.

Initially, Cohen and Eimicke (1994) gave a specific and particular meaning to every word shown in the acronym of TQM:

"***Total*** means applying to every aspect of work, from identifying customer needs to aggressively evaluating whether the customer is satisfied.

Quality means meeting and exceeding customer's expectations.

Management means developing and maintaining the organizational capacity to constantly improve quality".

Over the last few years, Quality and TQM in particular have been considered a way of sustaining competitive advantage and maintaining or further improving the profitability level , for all company sizes including the ISO certified SME, (Corredor and Goñi, 2010).

In this chapter a brief definition and description of the elements/dimensions of quality and TQM is given. Quality and TQM as being the primary source for improving business productivity (Morrison and Rahim, 1993; Schroeder et al., 2005) explains the analysis of the levels of quality and the TQM as a philosophy in the business environment. TQM is characterised from its elements that have been identified and surveyed in literature (Section 2.2). From s*ection 2.3* all possible ways with which the value of quality and TQM in particular can be measured and added to a company's overall value are discussed. *Section 2.4* presents the role of quality and TQM in different economic sectors of an economy, the approaches used for its implementation and the problems that occurred. In s*ection 2.5* an attempt is made to clarify how the cost of quality is determined and how it influences the decision to introduce quality into a company's strategic plan. Finally in s*ection 2.6*, a summary of what has been discussed in this chapter regarding the Quality, the TQM and their elements and dimensions is shown.

2.2. Quality and TQM

"Quality is a Habit, not an ACT" was stated by Aristotle in 322 BC (Aized, 2012). Management of quality has been developed in line with the definitions of quality. Early methods to quality improvements, have focused on improving a product's quality through the process of inspection (identification of non-conformance post-production) and quality control (attempts to prevent non-conformance).

Quality is introduced to a company through a quality assurance program. The program involves the organization's recognition, on a third party's (Quality Auditors) approval, for the setup of a quality system. Management experts advocated the importance of total quality management (TQM), marking the beginning of a movement away from

original notions of “quality” and towards its conceptualization as a philosophy in the field of management (Rallabandi et al., 2010).

Quality is applied equally to services and products. Initial research indicates that quality was firstly introduced in service industries, and subsequently in the manufacturing industry. In both industries, it was used as a means of achieving competitive advantage regarding technological and cost issues. In recent years this has become harder to sustain. Applying Quality to product-based approaches differs from applying it in service based approaches as in the latter case it is not possible to pre-specify all aspects of the service. In the interactive collaboration required among the customers and the organization in a service based approach, quality and TQM can offer innovativeness in the product’s technological and communication issues. (Chong et al., 2010)

Measuring quality in services, was achieved through focusing on the gap that exists between what consumers’ feel a company should offer, versus what they actually provide (Allen and Kilmann, 2001).

During the past decade, TQM has gained importance as an organizational trend in the context of management changes, and has been focused more on the public sector (Stringham, 2005).

The aim of TQM, is to contribute to a company’s overall effectiveness in achieving a higher than what individual outputs can derive from each of its sub-systems, namely: design, planning, production, distribution, customer focus strategy, quality tools and employees’ involvement. Customer’s satisfaction and continuous improvement remain the essential “elements” in supporting the TQM philosophy.

According to Stringham (2005), modern TQM, emerged as a management approach based on a set of fundamental quality principles. It was outfitted with a toolbox of different techniques and procedures, aimed at providing appropriate and differentiated guidance and structure to a company’s practical set of procedures, so it could achieve higher efficiency in its operations.

TQM is currently seen as an organization-wide management philosophy that emphasizes the need to meet customer needs and get things "right first time". It is considered a management system, the partial implementation of which does not generate any benefits (Kolesar, 1995). According to Price and Chen (1993) a company can fully benefit from TQM, only if it manages to change the attitudes and the priorities of its day-to-day operations. But to manage these changes, a company needs to wholly

adopt TQM and all its employees need to make a long term commitment to its implementation. The ability to improve the quality delivered to external customers, depends on the quality of all the company's operations in the chain, including the internal customers and definitely all its employees. So, companies that have the option of implementing TQM may want to consider assigning it to every organizational unit and member within it, instead of delegating its implementation to a specialist department.

In order for a company to fully implement TQM, it needs to use both its "hard" and "soft" elements. The "Hard" elements of quality include the systems, the tools and the techniques applied to its operations and the "soft" elements refer to the attitudes and the company's enhanced values. There classification into four major categories as noted by W.G. Lewis, et al., (2006) is shown below:

- Top management commitment (Organizational strategy)
- Gap Analysis (Systems and Techniques-QMS[1])
- System deployment (Appraisal and Feedback) and
- Continues improvement (Cultural changes)

As stated by Mendes and Lourenco (2014) among researchers Price and Chen (1993) have examined all the soft and hard elements (variables) that are incorporated within a TQM model, capable of being applied to a company and an SME in particular. These elements are presented in Figure 2 below which outlines "The TQM Plan"

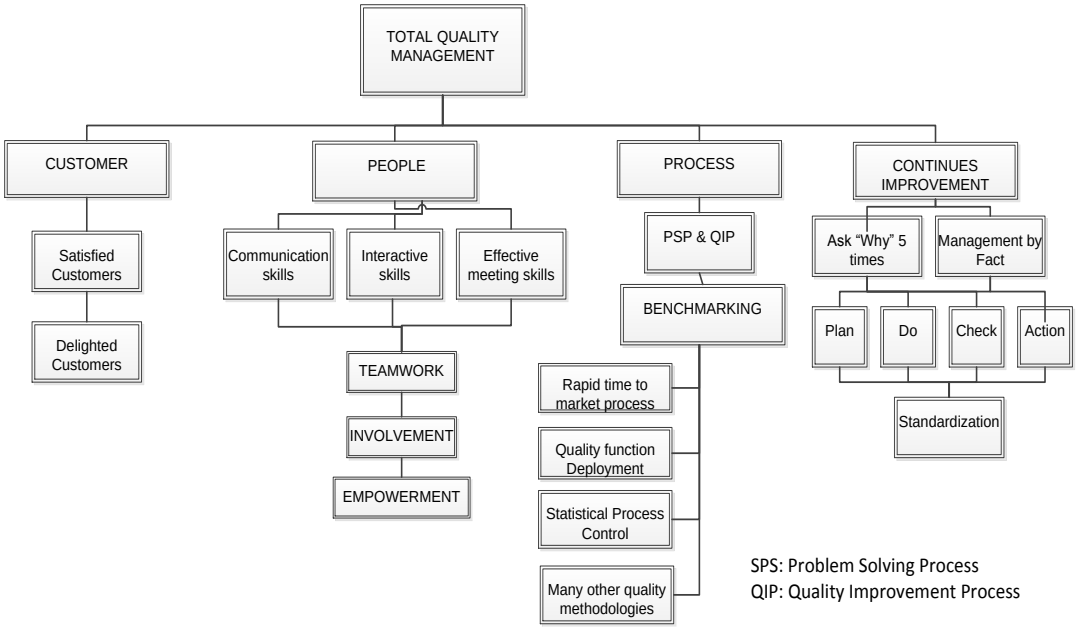


Figure 2: The soft and hard elements of TQM -The TQM plan (Price & Chen, 1993)

[1] QMS: Quality Management System

The four key elements that form the foundation of TQM, as stated by Price and Chen (1993) are the People, the Continuous improvement, the Process and the Customer. The implementation of a TQM plan, should begin from the centre of the cycle and expand to the outer layers. In order to be implemented adequately, each of the TQM elements additionally need to be supported from their supportive components.

Training employees' communication, interactive and meeting skills would enable the goals of being empowered, involved and work as a team. That goal achievement would improve the company's business effectiveness and productivity. Identifying problems and their cause need innovative and intelligent decisions in order to be solved. Successful decisions followed by Deming's cycle (Plan, Do, Check and Act - 1991) will bring the "continues improvement" and no-ending excellence in quality. Naming those practices "standard" the documentation and training is what would make them be standardized. The problem solving and quality improvement processes, would contribute in making the customers' requirements a specification to a work process. Benchmarking and the use of "best practices" in the process development explains the strategic role of quality. The TQM looks for customers' satisfaction that is to meet customers' expectations. When these expectations are satisfied the customers are satisfied. Delighted customers is what a company should look for if it wants to be diversified.

In order for a company to develop and establish a TQM plan, literature indicates two distinct paths which can lead to the necessary changes that would affect its level of efficiency. The first path, deals with the continuous improvement processes and their reliability and efficiency. The second path supports the company's continuous learning process that would maintain its flexibility and the use of a flexible management system (Sutcliffe, et al., 2000).

Black and Porter (1996) argued that the research conducted on TQM until then, hadn't managed to develop a practical model, that would recognize the areas in need of improvement and allow companies to develop their own quality system and quality methods. This led in identifying the quality criteria that the quality assessment and the quality improvement techniques could measure. The quality criteria identified, became the main criteria for supporting the development of different quality awards. These awards were developed and used in different countries, like the Deming Prize in Japan, the Malcolm Baldrige National Quality award in USA; and the European quality award in Europe. Using the same criteria, different areas of improvement were also achieved. The areas of improvement focused mainly on the company's set of operations but also

on employee relations, customer satisfaction, lowering costs, market share increase and overall profitability. Additionally, a company's improved financial performance due to the quality improvements clarified, was also identified and was included as a criterion to almost all performance evaluation models (Wisner and Eakings, 1994).

The selection of appropriate criteria for measuring different quality improvements revealed the need for the development of a quality model. Back and Porter (1996) pointed out that only a limited number of quality researchers, have tried to develop a model capable of identifying the level of TQM implementation, accompanied by a method capable of assessing it. One of the first to develop such a model, was Bossink et al., (1992) who tried to investigate the level of implementation of quality in a company, by interviewing the company's managers and employees. As the process proved time consuming, they administered a questionnaire that revealed only the company's specific characteristics. Saraph, Benson and Schroeder (2003) identified and proposed an eight critical factor model, for identifying TQM's implementation level, which included 8 variables namely;

- management's leadership
- quality policy
- the role of the quality department
- training
- product/ service design
- suppliers quality
- process management
- quality data and reporting as well as
- Employee's relations.

However the model ignored the perception of the people coming from the industry, as a way of verifying its accuracy and its reliability. As a result, Black and Porter (1996) proposed to additionally examine the reliability level in measuring TQM; and to synthesize/combine the selected eight criteria with the perception of the people who participated in the survey.

Totality in quality was firstly introduced by Hafeez, Malak and Abdelmeguid (2006), who defined TQM as the means with which a company could achieve a higher level of quality in terms of all its functions. TQM should include all the levels of interactions between the elements of the organisation as well as the elements themselves. Literature indicates, that the quality principles supporting the operations for the

successful implementation of TQM in a company, should be related with seven different elements. These elements include:

- the commitment of top management,
- the measurement of quality,
- the process management,
- the product design,
- the training and empowerment of personnel,
- the supplier's quality management and
- the customer's satisfaction and involvement.

Those quality elements should also be supported and from a set of measures, capable of giving feedback on the degree of the quality achievement from each one of them. Such kind of measures that could be used are:

- the defects proportion,
- the percentage of reworks,
- the cost of quality and
- the defect rates

in relation to the equivalent values of its competitors (Motwani, 2001).

Hafeez et al.,(2006) conducted a comparative study on the work of ten[2] notable authors in the field. Through careful content analysis, a set of 18 elements were identified and categorized in a well-established set of operations management dimensions. Three groups were formed: the technologies and tools (T), the organization and its systems (O), and the people (P). The elements included in each of those groups constituted the enablers, the facilitators for the efficient implementation of TQM that a company should focus on.

As it is depicted in Figure 3, the efficient implementation of TQM is based on a set of two different performance measurement groups: the financial and the non-financial ones.

[2] (Deming, Juran, Zairi, Crosby, Kanji, Feigenbaum, Ishikawa, Taguchi, Oakland and Shingo).

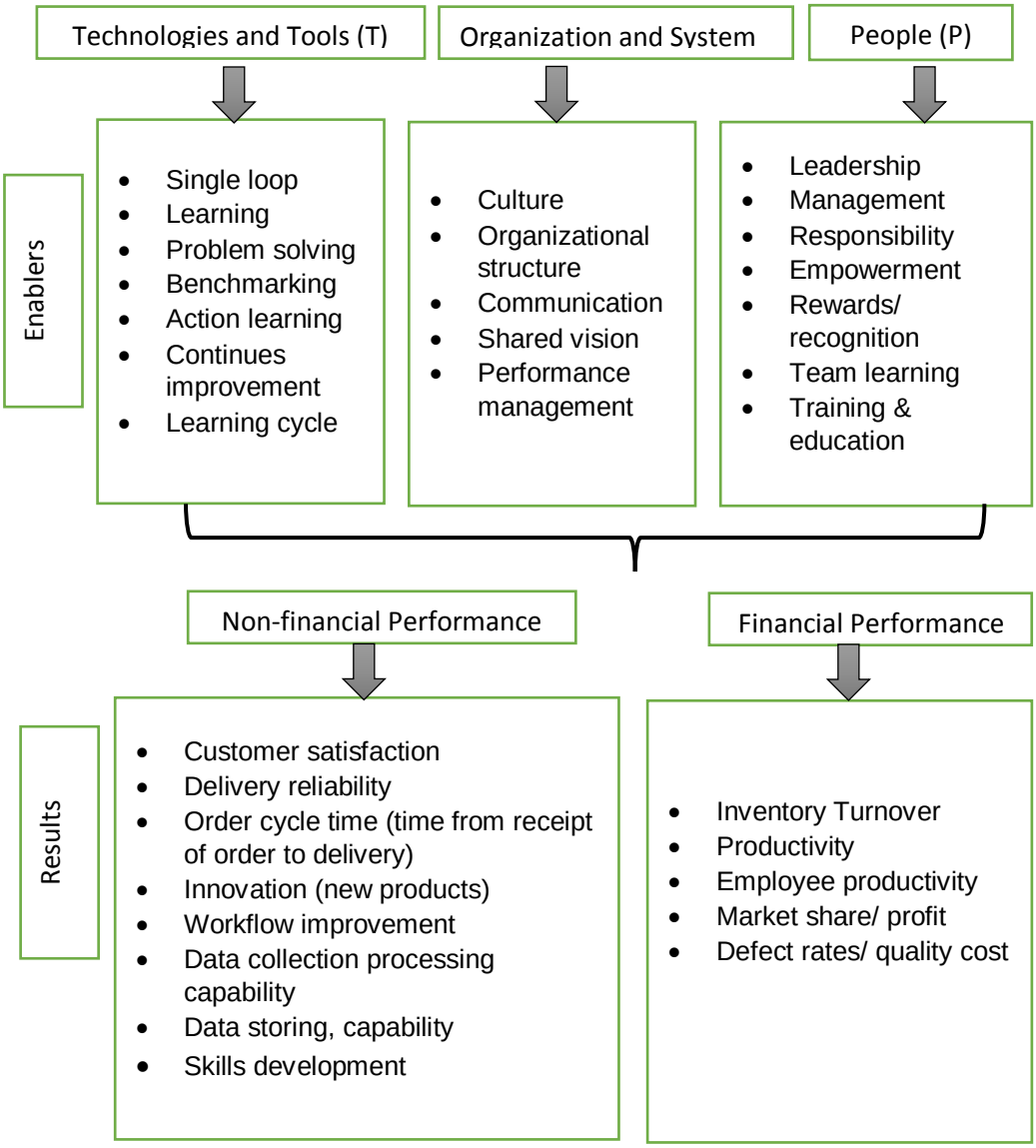


Figure 3: The Quality Elements supporting the TQM Implementation (Hafeez et al., 2006).

For the purpose of the survey conducted by Hafeez et al., (2006), a questionnaire was designed capable of reviewing the level of quality applied in different European organisations. The questionnaire was distributed to both manufacturing and service organizations functioning in the public sector. A sample of 100 organisations were approached over the phone and/or through email. Only 40 out of those 100 organizations, showed interest in participating in the survey, and from those forty questionnaires only twelve were completed (30% response rate). The results clearly indicated that the financial performance measures outweighed the non-financial ones.

More specifically, the analysis revealed that, the following enablers, being mostly related to the "people-(P)" and the "soft-(0)" elements (dimensions) of quality, were those that presented high values in supporting the relationship between the financial and the non-financial performance measures:

- Empowerment, management responsibility and leadership (25%).-(P)
- Team learning and rewards and recognition (27%).-(P)
- Performance management (22.83%).-(O)
- Training and education (29.16%).-(P)
- Culture and learning cycle (25%).-(O)
- Benchmarking (28.33%).-(T)
- Problem solving (20.83%).-(T)
- Communication (26.6%).-(O)

Though, it was also realized that there was no tangible form that could prove this relationship.

The results indicated that "people" (around 28%) were the most important factor for a TQM organisation, followed by "technologies and tools" (25%), leaving "organisation and systems" (23%) last. Consequently, we can confidently state that TQM contributes successfully in the placement of correct organisational structure and assists employees with achieving higher levels of quality (Hafeez et al., 2006).

Fotopoulos and Psomas (2008) developed a study that focused on the relationship between the soft and the hard TQM elements. They have followed the quantitative survey method to collect empirical data. The results derived from the analysis of 370 Greek companies, revealed that both the "soft" and the "hard" elements, play a significant role in the effective implementation of a quality management system. That was realized from the inside and the outside environment of the participating companies. However, it became evident that the "soft" TQM elements play a more critical role, than the "hard" elements. The adoption and use of "soft" and "hard" TQM elements, can lay the foundation for improving the way a company operates and supports the implementation of total quality (Fotopoulos and Psomas, 2008). The authors added that, "the quality tools" are just the "vehicle" to quality improvements and do not connote that a company satisfies all the quality elements, such as the continuous process improvement, or customer's satisfaction; nor do they predict an improved market position. For that, all the TQM elements, the hard and the soft are required. To attain market sustainability, a company would have to implement both "hard" and "soft" elements, including focusing on customers and properly measuring

their satisfaction levels, proper guidance from top management as well as employee and supplier support.

A company's market sustainability is also heavily dependent on its organizational strategy and consequently on its performance. Prajogo and Sohal (2006) tried to examine the way TQM elements fit into and mediate the relationship between organization strategy and performance. Their study examined TQM in relation to a company's organization strategy and facilitated the understanding of TQM in a broader context. The results derived, showed that both diversification and TQM were positively and significantly related to the three organizational performance measures: product quality, product innovation and process innovation. They showed that TQM (as a philosophy) could be adopted from a company as a means of implementing a differentiation strategy and through that, achieve and improve its organizational performance. They clearly stated, that both innovation and quality are the appropriate targets for an organization in order to differentiate itself from its competitors. They also demonstrated that for creating a competitive advantage through differentiation, a company needs to introduce innovative products, with unique characteristics that are comparable to its competitors' products, not just introduce innovation to its processes (Prajogo and Sohal, 2006).

Conversely, the analysis of the costs incurred from the development of a differentiation strategy, didn't indicate any significant correlation with any of the performance measures they used. This leads to the conclusion that, companies should prefer to focus on product innovation and not only on product quality; and that the cost-benefit analysis conducted should recognize the added value of the strategy implemented. In conclusion, the authors proposed that TQM has the strongest relationship with a company's quality performance and not only with its differentiation strategy. This constituted the basis for the development of the TQM's philosophical framework (Prajogo and Sohal, 2006).

2.3. The Value of TQM

A strong criticism against a number of surveys conducted, states that TQM has no value for a company, when it is based on the perception and the opinion of its managers and its employees (Hendricks and Singhal, 2000). For that reason, new ways and new methods were used as a means of introducing quality to a company, like six sigma and lean management approach which were initially considered to be reciprocals to TQM. Now, these new methods have acquired their own substance and

are considered components that add value to a company's operational and financial performance (Hendricks & Singhal, 2000).

One of the core requirements for implementing TQM is to have accurate data in order to make accurate decisions that would add value to a company. A study by Hendricks and Singhal (2000) aimed at defining an accurate methodology, that would validate the quality of the derived results, and determine the added value of TQM for a company. The researchers selected companies which had effectively implemented TQM and set benchmarks with which they compared their operational and financial performance. They conducted their analysis for a specific time period, which they split into two parts, the "Implementation period" and the "Post-Implementation" period.

The results derived, showed that TQM is considered a long term investment (Singh, 2011). Thus operational and financial performance results are evident in the long run and not in the short run. The increase in the companies' value was due to the increase in their profitability, supported from the increase in the sales level and the number of their employees (size). The companies also experienced an improvement in their efficiency. Reviewing the characteristics of the participating companies' it was evident that their higher efficiency and the overall benefits derived from the TQM implementation, were related to their capital intensity (low vs. high capital intensity). Capital intensity is derived from the ratio of net property over the number of employees. Their size (net property) was measured from the amount of their total assets, the degree of their market diversification and the degree of knowledge transferability among their units measured at low cost. All were influenced from the level of TQM implementation. In addition, the benefits achieved were also related to the degree of utilization of the economies of scale concept and the learning synergies among different units within the company. This is what would eventually result in adding more value to the companies (Hendricks & Singhal, 2000).

The authors concluded that TQM considered as a philosophy, forms the foundation needed in order to develop a management system. The added value from the TQM implementation, is derived from the development of a management system that may improve the decision making process and/or may improve a company's financial and operational performance. Management needs to "invest" in patience and be ready to accept and adopt major changes in the company's organizational structure, changes in its culture and changes in the way employee's think and perceive the quality of a newly implemented management system.

2.4. Quality and TQM in different economic sectors

The attempt to implement TQM in companies functioning in different economic sectors, emphasized the need to place greater attention on the human factor, which is influenced from changes caused in different cultural issues. Cultural issues differ among different sectors like the Health, the Public, the Service, the Sports and the Education/training sectors. The analysis of those cultural issues would enable a better understanding of the role that the TQM values and the quality practices have- or should have -in coping with possible changes that appear in the cultural environment and in the behaviour of the people involved.

Examining the professional training sector, Lam, Poon and Chin (2008) managed to establish the relationship that exists between Organizational Learning Capabilities (OLC) and the TQM Culture (TC). They tried to develop an organizational learning transformation model for vocational education in the context of TQM Culture. Their findings revealed a strong positive correlation between OLC and TC variables. They also identified that the shared vision, the long-term focus, and the teacher's/trainer's involvement were the key TC variables.

They pointed out that the orientation rules prohibit the creation of TQM culture, while the innovative leadership style contributes to its formation. They developed an empirical TQM cultural environment that was based on the OLC transformation model that focused on vocational education. After being tested through an implementation case analysis, the model revealed that it could efficiently facilitate the transition from a traditionally vocational education institution, into a learning organization, achieving organizational excellence.

Pool (2000) developed another model in an attempt to measure the quality elements of a learning organization. Following a descriptive study Pool tried to investigate the relationship of TQM, with a company's organizational culture, as well as its impact on the learning organization. The study, examined the attributes of the learning organization and the way it influences employee's motivation. The survey showed that many executives pursued professional development programs on TQM principles and/or on Senge's (1990) organizational learning principles[3] (Chang and Sun, 2007). The collected and analysed questionnaires measured the executive's perception regarding the principles applied to a learning organization, in relation to the TQM attributes, and to the adopted organizational culture. The results showed that the

[3] 1. Systems thinking, 2. Personal mastery, 3. Mental models, 4. Building shared vision, 5. Team learning

implemented TQM principles had a positive and significant relationship with the organizational learning process. They also revealed a positive and significant relationship between the learning organization and its executive's motivational level.

Ali M. Rad (2006) investigated the impact of cultural values on the success or failure of TQM implementation in the Isfahan University Hospitals (IUHs-Iran). His focus group consisted of the hospital managers and the employees. The conclusion derived from the analysis of the data, was that TQM's implementation was fairly successful in IUH. However the implementation level of TQM was low (58.3%) in all Hospitals examined. Greater attention was given to process management, customer focus and leadership quality elements; and less attention was given to suppliers focus, performance results, strategic planning and material resources quality elements. The failure to fully implement TQM, was mainly due to the problems faced in Human resource management, performance appraisal and strategic planning implementation elements. The successful implementation of TQM elements in hospitals with organic organizational structure and medium organizational culture, were found to be higher, than in those with mechanistic and bureaucratic structure characterised by a weak organizational culture level. This comes in congruence with the results of an empirical study conducted to eight south African air force bases, the even though their objectives differ, the approach they both follow to achieve excellence in their operations are not different. To those the result derived supported the valuable role of strategic planning to the implementation of TQM and to the improvement of their products and services (Oschman, 2017).

Considering that ISO-9000 certification, is the starting point for implementing TQM, Sharma and Hoque (2002) using the case study approach, tried to examine issues relating to the rational of implementing TQM in a Fijian's public sector organization-the Housing Authority (HA). They used a semi-structured set of interviews, with nineteen (19) employees selected from different hierarchical levels and a systematic study on documentary material related to TQM issues. The results derived, showed that HA faced no difficulty in adopting TQM elements. It assisted the organization to be more customer's focused, self-sustained and profitable over time (it facilitated HA to reduce its losses and move towards more profitable levels over time). It also found that the implementation of TQM made the organization's operations more effective and efficient.

The difficulty to provide higher quality in sport services (service sector), was reduced when the sport service providers understood customers' perception of a high quality

service and what elements they considered important in quality. Customers' perception revealed that the assessment of quality has a multidimensional structure (Tsitskari et al., 2006; Lam et al., 2005; Ko & Pastore, 2004).

Despite the fact that not all quality elements (dimensions) in the sport service sector have not been defined; Ferrand, et.al, (2010), found that elements (dimensions) such as the physical environment, personal interactions, the core service design and customers' perception of the outcome, would impact the levels of customer satisfaction. Additionally, behaviour of staff and other non-tangible elements (dimensions) like the image, the reliability and the responsiveness, could also influence customers' satisfaction. They could all influence the customers' behavioural intention. In spectator sports, a weak relationship between service quality and spectators' repurchase intention was identified, considering that the most important element that influences attendance is the team identification.

Other studies have focused on quality improvements in the field of sports and have concentrated on two main dimensions. The first was the structure and the programs offered by the sports organizations (Robinson, 2006), while the second was the service quality and the ability for an extensive investigation from the consumer's perspective. (Moon et al., 2011; Robinson, 2006).

De Knop et.al.,(2004) focused on quality on sport clubs. They defined two different approaches for implementing TQM, (a).*the technical approach*: referring to the statistical methods for control, development of strategies and design of procedures, and (b) *the social dynamic approach*: emphasizing the human side of the organization, embracing the human resource management and the organizational culture. They have also approached TQM from its (a).*Operational level:* including all the primary procedures that contribute to the expected service experience, and (b) *Strategic level*: including all the additional elements and supporting processes that could optimize the creation of added value, the setting of higher goals that need to be pursued by the club and its members (Table 2).

Table 2: Total Quality Management (TQM) Matrix (De Knop et al., 2004)

Level/ Approach	System-Technical approach	Social-dynamic approach
Operational level	• Inspection • Statistical techniques • Procedures and instructions • Problem-Solving techniques	• Coordination • Information • Teamwork • Interpersonal skills
Strategic level	• Goal formulation • Strategic planning • Policy deployment • Organizational Structure	• Leadership • Corporate culture • People management • Communication

Though a large percentage (56.6%) of the athletic departments have shown as being incapable of incorporating into their management system, a strategic plan (Kriemadis, 1997).

For the higher education sector the implementation of TQM is considered as a process-oriented approach. Categorizing quality costs into internal and external failure costs that tend to be immediately evident and to the appraisal and prevention costs the increase in productivity, decrease in costs and improvement in the quality of the services performed was attempted (Trevor, 2007).

TQM philosophies in education are introduced and have been used for three decades now compared to that of the industry sector. There has been much criticism, among researchers about the belief that TQM ideas have been borrowed from the industry, in order to be used in the education sector. At the same time, many researchers have identified great similarities between TQM implementation in the education sector and in the industry sector; and have drawn conclusions towards favourable implications of it being used in the higher education sector. However, not all TQM implications were favourable and this was due to the manager's perception that for TQM implementation the institution should adopt a more corporate oriented character. Standardization and uniformity would replace the distinctiveness, the inspiration, the freedom and diversity that mainly characterise an academic institution.

Even though numerous institutions in higher education have sponsored "quality" initiatives, nearly all of them have focused on non-academic activities. For example, higher education institutions have introduced TQM concentrating on processes such as registration, physical plant, bill paying, and purchasing; ignoring the most critical functions performed by an academy such as faculty tenure, curriculum, tuition and fee levels vis-a -vis scholarship assistance (Sirvanci, 2004).

But for an academic institution to change and adopt the TQM culture, they need to move from product focus to market focus. The customer identification step in these institutions, seems to face more difficulties than those encountered in business organizations. There is not much agreement on who the customers are (Students, parents, alumni, employers, society, faculty, local community, academic disciplines, and staff) and without a well-defined customer and a customer focused plan, quality efforts may easily be diffused (Meirovich & Romar, 2006).

Koch (2003) believes that the faculty members of a University, view quality with suspicion since educational services are different from business services. The measurement of quality in education, through measuring quality in the faculty's' teaching, research and service, is more difficult than in any other business field where the output is more tangible.

Different countries have established different ways to tackle the issue of evaluating quality in a higher education institution. The governments of different countries like Australia, South Africa, New Zealand, United Kingdom, Namibia and Malaysia, have established a system where an audit body evaluates and grants a quality assurance certificate to a higher education institution. Thus the development of the quality assurance standards (QAA) in education that are managed and controlled from an independent authority, manage to slowly but steadily overcome the problem of evaluating quality in higher education (Doherty, 2008).

2.5. Cost of Quality

Quality is one of the most valuable issues that a company (25-35% of a process cost) can consider, with the aim of increasing its competitiveness in the market. It is also believed from Crosby (1979) that quality is free and from Williams et.al., (1999) that quality cost is approximately the 5% to 25% of sales revenue (cited by: Plewa, Kaiser, & Hartmann, 2016). The need to incorporate a company's cost analysis, the cost of quality is inevitable. The need of a quality manager to identify and measure the size of the quality cost is vital given that quality cost determines a company's production and control costs that are directly related to it (Son & Lie-Fern, 1991). Their analysis revealed that quality and cost are inversely related. That is because an increase in the prevention cost due to a stricter quality control process has managed to reduce the out of control period and the probability of producing defect products. Thus, the overall failure cost has been reduced dramatically given the increase in the prevention cost. The authors specifically stated that "one ounce of prevention is worth a pound of cure". Having developed the EDCC (*economic design control chart*) they managed to identify

all the costs related to sampling, testing, investigating and correcting the wrongly assignable costs, as well as the cost of producing defective items. In addition to the above, they also highlighted the importance of incorporating the failure cost and the inspection cost (double dipping) into their model.

Quality cost is separated into four different categories: the prevention cost, the appraisal cost, the internal failure cost and the external failure cost. (Son & Lie-Fern, 1991). Various articles (Cánovas et al., 2009; Desai, 2008; Son and Lie-Fern, 1991) indicate that these four different costs are sometimes combined or merged into two or three different categories for simplicity. This is because quality costs are not easily recognized within an accounting system and if used must be measured objectively. To do so, they must be considered as being easily recognizable and reliable.

Determining the cost of quality, is important in all kinds and types of companies irrespective of the sector they operate in. This is especially significant considering that the cost of quality can significantly influence a company's overall processing cost or even its response time to customers. Being flexible and adaptable to any market price or demand changes, may lead a company to higher levels of quality supported from a higher level of competitiveness. When a company is struggling to survive, then it needs further support which can be derived from a better control of its quality costs. This is obvious because under economic and financial deficiencies, a number of quality costs that up to that point might have been hidden or intangible, could lead a company into more severe and unrecoverable crisis conditions. This implies that when a company faces crisis conditions, it needs to change and/or adjust a number of quality elements that would influence their cost leadership strategy aims as for example the reduction of their wastes and flaws (Herzallah, et al. 2014). This reduction would contribute in reducing further their operational and production costs (overhead costs, distribution costs) enabling them to better measure and control them. The use of a cost model, like the PAF (Prevention-Appraisal-Failure) model, in order to identify and analyse the quality cost elements as a mean of reducing the cost of quality offering higher quality at a better price is needed (Holota, et.al., 2016). Focusing on the prevention cost that approximately entails the 45% of the quality costs the efficient and effective implementation of a quality management system would manage to reduce it or even totally remove it.

For SME the cost of quality is also considered an important component in its strategic plan. (Desai, 2008). Its importance is related to its difficulty in being measured. Though, as Crandal and Julien (2010) noted, for manufacturing companies, the quality cost

represents approximately 15% of their dollar sales and for servicing companies 30% of their dollar sales. That is an amount that cannot be ignored and its coverage needs to come from the returns and benefits derived from the TQM implementation in a monetary and/or non-monetary form.

2.6. Concluding Remarks

Introducing quality into a company's operations, begins with the introduction of a quality assurance system. The concept of continuously improving its customers' requirements is what would bring total quality management standards and the TQM philosophy in its operations.

The TQM plan as it has been perceived and described by various quality gurus, its "soft" and "hard" elements, as well as the significance of its implementation have all been explicitly presented in sections 2.2 and 2.5.

Implementing quality and TQM in companies operating in different economic sectors like the Health, Public, Service, Sports and Education/training sectors has been discussed. There are sectors that give greater attention to the human factor. The role of the quality culture element and the performance appraisal element were examined in all those different industry sectors, as a means of improving the implemented quality level.

The different categories in quality costs were mentioned and the difficulties in objectively measuring them were identified. The need to find ways of identifying, measuring and evaluating quality cost was also identified.

The starting point for TQM implementation is the ISO certification. That is a certificate granted from an authorized organization to a company proving the accurate and reliable establishment of a management and operational system based on the quality standards specified by different quality models i.e. ISO-9000, ISO-33000, ISO-14000 or others. The next chapter describes the ISO characteristics and the transition from an ISO certified company to a TQM company.

Chapter 3

From ISO to TQM

The Transition Process

Chapter 3. From ISO to TQM –The Transition Process

3.1. Introduction to Chapter 3

A company needs to establish a quality system first, if it wants to implement quality in its operations. An ISO certification, is the proof that such a system has been effectively implemented and can act as the first of many steps that can lead to implementing TQM. The present chapter, examines the stages and processes that are required for an SME to progress from the ISO certification stage, to the TQM implementation stage.

More specifically, the chapter is separated into seven sections including the introduction (Section 3.1). In Section 3.2, the stages involved in the process of implementing ISO to TQM are described based on the work of various important researches in the field. In Section 3.3, the philosophy of TQM is described as a means of implementing and evaluating a TQM system for companies and SME. Section 3.4, examines the critical success factors in the TQM implementation process, while in Section 3.5, the process of implementing TQM in an SME is described. In Section 3.6, the S-P model, developed specifically for implementing TQM in SME, is analysed and evaluated. Finally, section 3.7 summarises the information presented throughout the chapter.

3.2. The Transition from ISO to TQM:

It is widely accepted that total quality management (TQM) and ISO 9000, can complement each other (Vloeberghs, 1996) and that ISO 9000 is a good starting point for the TQM journey (Corrigan, 1994).

Based on ISO regulations, quality is defined as “the summary of the characteristics and features of products or services that determines their ability to satisfy established or anticipated needs or requirements”.

Among the scholars (Quality gurus) who developed the quality theory, W.E. Deming tried to organize a number of companies under the philosophy of increasing their profits by increasing their productivity. (Gitlow et al., 1989). Deming’s cycle defined by Plan-Do-Check-Act (PDCA) denotes that in a process, when there is a difference between a customer’s perception for a need; and the process that tries to satisfy that need, a problem occurs that constitutes an opportunity for improvement. When there is a “big” difference, the opportunity is great; and when it is ‘small’, the opportunity is proportionally smaller. Considering quality as a big or a small opportunity for investment, means considering the amount by which this difference (gap) is going to

be reduced, or going to be supported from its contribution to earnings. The methods that Deming used, encouraged the use of statistical tools and behavioural techniques that altered the corporate environment of that time. He specifically introduced a set of fourteen points depicted in the Table 3 below, as a way of improving a company's quality level.

Table 3: Deming's 14 Points (Gitlow.et al., 1989)

i. Create constancy of purpose
ii. Adopt new philosophy of quality
iii. Cease dependence on final inspection
iv. Consider total cost, not just initial price
v. Find problems, improve constantly
vi. Institute on-the-job training
vii. Institute leadership across the organization
viii. Drive out fear
ix. Break down communication barriers between units
x. Eliminate slogans, targets, exhortations for workers
xi. Eliminate numerical goals
xii. Encourage education & self-improvement
xiii. Take actions needed to make transformations
xiv. Encourage pride of workmanship

Deming's quality points enabled the community of scholars, to investigate "quality" from a different perspective, the operational perspective, using different methods and techniques. The Baldrige award and the ISO management system, were the first quality models introduced to the market, the standards of which were related to the examination of a company's quality level and the appraisal of its performance. The revised versions of the models placed special emphasis on the human factor and on the quality of the products and services offered to customers.

Verifying that a quality system is in place before forming a company's quality strategy is required. ISO ensures that a quality management system is in place, ready to meet the company's organizational standards. The next step is to try to implement a total quality management system (Han et al., 2007). Dale et al. (1990) considered that ISO is just the beginning of a quality strategy and only if a company manages to implement

the TQM's elements, will it manage to bring its quality strategy to a higher level (Goh, 2000).

The ISO system, guides a company when implementing the quality assurance standards and the total quality management elements, whilst making the quality concepts understandable to all the stakeholders of an organization (Humans and others) (Tsekouras et al., 2002).

As noted by Dale (1994) and Bradley (1994), the ISO system, develops the "road map" for TQM implementation. If this road map is not followed, the chances for failing to implement TQM are significantly greater (Abraham et al., 1999; Brown, et al., 1994). Many authors including Terziovski & Guerrero-Cusumano (2009); Lambert & Ouedraogo (2008); support that implementing the ISO standards first and the TQM elements second, enhance a company's organizational performance and competitiveness. This way, a company, will enhance a customer's satisfaction, offering better terms in quality, costs, distribution, and flexibility (Al-Dhaafri and Al-Swidi, 2016; Han and Chen., 2007).

Throughout the years, new standards and new versions of the ISO system have been developed (ISO-9000:2000, ISO-9000:2005, ISO-9000-2008) in an attempt to reduce the gap existing between the ISO certification and TQM. The ISO standards have been improved in terms of measuring not only the conformities of the functions and the processes implemented, but also in their ability to evaluate effectiveness through measuring the customers' satisfaction level. However Biazzo (2005) criticised the ISO standards by naming them "ceremonial conformity". He tried to point out that differences existed between the ways, the processes and the procedures are documented in relation to the level of quality implemented. Meyer & Rowan (1977) explained that the reason those differences exist, is that companies are protective of the criteria they use to evaluate their effectiveness and efficiency. So, companies with a high level of quality place greater attention and importance on the effectiveness of the actions taken and the results derived from the certification system implemented and less on its pure documentation (Biazzo, 2005). This problem became more evident, when the quality system was applied to SME with limited resources.

The ISO system for an SME, is a process focusing and contributing to the continuous improvement concept, but is also a process of implementing and evaluating management practices by increasing its "formal and accessible" know-how (Biazzo, 2005). Given the SME lack of technical and specialist know-how, the external forces

that would give them guidance to the implementation of new processes are extremely crucial.

Table 4:ISO standards vs TQM elements (Biazzo, 2005)

MBNQA Model (2001).	EFQM Model (1999).	ISO 9000 (2000).
Visionary leadership	Principle developed in the same way	Principle developed in the same way
Customer-driven excellence	Principle developed in the same way	Principle developed in the same way
Organisational and personal learning	Principle developed in the same way	Principle developed partially in the same way (focus on continuous improvement of company performance).
Valuing employees and partners	Principle developed in the same way	Principle developed partially in the same way (focus on both personnel and supplier involvement).
Agility	Principle not developed	Principle not developed
Focus on the future	Principle not developed	Principle not developed
Managing for innovation	Principle given less emphasis	Principle not developed
Management by facts	Principle developed in a similar way, but with more emphasis on processes	Principle developed in a similar way, but with more emphasis on processes and on their interconnections
Public responsibility and citizenship	Principle developed in the same way	Principle not developed
Focus on results and creating value	Principle developed in the same way	Principle developed in the same way

Table 4 comparatively examines the quality criteria used from the ISO model and other quality excellence models. Great similarities exist between the ISO and the other models which are mainly used in supporting and evaluating the implementation of TQM. As stated by Biazzo (2005), the areas of convergence between ISO and TQM are: (a) their reference to customers satisfaction, (b) the monitoring processes used in order to improve their performance, (c) the recognition and focus on the basic processes, (e) the setting of quality objectives in different levels and in every function performed, (f) the evaluation of human resources and its capabilities and (g) the simplicity and efficiency of the documentation process. These are defined as the “management norms” used by the new ISO terminology.

Changes and improvements made to the ISO model, clearly resulted in the similarities to the TQM principles. This supports the belief that the auditing models used in measuring and evaluating quality under the ISO standards, would also manage to measure and evaluate performance under the TQM standards.

The ISO-9000 series and the Baldrige award were first introduced as part of the TQM implementation process used as a means of facing the Japanese competition (Miles, 1989). Specifically the Baldrige award, as stated by Reimann and Hertz (1994) aimed at evaluating a company's competitiveness in relation to the level of competitiveness achieved after applying the ISO-9000 model. Of course revisions of the model narrowed down the differences between the two systems with further revisions being expected in the future (Reimann and H.S.Hertz, 1994). The low cost of implementing the ISO standards, paved the way for more companies to introduce quality in their operations and commit to it (Angell, 2001). New ISO standards have been developed that focused on safety, environmental and cultural issues, leading a company closer to the elements of the TQM philosophy.

A company should consider various factors that influence its progression from the ISO certification stage to the TQM implementation stage. The degree to which these factors will influence the process, will depend on the company's ability to accept and adapt various changes, as for example to start with a Unified culture, or respond quicker or understand customers' needs better (Dandekar et al., 2012). Much research has been devoted to investigate the transition period from Quality Assurance to TQM and the effects of using different models with varying factors. Despite the variation of models and factors however, research indicates that all influence TQM and the level of its implementation to some degree. All models at first, try to identify the current stage of a company's quality assurance system. Then based on the system identified, they attempt to determine what future actions should be taken and which factors should be chosen, so that the optimum level of TQM implementation is achieved. Therefore, the SME entrepreneurs decisions should be related with what a company should do in order to continue its quality journey (Meegan, 1997). Different models suitable for TQM implementation, with distinct organizational functioning, were applied to different companies, during their transition from ISO to TQM. The two most commonly used models were (a) the organizational effectiveness model *(the pyramid of organizational development)* and (b) the organizational life-cycle model.

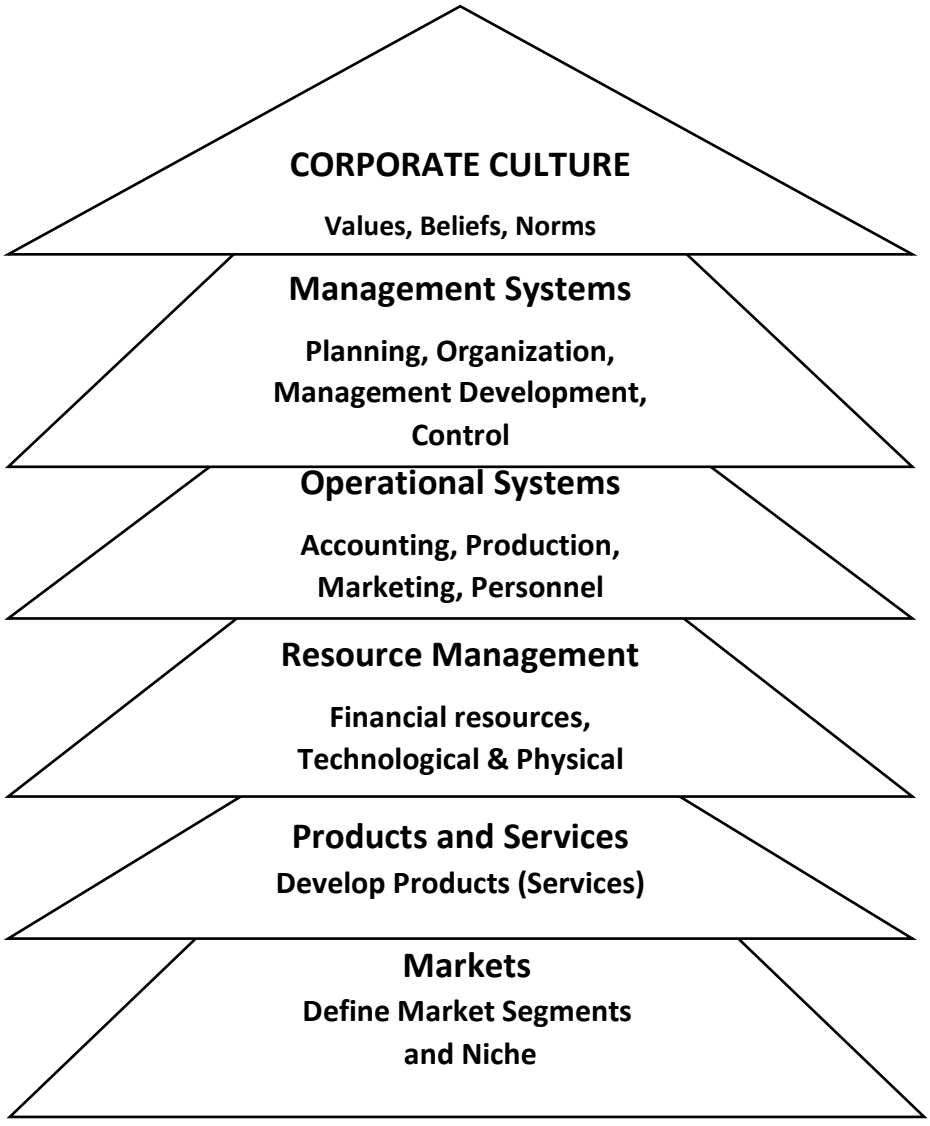


Figure 4:Pyramid of organizational development (Meegan, 1997).

At the time these studies were conducted, the organizational effectiveness model (Figure 1) was considered the most efficacious It included six areas of development and competition. From those six areas, only the four (Markets, Products and services, Resource management and Operational systems) were the ones that the company needed in order to be more effective and competitive, provided that anyone is free to enter and exit the market. For the organizational life cycle model, a company, needs to have a clear understanding of its organizational infrastructure, before making changes to its operations. As Flamholtz (1990) clarifies, the organizational infrastructure is composed from the operational infrastructure (day to day resources and systems) and the management infrastructure (management systems and corporate culture). If a company has already received a quality assurance (QA) certificate, it can safely be

deduced that some degree of guidance regarding the needs of the operational infrastructural, exists. In other words, the available management resources and the operational systems required for further developing and improving its quality level, are present. But to proceed to the TQM level, companies need to direct their attention to the management infrastructure, meaning the established management systems, which are also tied to the company's corporate culture.

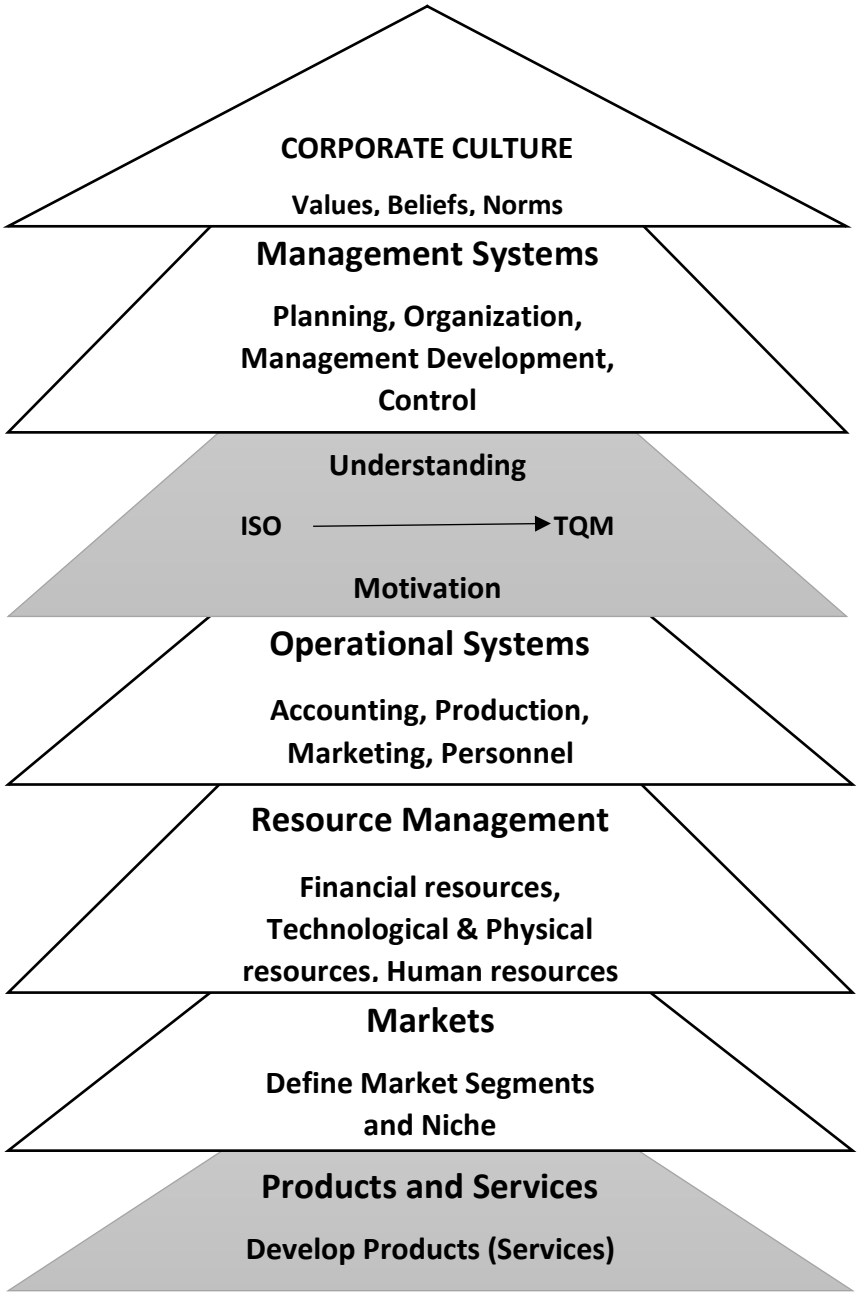


Figure 5: Model of Quality Transition. (Meegan, 1997).

While focusing on the transition from the ISO to TQM and on the model's organizational effectiveness, companies where faced with a number of problems, related primarily to the degree by which the required for the accreditation operational infrastructure, was

accepted. In a number of cases, this was not as evident. As shown in Figure 2, the need to introduce a new level, the transition level was realized.. This new level, was aimed at helping the organization make the quality elements understandable and the rational of the transition period clear to everyone. Meegan (1997) clearly outlines what the transition period incorporates and the benefits derived from its implementation. He argued that the understanding and the motivation driving implementation, are the two critical factors that determine the successfulness of the transition and ensure a successful journey towards applying TQM. He additionally referred to the needs and the actions of the transition level, namely: (a) the strategic plan that will support the corporate strategy, (b) the communication infrastructure, that will reinforce the employees' involvement, (c) the self-development plan and (d) the implementation of a reward and recognition system, that will be supported from a quality related measurement system, comprised of a self-assessment and an involvement plan (Meegan, 1997).

Meegan (1997) supported that the way management handles the transition period, will determine its success or its failure. The cultural factors however, will be the ones that will eventually bring a company to the TQM level. All other factors will simply support the implementation of quality and make the transition stage more understandable. But the transition outcome will only come from the effective utilization of that company's corporate culture.

Meegan (1997) refers to a four stage model for companies that have already been accredited with the ISO certificate. As depicted in Figure 3. These stages are: (a) no plans for TQM – current state, (b) considering/ planning TQM – Transition state, (c) still participating TQM – Desired state and (d) tried TQM, gave up – original state.

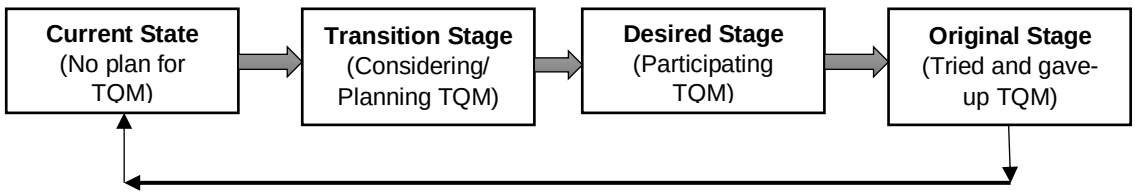


Figure 6: Meegan's Four stage Model

Through its cultural characteristics and empirical experiences, a company, will manage to determine the type and the degree of changes needed in all the four stages, in order to successfully complete the transition to the TQM level.

Meegan (1997) also supported that the companies which adopted the ISO standards can be considered as “traditional”, because they follow Taylor’s scientific management concepts. Therefore, in order to achieve the TQM level, they would need to adopt a more cultural perspective. His belief, was that there is a way that companies can develop an ISO based framework, in which cultural dimensions needed for the TQM implementation, would be incorporated. This ISO based framework, should be enriched with (a) focus on customers, (b) focus on continuous improvement and (c) processes that would attempt to predict and not react. This ISO based framework was the basis with which led to the revision of the ISO-9000:2000 edition to the ISO-9000:2005 and ISO 9000:2008 editions.

Schroeder et al., (2005), pointed out that little research exists to show the connection of Quality management with leadership, Strategic planning, Customer and Market focus, as well as their relationship to measurement analysis and knowledge management. The few management scholars like (Croson and Donohue, 2003; Schultz et al., 1999; Schultz and Juran, 1998) who tried to identify possible relationships with quality management, found that a relationship existed between strategic planning, configuration and the contingency theory. Other studies, (Neil, 1996; Sousa, 2003) have shown that the content of a quality strategy by itself is such, that it is contingent to the environment and to other factors, like the size of the company, the environmental uncertainty and management’s enthusiasm and dynamism All these factors, could affect the content of the implementation process and the quality strategy developed. Considering that the contingencies of a quality strategy are related to the quality practices and the elements adopted from it, these factors should also be considered as vital for a company’s growth and total value. The contingencies realized from the smaller sized companies (SME), requires them to be flexible and possess, a competitive advantage at all times, in order to survive. Thus, the quality strategy they develop should be a valuable resource that is not easily copied or imitated (Schroeder et al., 2005).

A company’s decision to enhance its quality level by introducing the TQM philosophy, requires it to re-organize its operations, motivate its team members to collectively embrace the effort, satisfy its customers’ needs through offering them high quality products; and reduce its overall costs through quality improvements (Miles, 1989). These changes and improvements, will in turn bring changes to the company’s culture. Davies (1990) claimed that these changes will further support the modifications a

company is required to make to its operating system and procedures. Specifically, the changes will result in making the company's actions innovative; increase customers' satisfaction, further improve new technologies, better satisfy market demand and protect its environment thus making it even more competitive (Goh, 2000).

A quality strategy that gives a company a competitive advantage (Barney, 1991), in a continuously changing environment is valuable for all companies types, especially for SME. A number of empirical studies (Haksever, 1996; Regan, 2000; Williams et al., 2006), have examined the adaptation and use of flexible systems from SME. Flexibility refers to the ability of a company to route, schedule, dispatch, and match and sequence its operations. When developing their quality strategy and quality plan SME, could benefit from a step by step management approach. This would assist an SME to form a basic management system with aggregate flexibility and agility, which could easily be controlled and maintained, irrespective of the resources availability (Azizan, 2007; Sinha, Garg and Dhall, 2016) .

For the development of a quality strategy, suitable for an SME, new methods were developed such as the balance score card and the process dashboards, which were both related to the newly developed six sigma model. Debusk, Brown and Killough (2003) stated, that the process dashboard and the six sigma model, could give useful information about a company's operational activities that are dependent on internal and external conditions In addition, this analysis could be supported further from a set of financial measures, like the profit and the return on investment rates.

3.3. The TQM Philosophy and the TQM Implementation Models

Extensive research (Dandekar et al., 2012; Demirbag, Koh, Tatoglu and Zaim, 2006; Kalpande et al., 2013) has shown the relationship between the efficiency of the techniques used in implementing TQM and the analogous philosophy that supports the TQM implementation.

(Garvin, 2000, 1987) gave the chronological and contextual order of the steps needed in order to implement quality (TQM). These steps are depicted below (Figure 7):

Figure 7: TQM implementation steps (cited by Kufidu & Vouzas 1998).

From the "14 points" of Deming, the "ten steps" of Juran and the "14 steps" of Crosby, it was found, that TQM implementation could be achieved through the use of equivalent TQM tools, as these, are related to the philosophical issues that support the TQM philosophy. This analogy is illustrated below in Figure 8.

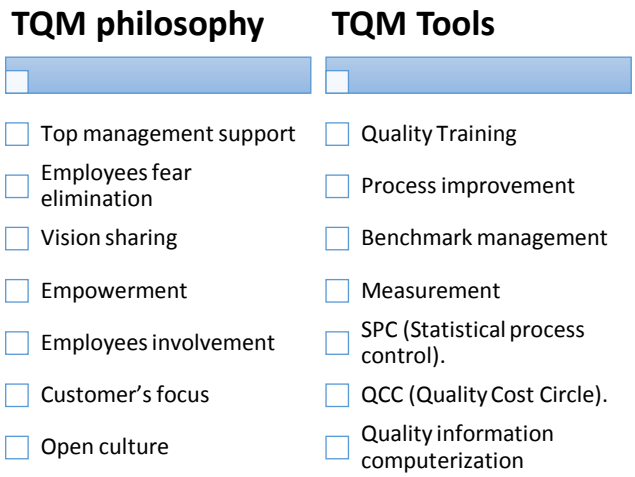


Figure 8: TQM Implementation (Huarng & Chen, 2002).

Research indicates that from all the obstacles which can materialize during an attempt to implement TQM the inability to "modify" top management's behaviour, to a style that adopts and fulfils the TQM requirements, is the most crucial. Different researchers, identified different ways of overcoming this problem. Among those Yusof and Aspinwall (2000) pointed out, that the factors for successfully implementing TQM include: leadership, the ability to measure results, employees' training and the adoption of a quality assurance model. To that, Harris and Purdy (1998) with their survey, supported that "participative management" is what will pave the way for TQM implementation. Others like Krumwiede et al. (1998) and Krumwiede with Lavelle (2000) stated, that the "top management's personality", after being identified, constitutes a more psychological approach for implementing TQM.

Others believe that culture, employee's empowerment and executive commitment are the driving forces behind the implementation of quality in a company and there is no need to fully implement the TQM tools and techniques in order for a company (large or small) to implement quality standards (Huarng & Chen, 2002). Though in order to implement TQM successfully, all of its components/ elements need to be implemented. Only then can a company achieve improved performance and customer satisfaction.

Whilst focusing on the small and medium sized companies (SME), a question arose, regarding the Sme's ability to fully implement all the TQM elements. According to Huarng and Chen (2002), two factors influence the TQM philosophy and four factors influence the TQM's tools and techniques, but all lead to improvements in an SME's overall performance. Those factors include: employee's empowerment, employee's quality perception, executive support, training and use of statistical methods, benchmarking on cost and supplier's support. The TQM philosophy, techniques and performance measurements may vary in different countries and economies, in terms of the manner and the time by which they are implemented.

Thus to achieve, improved performance, the combination of the soft (TQM philosophy) and the hard quality factors (TQM techniques) is needed. The combination of the two, is what will manage to bring a reduction in a company's operational costs, a higher level of employee's empowerment and training, as well as improved cooperation among its employees, suppliers and top executives.

The criteria that characterise and determine the successful TQM implementation are identified in a number of surveys including those by Powell (1995), Whitney and Pavett (1998), Lewis et al., (2005), Chobadian and Gallear (1997), Quazi and Padibjo (1998) and Antony et al., (2002). Conclusively and collectively they have proved that top management leadership, continuous improvement, satisfying customer's needs, reducing waste, long range thinking, increasing employee involvement, teamwork, process redesign, competitive benchmarking, team based problem solving, constant measurement of results as well as a closer relationship with suppliers, are vital for successfully implementing TQM All scholars also recognized the need to include the geographic region among those variables, as this valuable factor will most likely influence the allocation of resources, especially when they are scarce. Sila and Ebrahimpour (2002) found that in order to implement TQM in an SME, variables like the Country (Culture) and the Firm (size and type) should also be considered. As shown in Figure 6, Lewis, Pun and Lalla (2006) stated that these two variables (Country & Firm), together with fifteen quality characteristics (attributes) selected from a pool of different studies spanning the globe, could present the following relationships:

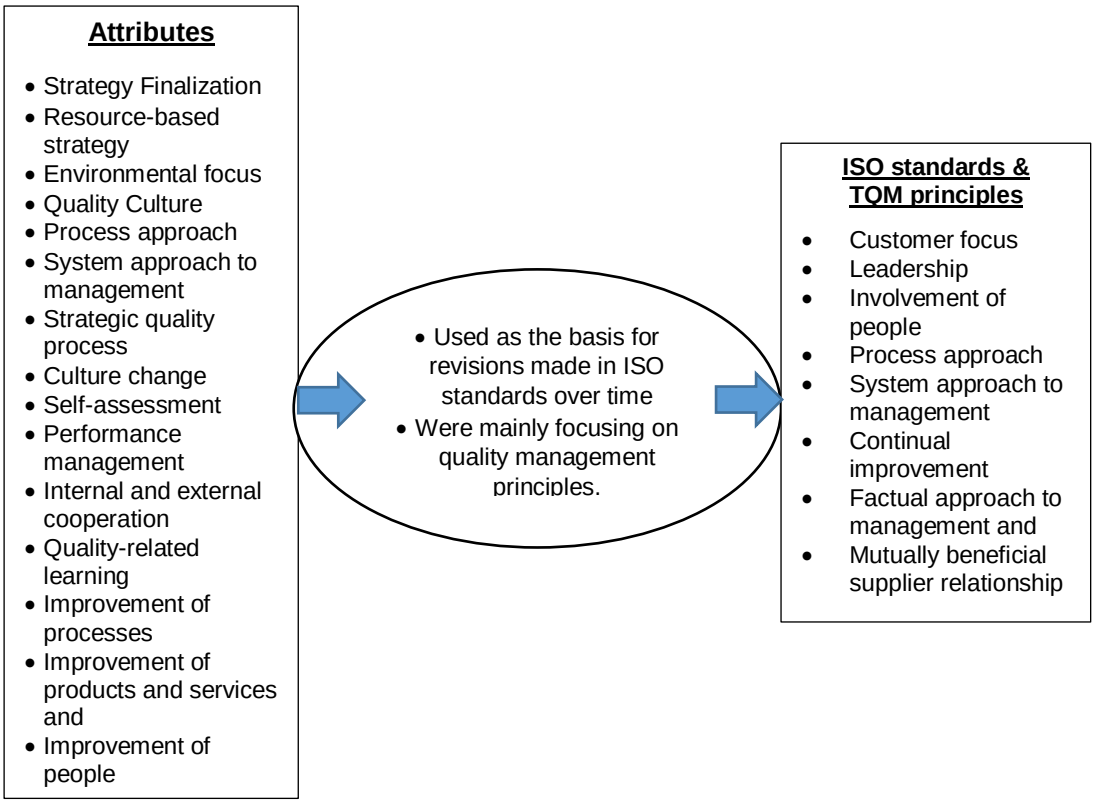


Figure 9: Quality attributes & Principles (Lewis et al., 2006).

The results derived from their study, support the idea that the quality management principles are in compliance with the ISO standards, which are used as a means of developing the required foundation for the TQM implementation. Other scholars, such as Fuentes et al, (2000), Gotzamani and Tsiotras (2001); Magh and Curry (2003) have reached the same conclusion.

From a survey conducted by Lewis, Pun and Lalla (2005), they have tried to identify the level of TQM implementation in an SME. They developed a model that had four different stages, namely: the "top management commitment stage", the "Gap analysis stage", the "system deployment stage" and the "focusing on continual improvement stage". Each stage, had four sub-categories and a set of performance criteria picturing the set goals and the benefits that could be derived.

More analytically, in the first stage which the researchers named the "top management commitment stage", the changes in the organizational strategy were evaluated. In the second stage, the "gap analysis stage", an attempt was made to identify the processes that the ISO system had introduced and implemented. In the third stage a system was deployed, revealing the outcomes from the performance evaluation process. Finally, in the fourth stage, the outcomes were evaluated, causing possible changes and

improvements in the company's culture and consequently in its performance (Lewis et al., 2005).

Lewis et al. stressed the inter-functional combination and merge of the SME's economics within their strategic plans. They specifically noted, that at the first stage the attempt was to identify *"where to go"* based on the criteria: (a) the strategy finalization; (b) the resource based strategy; (c) the environmental focus and (d) the quality culture. In the second stage, they developed a gap analysis attempting to respond to the question *"how to get there*". The variables they examined were: (a) the process approach; (b) the management system approach, (c) the strategic quality process and (d) the cultural changes. They also tried to identify the degree to which these changes were met and how they were implemented. In the third stage, a crucial question was asked, "*have we reached our goal?* The influence of the external environment was also examined. The evaluation of the selected criteria, was aimed at supporting the answers to the questions set in the first stage and was accomplished through: (a) the Self-assessment approach; (b) the performance management approach; (c) the internal and external cooperation approach and (d) the quality related learning approach. The authors also observed, that all the quality objectives and all the procedures used, should be developed and implemented in every part of the organization. In the fourth and last stage, the level of improvement of the processes, the products/services and the people involved, were evaluated based on the level of customers' satisfaction achieved. It should be noted, that the model gives value to the continuous improvement criterion and its actualization, through both the review and improvement of the existing processes; or from the adoption and implementation of new ones. To these new processes, cross functional teams and the development of a set of cumulative activities that will lead to further improvements within the existing processes, should be established (Lewis et al., 2005). The appraisal methods used, the feedback received regarding customer's satisfaction as well as the contribution of all parts of the organization to the development of the procedures and to the continues improvement process gives value to this model.

The methodology that Lewis et al., (2005) used in their survey, was the AHP (Analytical Hierarchical process). This methodology, tries to decompose a complex problem into a multi-level model, using different characteristics and criteria for each of its different levels, leaving the level were possible alternatives can be generated for last. These alternatives, according to Crowe et al. (1998) and Saaty (1980, 2000), will be compared

and the model itself will then manage to determine the ones that best fit the objectives of the problem (Lewis et al., 2005). The steps taken under AHP were: a) to establish the goals for TQM implementation, b) to identify the TQM stages and the equivalent criteria; c) to construct a hierarchical framework for analysis; d) to collect empirical information and data; e) to set the priorities and the importance of the criteria, f) to set the sub criteria; in evaluating the impact of TQM criteria and sub criteria to an SME and finally g) to incorporate all findings, in order to improve the TQM implementation level.

The analysis of the data proved that the performance criteria with the least contribution to TQM implementation, where the TMC (Top management commitment) and the GA (Gap analysis). However, the limitations of the study were considered to be the small sample used and that the focus on only one industry. The two leading performance criteria identified, were the SD (System deployment) and CI (Continuous improvement). The results indicated, that the SME need to have more formalized quality, business and corporate objectives. Finally, factors such as the internal and external cooperation, process and products/services improvement, self-assessment, performance management and the quality learning process, received the highest ratings. Instead, the factors of quality culture, strategic quality process and cultural changes received the lowest ratings. Based on these findings, the authors' recommended that SME's should have better compliance to its quality management system and quality culture. They also recommended that SME develop strategic processes so as to handle the proposed or expected changes needed for better implementing the TQM practices (Lewis et al., 2006).

Another researcher, Holmegaard (1990) also developed a model in an attempt to identify the level of TQM implementation. He proposed three different profile systems, a) the "low degree of TQM", b) the "some degree of TQM" and c) the "high degree of TQM". He classified the efforts made to implement quality improvements into four different groups. In the first group, the firm developed a strong quality control department in which product inspection was the only quality practice. In the second group, quality cycles and short term quality programs were introduced, so as to evolve quality initiatives. In the third group, a quality assurance system was introduced to implement quality techniques and methods, supported by an educational/training program at the low level management. In the fourth and last group, attempts were made to integrate all previous groups and make quality the dominant organizational culture (Kufidu & Vouzas, 1998).

Marchington et al (1993) criticized, that when quality management comes from a quality assurance and quality control system, the focus is mostly on the processes and not on the human factor, which is the basis for the TQM implementation.

Therefore, SME's top management should emphasise and upgrade the role of personnel and reinforce its participation in the design of a quality system (Wilkinson et al.,1991). Making personnel involved in changing the practices related to it, will in return influence the company's overall quality culture (Tuttle, 1991; Blackburn & Rosen, 1993; Bowen & Lawler, 1992) thus lead to the development of a quality orientation that will be "revealed from itself" (Bowen & Lawler, 1992; Easton, 1993; Fowler,et al. 1992).

Another approach for implementing TQM, was proposed by Dale et al. (2001), who categorized quality into six different levels. The researchers gave different names for each level, namely: a) the uncommitted, b) the drifters, c) the tool –pushers, d) the improvers, e) the award-winners and f) the World class.

A number of studies showcase, that quality assurance and the accreditation of the ISO certificate, are considered as being the first step in introducing quality to a company and to an SME in particular. The accreditation, lays testament to the improvements of a company's operational performance, but not necessarily improvements in its financial performance. Saunders and Preston (2006) emphasized this and stated that the studies conducted didn't take into consideration the external economic factors, but only took into account the company's overall performance through sole examination of the company's sales turnover or its return on investment. Other studies like the ones conducted by Eisen et al. (1992) and Frost and Oakland (1992), focused only on an executive's perception per company, offering no-global perspective on TQM's contribution to improvement. The aforementioned research, in conjunction to what has been presented thus far regarding TQM and the ISO dimensions for SME, imply that a research model needed to be developed, capable of assessing the level of TQM applied in an SME. That identified model would then be applied to the companies already on their journey towards quality, and more specifically, to those with a quality assurance certificate that wished to measure the extent to which TQM practices were implemented in their environment and operations. That model would also need to be applicable in different industries, different cultures and in different economic environments.

Eventually, that model was developed by Saunders and Preston(2006) and is called the S-P model. It attempted to identify and describe all those activities that are necessary from different types of organizations, in order to identify the continuous

improvement and the overall benefits derived from implementing TQM. The variables used in the S-P model, were considered the best indicators of the degree of TQM implementation in an SME ever used in a model. The model's reliability and validity guarantee the quality of the results derived from its use (Saunders & Preston, 2006).

In order to successfully implement TQM, a model needs to be capable of identifying the TQM components and able to depict how these are connected to each other.

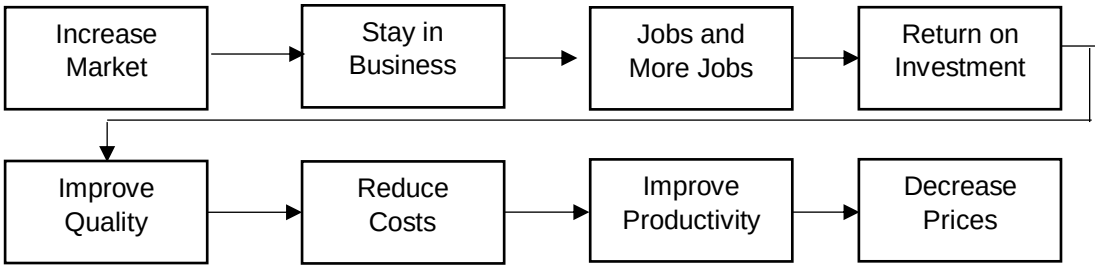


Figure 10: The Deming Chain Reaction

As Saunders and Preston (2006) pointed out, a series of models have been developed capable of examining the level of TQM implementation; but all were descriptive, meaning that they did not prove the existence of any logical relationship between each different component used in the models. Joiner's model (the triangle-1995) and Juran's model (the trilogy-1989) are some of the models that were developed. The first incorporating variables related to (a) customer's focus, (b) teamwork and (c) scientific method and the second incorporating the variables: (a) quality planning, (b) quality control, and (c) quality improvement. More descriptive TQM models, with closely related criteria were introduced to the market, like the ones presented by Lewis (2007), Dale (1994) and Holmegaad

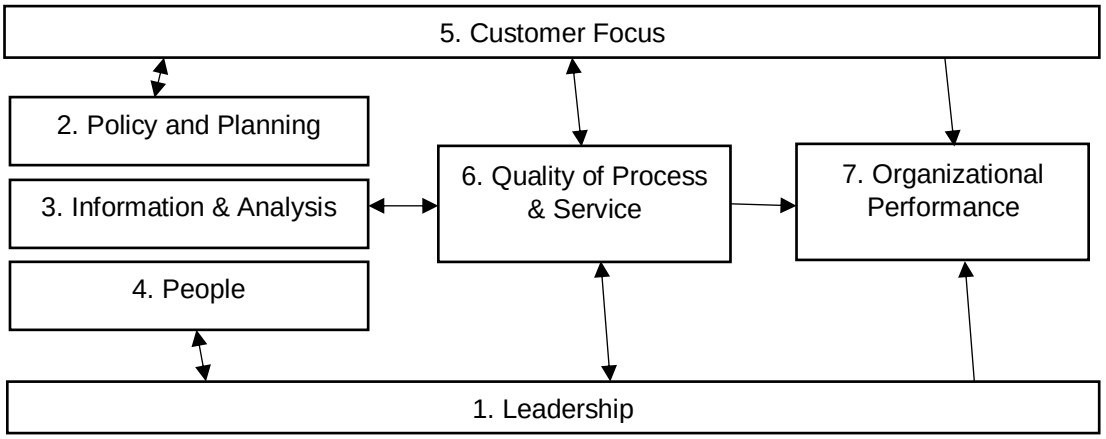


Figure 11: The AQA criteria

(1990) which were even more standardized, and constituted the basis for national quality awards, like the Malcolm Baldrige National Quality Award (MBNQA), the

Australian Quality Award (AQA) and the European Quality Award (EQA). These models were criticised by a number of researchers like Saunders and Preston (2006), Deming (1992) and Garvin (1992), who recognized that there is no need for the development of a model that sets and examines a list of TQM characteristics, but for a model that supports a logical chain of arguments related to the TQM characteristics. Pincer model shown in **Figure 12** was also developed in an attempt to relate quality with the impact it has on enlarging a company's market share and achieving possible cost reductions (Karafet et al., 2001).

The S-P model constitutes an elaboration of what Deming used as his main argument,

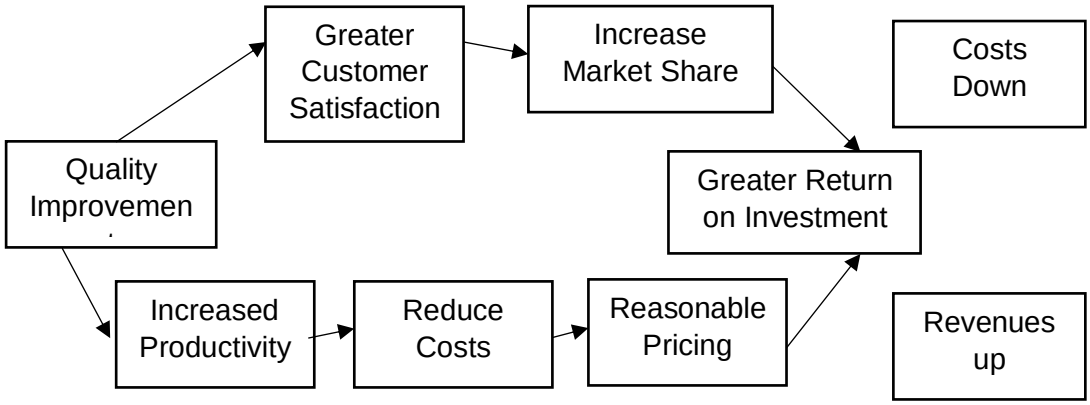


Figure 12: The Pincer model

referring to the use of statistical tools as being the only source that will bring quality to a company. Specifically, it uses a set of components that show the activities and the attributes of a company that has successfully implemented TQM. All these components are directly connected or connected through the formation of logical sequences. The components used are classified into four major groups. The first group, consists of the basic characteristics of TQM, that are also shown in Joiner's triangle; the second group, consists of the results derived from the use of TQM's basic characteristics the objective of which is to reinforce improvement. The third group, consists of the control procedures that are focused on the improvement of processes, products and services; and the fourth and last one offers the outcome which is also related to company's ability to further improve. This group incorporates what Pincer (**Figure 12**) included in his model regarding the reduction of its costs and the increase in its customer's satisfaction (Saunders & Preston, 2006).

At this point it is important to note the benefits derived from the use of the S-P model. These benefits in fact apply to all of the company's stakeholders, including the

suppliers, employees, shareholders and to the community as a whole, not just to the company's customers (Saunders & Preston, 2006).

Specifically the benefits are:

To the suppliers:

- Improving operational performance and reducing waste, will mean that the suppliers can pursue better prices.
- Supporting and improving their processes suppliers will bring new partnerships with mutual benefits.

To employees:

- Team work, a common understanding and recognizing the importance of quality brings more trust and increases morale
- Better performance brings job security and higher compensation

To shareholders:

- Improved organizational performance, improves the company's value and leads to higher profits
- Better understanding of procedures brings greater accountability

To customers:

- Waste reduction leads to reasonable prices
- Customer's satisfaction leads to more trust and a feeling of partnership
- Customer's satisfaction brings greater satisfaction with products and services

Society/ Community:

- Waste reduction lessens the sum of total global waste
- Improving trust among companies brings trust as a core value
- Better operational performance of TQM companies bring an increase in the standard of living of the society as a whole.

What is important is that, not all the benefits derived from TQM implementation will be applied but only those that are appropriate. This depends on whether all the model's components will be needed in order to achieve all the expected results from it. So, it is evident that the model has embedded within it the values of TQM, with trust being the most important element for TQM implementation. This is also supported from the use of teamwork. For the development of the model, a tool, is required, that will impose control over the way the company's processes and its products will be improved. With this tool working properly, customer's satisfaction, higher productivity and the company's value, could be used as a way of measuring its stakeholder's interests, the

degree to which the company's competitiveness has increased and the degree to which the needs have been satisfied. So, TQM will contribute to a company's value, only if it can manage to achieve and use the control tools, as a way of realizing the benefits derived from its implementation (Saunders & Preston, 2006).

The methodology followed by Saunders and Preston (2006) used four layers. The first was named "the basics of TQM"; the second "the prerequisites for improvement"; the third "the ability to improve" and the fourth "the outcomes of improvement".

In the first layer, a justification is made, considering teamwork as (a) a need for team management and activity improvement and (b) a need to make a company operate as a single team, which is also considered as an internal customer focus. TQM should focus:

- On the use of team activities and processes
- On the attention to internal customers (Stakeholders, employees, shareholders).
- On agreeing by anyone on what quality is and the need to satisfy external customers and
- On the knowledge of the data use, and on the reasoning of any differences in the decision making process.

In the second layer, the required improvements are identified. To accomplish this the company needs:

- to define and clearly understand its customers' needs, so it can pinpoint the required changes.
- to understand all its internal processes including those related to its suppliers (external), in order to identify what needs to be changed.
- to define the processes and techniques used for improvement in order to know how to implement them effectively.

In the third layer, the greatest emphasis is placed on the presence and justification of the TQM prerequisites. With the term, TQM "justification", we refer to the environmental factors that will support the TQM implementation. Only then the TQM model introduced, will offer the company an improvement in its processes.

In the fourth and last layer the benefits will be realized. Possible benefits included the customers' satisfaction, the reduction in waste and the improved reliability. All resulted

in minimizing the product's variability. This enabled the re-allocation of the company's resources in a more efficient and productive way, thus achieving continuous improvement:

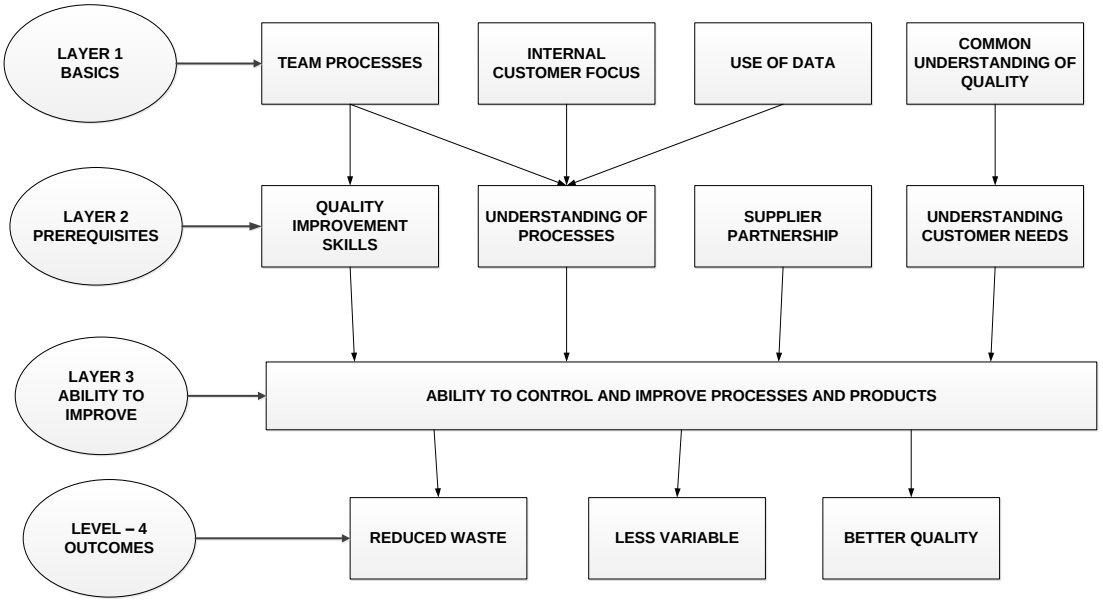


Figure 13: S-P MODEL (Saunders & Preston, 2006).

The model's vulnerability is its lack of a feedback loop. The authors clearly stated, that the purpose of the model is not to describe the process of implementation, but instead to recognize the value that TQM adds to a company's overall value. In so doing, the authors rejected the necessity of a feedback loop, but not its importance. In addition, the model's aim, is to motivate the potential users to adopt the TQM processes, activities and structure, through utilizing the benefits derived. Thus, this is done not because there is a rational choice behind its selection and for supporting it, but because of the benefits the companies expect to get from its implementation (Saunders & Preston, 2006).

Considering that the aim of implementing the S-P model is close to the aim of the survey conducted, the following two sections of this chapter, were prepared in order to investigate the structure and the variables used in the S-P model in more depth.

3.3.1. The characteristics of the S-P Model

The S-P model developed by Saunders and Preston is used and applied in different ways. For the purpose of this survey, the S-P model was used (a) in order to compare and support the selection of the quality elements and their factors related to the

successful implementation of TQM and (b) compare and support the methodology used in measuring the implementation level of TQM in an SME.

The S-P model was firstly applied to large manufacturing companies, despite the developers' belief that the model's theoretical basis could also be applied to other industries and to SME in particular. They considered that the model could be used as an approach to connect the Quality assurance and the TQM.

The S-P model was used in this survey given that the TQM implementation approached follows a logical sequence in achieving quality assurance for an SME and Saunders and Preston's (2006) S-P model, that is not based on a logical dependence approach, was used as a means of identifying the reasons why implementing TQM does not always follow the quality assurance accreditation that, as this is mentioned above, follows a logical sequence.

This observation comes in congruence with the thesis aims and objectives that is to identify at which stage the Greek ISO certified SME are in regard to the implementation of TQM. In the case of SME, it is easier for an analyst to recognize and identify the needs of its external and internal customers, but difficult to assess the availability of the (financial and non-financial) resources needed for an efficient and effective implementation of TQM. So, what really matters is that SME managers/owners realize the importance and the benefits derived from the implementation of TQM. A one-off investment for granting the quality assurance, would bring in the long run the ongoing benefits that will also bring financial returns (Saunders & Preston, 2006). The decision to invest in TQM will be left to the owner(s) of a company and to those who support that decision and to the SME's internal and external environment that can support or offer to it.

The role of the environment in the successful implementation of the S-P model is shown by Saunders and Preston (2006) in Figure 14. Both the external and the internal environments that surround the model elements may influence their relationship and the way they will behave and function.

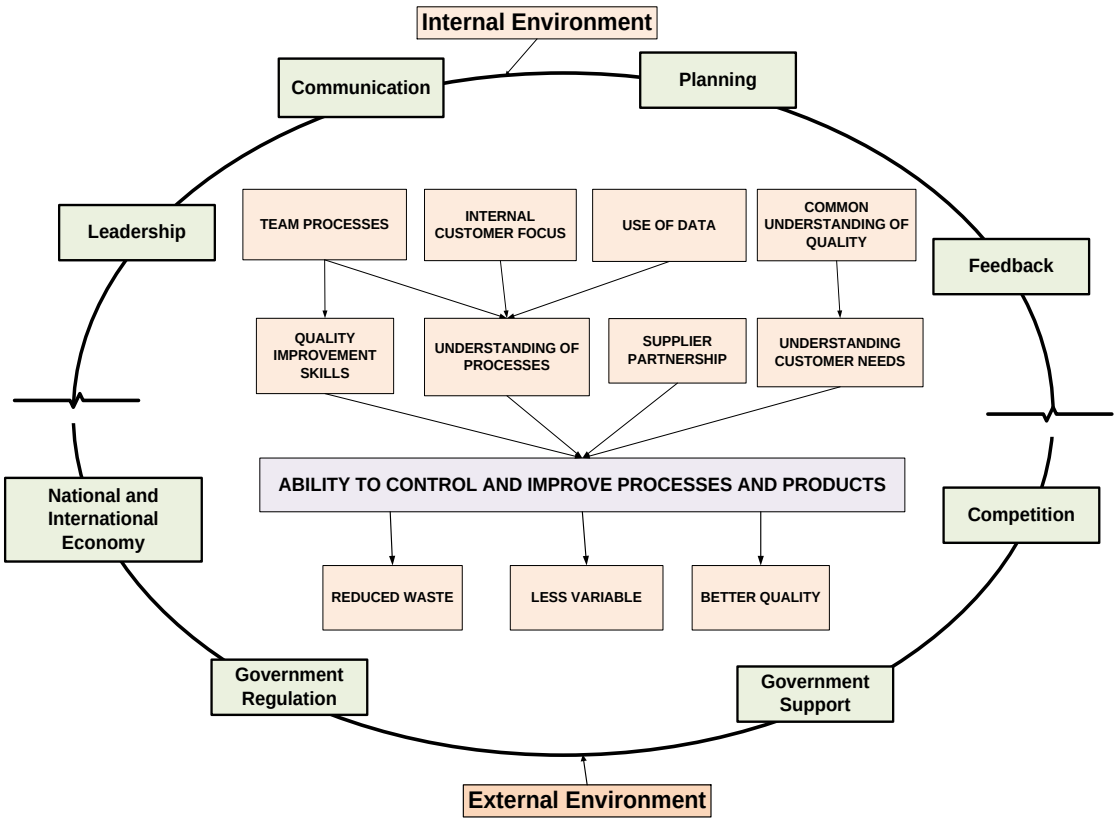


Figure 14: The S-P model and its environment

The elements of the internal environment namely, the type of leadership, the communication skills, the design of the planning processes and the feedback developed, should operate efficiently in supporting the implementation of TQM.

Even though the S-P model is designed to identify the logical dependence of each component to all other components, it does not place much significance on it. For example, the model implies that different leadership styles may be appropriate for each different activity. For activities related to the establishment of TQM, a more determined leadership style should be used, compared to the style required with activities related to establishing changes in the production. A more authoritarian type of leadership is needed in the establishment of TQM stage; and more teamwork and participative style of leadership should be introduced in the subsequent stages. Research has yet to define the appropriate leadership style needed for each different component (Saunders & Preston, 2006).

Communication between all the participants operating in the internal and the external environment is also of paramount importance for the effective implementation of the model.

The feedback element is what relates the components in the internal environment. Saunders and Preston (2006) initially insisted that the model was developed not because they wanted to introduce a logical sequence, but a logical dependence of its components, so the model did not support looping. In fact, looping is necessary given that its results could be the growth in the company's value. This growth and its equivalent value added, should be explained from the model's benefits and evident from its feedback.

Strategic and operational planning that will combine and coordinate each individual component, is also needed. This will further support the links in the model and make it function efficiently producing the expected TQM benefits (Saunders & Preston, 2006).

Additionally, the external environment will also contribute to an SME's ability and desire to continue with the implementation of TQM. Saunders and Preston (2006) believe that the external environment is what will influence an SME's financial and quality achievements. Specifically, the economic and competitive environment, the cultural trends and the valid government regulations, will influence the way TQM is adopted and implemented. For the Greek SME, that are undergoing continuous internal and external environmental changes, these factors will constitute both an opportunity and a threat when trying to achieve their quality goals. Assessing and controlling the components that support the implementation of quality practices, is what will improve their quality level and what will assist them to reach the TQM level.

3.3.2. The implementation of the S-P model in SME.

In Europe and in Greece, SME are fully supported financially from the state in order to get the quality assurance certification (ISO Standards). Attaining the quality assurance cerftication might be the first step towards quality, but what really matters is that it is not the last.

As Saunders and Preston (2006) stated that quality assurance offers the basic structure for TQM implementation., but if it is the only approach to quality, the excess documentation will lead the SME to failure. The need for team processes and common understanding of quality, is what will enhance quality improvements.

The S-P model's contribution to that is as the authors' stated, the "Evaluation of the success of the efforts of organizations who have attempted to introduce quality assurance without taking on the full TQM approach would provide evidence for the validity of these suggestions".

Using the S-P model as a logical foundation for the TQM implementation in the Greek SME, the aspects being researched refer to:

- Assess the elements that SME implement, if any, as part of the TQM implementation schedule and
- Recognize, the financial benefits derived from this implementation.

Saunders and Preston found that in a number of studies conducted, the researchers who have tried to identify the level of TQM implementation into ISO certified companies, encountered difficulties in assessing the degree of the existing quality level. Table 5, presents a pool of measures, which the authors proposed could be used in order to overcome difficulties in the assessment process.

Table 5: Measures for assessing TQM components used by the S-P Model

COMPONENT	MEASURES
Use of team processes	.1. Number of team activities .2. Perceived effectiveness of team processes .3. Outcomes of team activities
Focus on internal customers	Awareness of internal customers among staff Perception of internal customers of quality service received
Common understanding of quality as satisfying the needs of external customers	Awareness of concept Ability to express customer needs
Emphasis on the use of data and understanding of variation in decision-making	Extent of training in use of data Extent of application of data and analysis Understanding of the impact of variation on decision-making Evidence of impact of variation on decisions made
Understanding of customer needs	Ability to express customer needs in terms of internal activities and measurements
Understanding of the organization's processes	Documentation of processes Awareness and understanding of documentation Knowledge of undocumented features of processes
Understanding of techniques of improvement	Training in techniques of improvement Application of techniques
Ability to improve	Understanding of how techniques can be applied to major processes, with the aim of improvement in customer satisfaction Evidence of improvements
Ability to meet the needs of the customer	Improvements in customer satisfaction measures

COMPONENT	MEASURES
Ability to reduce the variability of its products and services to provide greater reliability	Evidence of reduced variation and increased reliability
Ability to reduce waste	Evidence of reductions in waste

Regarding the financial benefits and their relationships with the model's components, the authors expect a longitudinal study to be used and not just a correlation between them which may not present any causal relationships (Saunders & Preston, 2006).
The characteristics and conclusions derived from the S-P model partially formed the basis used for selecting the critical factors and the structure of the research conducted on the Greek, ISO certified SME. It will also contribute in identifying the spread of TQM applicability, showing the applicability of different TQM factors and functions in an SME. Finally, it will support the determination of the environmental factors that may influence and determine the successful implementation of TQM.

3.4. The TQM implementation in SME

The aim of the current study is to elaborate on TQM's implementation level on SME which have already introduced quality in their operations by being ISO certified SME. Ghobadian and Gallear (1997) stated that the intrinsic characteristics and the basic elements of TQM are more easily and effectively implemented in SME's rather than in large organizations. Among those elements are the type of strategy(ies) adopted, the nature and essence of management leadership, the communication methods, the content and the extent of training programs, as well as the nature and the extent of organizational changes adopted. However, it has been found that the unmodified adoption of the TQM elements from an SME, often produces adverse results.

The sequence with which SME adopted the TQM practices, presented a significant impact on quality performance and outcomes. Firms that have implemented TQM programs prior to seeking the ISO certification, demonstrated a higher commitment to the broader concepts of quality, than the quality certification per se. The way and the sequence with which the SME approached TQM, also had an impact on the management practices adopted and the outcomes derived from its implementation. However this positive impact on the practices and on performance cannot be undermined, because of the lack of a statistically significant ISO certification. Therefore it would not be conflicting for a quality company to search for an ISO certification if it is needed to do so.

Considering that an ISO certification is the starting point for introducing quality to a company, Quazi and Padibjo (1998) studied the potential that ISO standards have on SME in Singapore and how these contributed to the continuation of their quality journey. The main argument was that TQM practices have been designed for application in large organizations and their application in SME has difficulties. The survey was expected to help SME identify the degree to which they need consultancy and training support regarding the TQM implementation. Their main concern was, that the SME have limited resources. They examined if and under what conditions TQM could be applied as a philosophy in an SME and whether the method of application would enable it to secure a competitive advantage. It was concluded, that creating or changing an SME's corporate culture to a more quality oriented cultural environment, is more important than just achieving full commitment to TQM principles. It was also established that SME, compared to larger companies, need a simple and clear set of directions on what needs to be done, instead of a general directive for TQM implementation (Sturkenboom et al., 2001).

Another research conducted by Sohail & Hoong (2003), examined the impact of ISO certification on an SME's organizational performance and their perception regarding TQM practices. ISO certified SME in Malaysia compared with the non-ISO certified SME, were found to have a clearly different perception regarding the way TQM implementation is related to the organizational performance. The variable "time" of their operations was found to have a positive impact on the performance appraisal of the quality practices implemented. This was also confirmed from the survey conducted by Prajogo & Brown (2011) who focused on the type of quality management practices adopted and performance appraisal methods used from SME in Australia.

Leadership's readiness, is another key element and a prerequisite in developing the appropriate quality culture for introducing and implementing TQM. To recognize the need for a change in a SME's cultural environment, is mostly management's responsibility. But if that change is recognized initially from the top management, then is going to be recognized and understood even easier from all its employees. So, for an SME, management's visibility is considered as an opportunity for possible cultural changes, due to their close interrelationship with all the blue and the white colour workers. Consequently employees' resistance to change could be minimized, considering that managers would inspire their vision for TQM implementation to the

whole organization, setting the appropriate and realistic quality performance goals and objectives (Ghobadian et al., 1996).

Sousa et all., (2005) ascertained the lack of knowledge on performance measures when they investigated the level of quality implemented in Portuguese SME. The misalignment between the strategy followed and the criteria used in measuring and evaluating their performance, revealed that lack of knowledge. This was also supported from the recognized need for management and employee teams-training regarding measurement tools. This shortage of knowledge explains why for SME individualized solutions should be used instead of implemented TQM practices.

One of the objectives of an SME's management team is to achieve customer's satisfaction. To accomplish this, there is need to develop a long term strategic plan. The length of time required for the adoption of a TQM program, significantly enhances the strength of the relationship between quality management elements and quality performance evaluation that supports the customer's satisfaction. This supports the notion that TQM implementation requires a long term vision and investment, in order to be accomplished and why it should not simply be considered as a "quick fix" tool (Ghobadian and Gallear 1994).

The SME that have already implemented the ISO standards and are willing to continue their journey towards quality, need to choose between a "tailor made" approach and / or a "do it yourself" approach. Their choice though, would have a direct effect on its implementation cost. Newall, Dale (1991) and Oakland (1993) proved in their survey that this incremental cost would be related to the cost of the resources used.

Temtime et. al (2002) conducted a survey on the Ethiopian SME, with the aim of examining the relationship between TQM perception and TQM Planning, based on the following ten variables related to SME planning behaviour:

- Formal mission statements
- Market research
- Industry analysis
- Long term goal setting
- Environmental scanning
- Planning manuals
- Forecasting
- Short term goals
- Operational efficiency
- Functional budgets

Eight out of the ten variables selected, were considered as more influential in the implementation of TQM. Yosuf & Aspinwall (2000) identified equivalent factors in their study, the most important of which were:

- Managerial leadership and commitment
- Customer Satisfaction
- Continuous Improvement
- Employee Empowerment and Involvement
- Supplier Partnership
- Quality Culture and Philosophy
- Resources and working environment
- Measurement and feedback

Temtime (2003) investigated the relationship between the TQM implementation practices as being part of an SME's strategic planning process. The dimensions of a strategic planning model examined were: the Planning environment, the Planning process and formality, the Planning content and the horizon of planning; as well as the Planning resources and support. The analysis of the data showed that SME placed greater emphasis on the operational plans and not as much on the strategic ones. They also paid greater attention to the informal and intuitional planning activities, making the process of implementing TQM a challenging task. With the development of a cultural environment that will support the development of a business plan, SME have the opportunity to implement TQM effectively and gain a competitive advantage.

Having considered that every economic system has its own cultural rules, Sousa et al. (2005) examined the relationship between an SME's corporate culture and the TQM implementation level The study focused on the cultural environment existing in Portuguese SME and examined the companies readiness and resource availability while executing the necessary actions for implementing a quality system.

In addition, the level of knowledge and understanding of the performance measures and performance measurement tools, were examined in relation to the degree of quality adoption by an SME. The results of the research indicated, that since quality tools, when they are effectively applied, provide some degree of integration between the external requirements and the internal activities performed, they offer an SME the chance to gain the necessary knowledge and understanding of all the performance measures needed for measuring the quality and in particular the level of TQM implementation (Gregory, 1993).

Since, differences in the approach and in the quality criteria used, determine the success or failure of implementing TQM, PrajogoI & Brown (2006) tried to identify the possible differences that occur from using different approaches and pinpoint the impact they have when introducing the TQM philosophy to a company's organizational performance.

It is true that the level of commitment to an objective is what makes the difference. The possibility of realizing organizational differences between a highly committed to quality SME and a less committed SME was studied by Abdullah (2010). His research examined those TQM elements that significantly contributed to the business effectiveness of the Malaysian SME and highlighted the relevant benefits derived through TQM implementation, in the context of the Malaysian Economy. Quality control and quality assurance processes, together with the full integration of the TQM elements in all its operating systems and strategic plan, will enable an SME to improve its effectiveness and efficiency, resulting in improvements in customer's satisfaction, applied operating processes and cultural environment.

As mentioned above, a company's size plays a role for TQM implementation. Ghobadian and Gallear (1997) in their effort to explore the structural differences between large organizations and SME, used secondary data to analyse the relationship between the inherent characteristics of TQM and the size of an organization. They conducted four different case studies, aimed at the development of a special model for the implementation of TQM, suitable for SME. Among other things, their study identified, that the reasons for introducing TQM were related to the internal and external sources for collecting TQM data; the Perceived TQM concepts; and the way TQM was related to the company's strategy. The data were collected from 47 international organizations renowned and recognized for their attention to quality issues. Factor and cluster analysis was used and a multivariate (ANOVA) analysis of the data collected, showed that there were no significant differences between SME and large organizations with respect to all the selected factors. The relevance of the research questions developed, was also explored, with another survey using secondary resource data. A case study approach was also used, given that it allows the researcher to conduct a full and detailed contextual analysis of the issue examined. Four exploratory case studies were conducted; two in large organizations and another two in SME. No categorization in service and manufacturing sector companies was made, as the researchers claimed that the spread of cases in such different companies offered a

reasonable balance. The development of TQM in each company, the impact of its implementation on the resulting structural changes, and the difficulties encountered in its implementation and operation, were used as measurement criteria to examine the returned responses. Differences relating to the SME structural, procedural and behavioural level, as well as the process, human resources management and type of business contact level were identified. The advantages and disadvantages of large organizations and SME were also acknowledged.

From the analysis of the results, it was found that the management style, the achievement style, the self-actualization and the affiliated style; were considered to be the most important factors, as these were related to the management approach and to the culture of the organization.

The results also indicated, that the characteristics of TQM implemented in an SME's internal environment, can at the same time act as a major obstacle. Such an obstacle could be the leadership's readiness to deal with the needed behavioural modifications and the fine tuning in their management style. This key concept in setting the appropriate business culture for TQM advancement, together with the shortage of resources in an SME is of crucial importance during the process of adopting the behaviour and practices needed from the TQM philosophy. The valuable conclusion derived from their survey was that certain basic concepts of TQM can be applicable to SME. These are presented in table 3.: (Ghobadian & Gallear, 1997).

Table 6: TQM concepts for SME

• The type of strategies adopted.
• The nature and substance of management leadership.
• The communication methods.
• The content and the extent of training programs.
• The nature and the extent of the organizational changes.

The need to diffuse the TQM philosophy within an SME supports the TQM implementation. The key factors for that diffusion were the "recognition" of the ten "salient" steps that were necessary for the successful implementation of TQM. The ten salient steps were identified from the Ghobadian's and Gallear's (1996) and are depicted in the following table (Table 4):

Table 7: The ten Salient Steps for TQM implementation

1. Recognition of the need for the introduction of TQM
2. Developing **understanding** among management and supervisors
3. Establishing **goals and objectives** of the quality improvement process
4. **Plan** the TQM implementation
5. **Educate and train** all employees
6. Create a **systematic** procedure (i.e. implement BS5750).
7. **Align** organization
8. **Implement** the TQM concepts
9. **Monitor** the implementation of TQM concepts
10. Engage in **continuous improvement** by going back to step 3

Due to an SME's limited resources, "Time" was considered among the factors that may impede the first step, called the "recognition step", thus inhibiting the progress of the TQM concept. This step is usually carried out through a formal and recognized scheme of leaders as the TQM philosophy guru's state. But formality from SME can be bypassed from the moment all the initiatives for TQM implementation and the efforts made can be easily seen and interpreted by almost everyone within the company. This initiative will be instantly brought out from isolation, motivating and empowering employees' and give higher credibility to the quality model implemented.

On the contrary, the "Management visibility" factor, was not considered a problem for TQM implementation in an SME. It was considered as being easier to attain due to the characteristics of an SME's operational environment. Another factor the "Resistance to change by employees", was found more prominent in large organizations than in SME, in which it did little to effect the progress of the TQM implementation process. The level of communicating the company's aims and objectives appeared to be crucial for TQM acceptance. For large organizations this was a significantly more complex process than it was for the SME. Also, setting unrealistic goals and objectives in a TQM program could demotivate the employees and cause delays in the process or even prevent it from starting. The education and training of employees is also considered vital, as it augments the level of commitment to TQM principles. Such occasions could easily arise within an SME's environment, because of its workforces' closeness (Ghobadian & Gallear, 1997).

To identify the type and the kind of quality management practices applied in an SME, Quazi and Padibjo (1998) conducted a pilot study on Singaporean SME. Open-ended

questions were given to the interviewees regarding the quality management practices implemented in their SME.

The questions were grouped into different themes relating to:

- Management's view on TQM
- Benefits and barriers of ISO certification
- Role of Singapore Government in promoting quality management practices

From the seven randomly selected companies examined, the authors identified the barriers from the ISO certification which held back the correct implementation of TQM. These barriers were the lack of full commitment and participation of top management, the lack of financial and human resources, the limited time available for TQM implementation, the perceived employee resistance, the non-perceived advantage of certification in the service industry; and the proper training and education of employees. Similar results were also derived from other studies, like those conducted by R. Calingo Luis (1995) on Singaporean companies and from Henricks (1992) and Haksever (1953) on US companies. The researchers also identified a number of benefits derived from the ISO certification from the same sample. These included increase in customers' preferences, improved company quality image and improved competitiveness in the market. Other benefits realized were, compliance to customers' requirements, the modernization of procedures and documentation, the increased consciousness for preventive and corrective actions, and the provision of a foundation in searching for TQM. R. Calingo Luis's (1995) survey significantly contributed to the above findings, as it identified similar benefits to the Singaporean companies. However, in his survey the encouragement of teamwork was also added as an extra benefit.

Studies such as those by Simons and Kerr (1993) and Ghobadian and Gallear. (1997).have identified that the compliance to the requirements stipulated by large customers (i.e. multinational corporations) is the main reason for getting an ISO certification. Other researchers such as Quazi & Padibjo (1998) have supported that the establishment of the ISO certification is an act, solely applied and used as a marketing tool that has the role of a stepping stone towards TQM implementation .

Government plays a supportive role in initiating total quality in the economic and social environment. Progression from ISO certification to TQM, requires not only full commitment from the company's management, but also an external environment capable and willing to support and reinforce the quality acceptance and adaptation. To achieve that, government can only externally offer guidance in developing or at least

motivating the outsourced development of an entity, that will bring progress beyond the ISO certification (Kluse, 2009).

Sturkenboom & Brown (2001) recognized that there are significant structural differences between SME and large organizations. These differences are likely to influence the relevance, the planning and the implementation of the TQM concepts. They have argued however, that despite those differences the TQM concept could be used and successfully applied by SME with considerable success. Their work was based on the observation they made that SME have an inherent inability to utilize formal techniques in evaluating their quality management system. Appealing to literature they suggested, that the majority of SME tend to adopt an externally imposed approach to TQM. In other words, an approach that is not internally driven and does not continuously improve. Their proposal was to construct a self-assessment instrument suitable for SME. The instrument which would be used as a practical evaluation device would have the following characteristics:

- not be too complex
- give direction for what has to be done
- focus on action instead of scoring
- support the company in implementing the key elements of the quality management concept

Having selected four small-medium-sized enterprises, operating in the Netherlands the authors examined the acceptability and the usefulness of the two dimensional instruments (questionnaires) they developed. They also considered it important to test the understanding of the terminology used and its practical application on the SME owners.

During the interviews conducted with quality and general managers, the following dimensions were evaluated:

- *The level of maturity* (Levels: 1.capacity- 2.activity- 3.process- 4.system- 5.organization), and
- *The key elements of quality* (which were kept to three, so as to maintain the simplicity of the instrument for SME). The elements selected were: 1.customer focus- 2.participation and teamwork- 3.continuous improvement (Wilkes, 1998).

The combination of the three key elements with the five maturity levels, gave a matrix of 15 cells.

However, it should be specified that the three key elements of quality management were developed into three matrices.

1. One for customer focus
2. One for participation and teamwork and
3. One for continuous improvement.

The content of the three matrices, described what should be done and which activities the company should focus on, in order to continue its quality journey.

The matrices proposed could also be used in detecting which elements already exist in the company and to identify the equally important subsequent actions for implementing TQM. This way, the journey towards quality would progress with a balanced development of the issues and activities included in all three matrices.

Conditions or issues that may potentially arise during the implementation of quality and their causes, would require immediate attention. Caution should also be given to the relationship among the issues and the activities involved in case they would form a holistic (Total) quality management philosophy.

Temtime et al., (2002) conducted a study on 57 SME in Addis Ababa, Ethiopia, with the objective of analyzing the perception of SME regarding the TQM elements and practices established. From their survey it was found that the planning behaviour of SME in Ethiopia had a strong relationship with TQM practices. The sample consisted of companies representing the manufacturing, merchandising and service industries. They were divided into 39 small and 18 medium sized companies based on the number of their employees. A further categorization into strategic planners and operational planners was also developed, based on their response to ten selected strategic indicators. These indicators, were the formal Mission statements, the Market research, the Industry analysis, the Long term goal setting, the Environmental scanning, the Planning manuals, the Forecasting, the Short term goals, the Operational efficiency, and the Functional budgets.

Yusof and Aspinwall (2000) considered all indicators as “critical” in their survey. Given their results, they advised the SME in the developing countries and economies to implement TQM practices only after having developed a formal Strategic plan, so as to avoid making the mistake that their counterparts in the western economies made. They proposed that TQM implementation activities be case specific, aligned with the company’s strategic objectives and able to be intergraded into them and not

fragmented. TQM should be viewed as a journey requiring a long term commitment and continuous search for improving an SME's products, services and processes (Shari Mohd. Yusof & Aspinwall, 2001).

A similar survey was conducted on micro and small sized enterprises in the Republic of Botswana (Temtime and Pansiri, 2006). That survey revealed that the strategic planners were much more benefited from quality than the operational planners. From incorporating the quality elements into their strategic plan, they managed to support the TQM practices following a systematic thinking and approach. Their results also indicated, that an appropriate cultural environment is needed to support the TQM implementation in an SME. Quazi & Padibjo (1998) arrived to the same conclusion from the results of their research.

As a quality award winner, a company can lay claim to having successfully implemented business excellence and TQM. Abdullah's (2010) qualitative survey, explored how the TQM perception and practices differ between quality award winners and non-quality award winners among SME that are functioning in Malaysia. His research, revealed that quality award winners differ from non-quality award winners. The first consider that senior management has an important role in strategy formation and are more active in quality practices implementation. This confirms the important role that top management has in conceptualizing the need for change in quality and, the significance of leadership in the diffusion of the TQM culture within an SME (Ghobadian and Gallear, 1994). Many researchers have identified leadership, corporate planning, human resource development, customer focus, supplier focus, information management, process management and quality assurance; as being the key areas of intervention within an organization and part of a TQM program implemented in an SME.

While researching the critical factors needed for implementing TQM, and identifying the ones which characterise an SME, Lewis, et al., (2006) managed to identify a set of critical success factors, which in congruence with the quality management principles, could determine the success of TQM as a quality management system applied in SME. They categorized those factors into "soft" and "hard". The "soft" factors also considered as long-term factors, included leadership, human resource management, suppliers' relations and customer focus. These factors were of a particular interest to SME, since they were established to sustain a company's continuous growth. The soft factors are also dependent on the characteristics of the entrepreneur(s) and the cultural behaviour of the employees (Dennehy, 1995). They "hard" factors were defined as the tools and

the systems that support the implementation of the "soft" factors. The value of the survey mainly came from the consolidation of all the recent views regarding the criteria used in determining the success or the failure of implementing TQM in an SME, and connecting those to the "soft" and the "hard" factors of TQM. A number of links between quality management principles and compliance requirements of the most commonly used quality assurance standards (i.e. the ISO 9000 series) were also revealed (Black and Porter, 1996; Oakland and Beardmore, 1995; Quazi and Padibjo, 1998). In the following section a more in depth analysis of the TQM critical success factors used in different quality models is presented.

3.5. Critical success factors for TQM implementation in SME

Adopting and fully implementing a quality model such as the NBNQA and EFQM is the best way to achieve total quality. But the shortcomings of these models indicate that they are developed in order to serve large companies and not SME's. The shortcomings are mainly related to their implementation cost and the fact that they don't focus on the specific financial and operational needs of an SME. A quality model suitable for an SME should be simple, systematic, easily understood, outlined and able to provide a tool for planning TQM's implementation (Dandekar et al., 2012).

To develop such a model, an SME would have to identify and measure the critical success factors (financial and Non-financial) influencing the successful implementation of TQM, so as to determine its current quality level or its current maturity level. It will also have to identify and assess the basic quality elements needed, the barriers that impede TQM implementation and the areas that can been trusted in an SME. From the comparison of various quality models, an SME will manage to select and adopt the model which best fits its specific needs and requirements (Dandekar et al., 2012).

The term "critical factor" was also used from Motwani (2001). As Critical success factors are defined the areas that an organization should attain in order to achieve its goals and objective. Those factors should be categorized and tested in terms of their impact on the aims and objectives achievement (Salaheldin, 2009). Motwani, considered as "critical" the processes being composed from a set of fundamental capabilities. He considered that excellence in quality should be based on the manufacturing processes. These should be placed in priority order and organized in such a way so they can be easily and reliably implemented. He also stated that all critical factors should account for the size of the company.

In Table 8 and Table 9, a set of selected and applicable critical success factors used in different surveys from different researchers are illustrated. All of them were used in determining the maturity level of TQM in different sized companies and SME in particular..

Table 8: Studies used to identify the maturity level of a company.

Researcher	Scope	Sources	Critical Success Factors	Size
Saraph et al(1989).	To develop an instrument for studying critical factors of quality management	Mainly from concepts and prescriptions of quality gurus	Eight factors with 66 elements	Size arbitrarily set where small company defined to be 1,000± 5,000 Employees. Less than 1,000 not considered
Black & Porter (1996).	To identify critical factors of TQM	Malcolm Baldrige Award model	10 factors with 32 elements	Not indicated (1996)
Ahire et al(1996).	To develop implementation constructs of TQM	Mainly from the literature, including best practices in case studies (large businesses).	12 factors with 50 elements	Considered only plants with more than 100 employees
Tamimi & Gershon (1995).	To develop a tool for assessing TQM practices	Used Deming' s 14 points	14 factors with 50 elements	Not indicated
Quazi & Padibjo (1998).	To assess training and consultancy support needs	Malcolm Baldrige Singapore Award/model	7 factors with 39 elements	For **SME** (mainly <100 employees)

Table 9: Critical Success Factors for TQM implementation

Generic Critical Factors	Saraph et al (1989)	Ahire et al(1996)	Black and Porter (1996)	Yusof & Aspinwall (1999)
Management leadership	Role of divisional Top management and quality policy	Top management commitment	Corporate quality culture Strategic quality management	Management Leadership
Organization	Role of quality department		Teamwork structure	Continues improvement system
Education and training	Training	Employee training		Education and Training
Quality and design	Product/ service design	Design quality management	External interface management	
Quality and suppliers	Supplier quality management	Supplier quality management	Supplier partnership	Supplier quality management
Quality in process	Process management/ operating procedures		Operational quality planning	Systems and processes
Fact-based management	Quality data and reporting	Internal quality information usage	Quality improvement measurement systems Communication of improvement information	Measurement and feedback
Human resource management	Employee relations	Employee involvement Employee empowerment	People and customer management	Human resource management
Customer focus		Customer focus	Customer satisfaction orientation	
Tools and techniques		• Benchmarking • SPC USAGE • Product quality (output construct) • Supplier performance (output construct)		• Improvement tools and techniques • Resources • Work environment and culture
	8 factors with 66 elements	**12 factors with 50 elements**	**10 factors with 32 elements**	**10 factors with 58 elements**

In an attempt to focus more on the critical success factors that have been specifically identified and assigned to SME, Dandekar (2012) proposed the following set as being the most suitable for TQM implementation:

- ..to realize customers' needs
- ..to satisfy customers' needs
- ..to clearly understand quality
- ..to adopt team processes
- ..to recognize and understand the processes adopted
- ..to concentrate on internal customers
- ..to give attention and importance to data use
- ..to conceptualize the techniques used for improvement
- ..to develop methods and techniques in reducing variability
- ..to enlarge the company's ability to perform
- ..to enlarge and enrich supplier relationships
- ..to reduce waste

Dandekar (2012) noted that in order to successfully measure and control these CSF's a company should have a "continuous improvement" environment. However a "continuous improvement" environment exists only if the company has developed the appropriate cultural climate that will allow this concept to flourish. He proposed that a company should start with the planning process, follow with the education and the training and finish with a trial run of the process that will also determine its effectiveness. Adopting revisions and subsequent improvements, standardizing the crucial ones, should also be part of an SME's quality practices and in the sequence of actions, in the TQM implementation process.

Hunt (1993) proposed a set of variables to be used in identifying the level of quality implementation in an SME. Table 10 presents all four variables he identified and the corresponding critical success factors.

Table 10: TQM Variables (Hunt, 1993).

Variables	Critical Success Factors	Variables	Critical Success Factors
Quality culture	Strategic focus	**Quality processes(Cont.)**	People-oriented Input
	Awareness of strategic challenge		Track Progress
	Vision for the future		Measurement
	Innovation		Feedback
	Quality Policy/Philosophy		Evaluation
	Value systems/ ethics		Results
Leadership & Management	Top Management Involvement		Awards
	Visible Commitment to Goals		Personnel Evaluation
	Role in Quality Improvement process	**Quality tools and Techniques**	Assessments
	Concern for improvement		Definition of Tools
	Systems/ Structure for Quality Improvement		Measurement / Process Analysis
Work Force	Awareness of Productivity/ Quality issues		Awareness / Communication
	Attitudes/ Morale		Organizational Development
	Cooperation	**Performance Appraisal**	Work Flow/ Delays
	Involvement		Waste
	Perceptions of work environment		Tools/ Equipment
	Social Interactions		Staffing
	Task Characteristics		Facilities
	Consequential constraints		Training
	Customer Orientation		Supplies/ Parts
	Communication		Organization/ Group Structure
Quality processes	Job Analysis		Customer Quality Survey
	Higher Authority		Quantity
	Quality Emphasis		Reliability
	Top Management Leadership		
	Customer/ Service Activities		
	Define Improvements		
	Unit Goals		
	Organizational Goals		
	Quality Planning		
	Planning Strategy		
	Organizational Streamlining		
	Investment/ Appropriate Technology		
	Methods/ Process Improvement		
	New Ideas		

Assigning different instead of equal weights to each critical factor in the TQM evaluation process, will make an SME use a multi criteria decision analysis (MCDA) model. This model is supported from the analytical hierarchy process (AHP) tool developed by T. Saaty in the year 1971 (Huang et al., 2009). The AHP process technique, try's to measure the practical implications that the critical success factors (tangible and intangible) have on the TQM implementation process.

According to Yusof and Aspinwall (1999) in the TQM implementation process you should not blindly select quality criteria as Critical Success Factors (CSFs) because not all quality criteria are critical factors. The selection of the critical factors should be made in accordance with the circumstances and/ or practices that each SME has adopted. CSF's are sensitive to their behaviour and critical in the success of the TQM implementation. Sensitive, for an SME means that it needs more attention. Sensitive areas for an SME are the ones that realize lack in their resources (financial, human, and technical). So, they all need attention on the factors that are or may influence them. Other sensitive (critical) factors are, the management of leadership, employee's commitment and support; suppliers' quality management; employee's relations, and training and education. The preceding factors, together with the working and cultural environment which for an SME incorporates factors like the values, the attitudes, the behaviour, the teamwork and the involvement of all its stakeholders (Yusof & Aspinwall, 1999).;are also important and critical resources for the successful implementation of TQM.

Recent surveys conducted from various researchers have identified and used different critical factors in measuring the TQM implementation in an SME. Kaplande et al., (2013) added more critical factors in their proposed model. They grouped them into three different sub-factors, presented in Table 11.

From those, only three, namely the understanding of customer's needs, the common understanding of quality and the use of team processing, were considered crucial. The need to conceptually understand them first and then implement them supports the idea that TQM acts as a philosophy within an SME. Is not treated as simply being a technique that can or may improve its performance (Kalpande et al., 2013).

Table 11: Critical Factors and Sub factors

Factor	Use of **T**eam **P**rocess **(TP)**	**F**ocus on **I**nternal customers **(FI)**	Emphasis on the **U**se of **D**ata. **(UD)**	Common **U**nderstanding of **Q**uality. **(UQ)**	Understanding of **C**ustomer **N**eeds. **(CN)**	**S**upplier **P**artnership. **(SP)**	Understanding of the **O**rganizational **P**rocess. **(OP)**	Understanding of the **T**echniques of **I**mprovements **(TI)**
Sub factor	Number of team activities (NT).	Staff aware of the concept of Internal customer (CI).	Employees trained in use of data (ED).	Staff, aware of the concept of Quality (CQ).	Ability to express customer Needs (EC).	Help renders to Suppliers (HS).	Processes documented (PD).	Application of various Techniques (AT).
	Effectiveness of team process (ET).	Quality service received from internal supplier (QI).	Application of data (AD).	Understand and express customers' needs (UC).	Budget spent on identifying customer needs (BC).	Suppliers continued (SC).	Awareness about the organizational process and documentation (AP).	Training in use of various techniques (TT).
	Outcomes of team activities (OT).	Awareness programs conducted for internal customer (AI).	Evidence of impact of variation on decision made (ID).	Training programs conducted for understanding of quality (TQ).	Training programs conducted to understanding of customer needs (TC).	Seminar organized (SO).	Undocumented features of the processes (UF).	Staff trained for new techniques (ST).

Source: (Kalpande et al., 2013).

Given that the SME environment has become even more complex in recent years, the need to increase the number of critical factors that influence their performance, has become imperative. From the aforementioned, the "AHP method" proposed by Saaty (cited by Yurdakul, 2002) is a method for ranking a set of criteria according to how critical they are to a decision.. Such a decision could be the successful implementation of TQM

to an SME. The AHP method, is also the basis for the development of the S-P model. , The S-P model which was extensively discussed in section 3.3, was used to identify the attitudes and activities that were critical for the successful implementation of TQM in an SME. The model's special characteristic, is its ability to identify the degree of applicability of the TQM elements in an SME and the fact that it pays special attention to the environmental issues that may influence the successful implementation of TQM.

3.6 Concluding Remarks

Considering that ISO is the first step in introducing a quality system to a company and to an SME in particular, the next steps include successfully implementing TQM. A thorough review of the literature regarding all the different models which have been developed for facilitating this transition process were thoroughly presented. The TQM philosophy was examined as a way of implementing it to an SME. The TQM implementation process suitable for SME was analysed in more detail and all the requirements and difficulties that arise due to their size and their limited resources were presented. Different models using different critical success factors for implementing quality and TQM to SME were also examined. Particular emphasis was placed explicit on the analysis of the S-P model, which indicates the most effective and efficient variables used for the successful implementation of TQM in an SME. All the factors that could determine the success or failure as well as the components and the measures used for the successful implementation of TQM in an SME were also presented. The factors proposed from all the referred authors that come in congruence with the factors used in the S-P model can determine with reliability and accuracy the transition of the Greek ISO certified SME to the TQM level. The following Chapter, presents how an SME's financial performance is influenced through the introduction of quality and TQM. Additionally, the role of the Greek SME in the Greek and European Economy will be analysed, and their financial and quality status will be presented.

Chapter 4
SME & Financial Performance - The Greek Crisis

Chapter 4. SME & Financial Performance – The Greek Crisis

4.1. Introduction to Chapter 4

Considering that ISO is the first step in introducing a quality system to a company and to an SME in particular, the next steps include successfully implementing TQM. A thorough review of the literature regarding all the different models which have been developed for facilitating this transition process were thoroughly presented. The TQM philosophy was examined as a way of implementing it in an SME. The TQM implementation process suitable for SME was analysed in more detail and all the requirements and difficulties that arise due to their size and their limited resources were presented. Different models using different critical success factors for implementing quality and TQM to SME were also examined. Particular emphasis was placed on the analysis of the S-P model, which indicates the most effective and efficient variables used for the successful implementation of TQM in an SME. All the factors that could determine the success or failure as well as the components and the measures used for the successful implementation of TQM in an SME were also presented. In this chapter, how an SME's financial performance is influenced through the introduction of quality and TQM is shown. Additionally, the role of the Greek SME in the Greek and European Economy will be analysed, and their financial and quality status will be presented.

Quality is considered a means of achieving higher long term profitability and an increase in a company's market share (Shahin 2011). Chapter 4 examines whether implementing quality could be used by SME in less than optimum conditions and more specifically by SME operating within the Greek economy, during the economic crisis. To illustrate this, the present chapter, has been separated into six different sections including the introduction (Section 4.1). Section 4.2, depicts the role of Greek SME in the European and Greek economy, while section 4.3, presents how SME can respond to threats and capitalize on opportunities. Section 4.4 illustrates how implementing TQM can be used by SME as a means of coping with crisis conditions. Research regarding the effects of quality on SME financial performance is also presented. Section 4.5 further elaborates on the latter concept with the introduction of the ratio analysis and the presentation of different methodological approaches (models) which attempt to separate SME into groups based on financial criteria. Special emphasis is

placed on Altman's Z-score and the calculation of financial distress levels. Section 4.6 acts as a summary of the information presented throughout this chapter

4.2. The SME in the European and Greek Economy

Greek SME, in the year 2011 have produced the largest added value from all other SME in the European Union. Though, their numerical reduction and the on average significantly lower productivity rate was recognized compared to their counterparts in all other European countries (SBA, 2012).

From Table 12, it is evident that Greek SME focus mostly on trade and on manufacturing. They also possess a much lower market share compared to that of the European SME.

Table 12: Greek VS European SME

	EUROPEAN UNION	GREECE
Trade Sector	30%	38%
Services Sector	45%	40%
Construction	13%	7%
Manufacturing	21%	22%
Market Share	33%	18%

(SBA, 2013).

Table 13 and Table 14, demonstrate the number of SME operating in Greece, the number of their employees and their added value in the Greek economy, for the years 2014 and 2015.

Table 13: SME in Greece - Basic figures (2014)

	Number of enterprises			**Number of persons employed**			**Value added**		
	Greece		***EU-28***	**Greece**		***EU-28***	**Greece**		***EU-28***
	Number	**Share**	***Share***	**Number**	**Share**	***Share***	**Billion€**	**Share**	***Share***
Micro	629 811	96.2 %	*92.4 %*	1 130 794	55.2 %	*29.1 %*	16	33.1 %	*21.6 %*
Small	21 669	3.3 %	*6.4 %*	398 503	19.5 %	*20.6 %*	11	22.5 %	*18.2 %*
Medium	2 464	0.4 %	*1.0 %*	227 832	11.1 %	*17.2 %*	8	16.5 %	*18.3%*
SME	**653 944**	**99.9 %**	***99.8 %***	**1 757 129**	**85.8 %**	***66.9 %***	**34**	**72.1 %**	***58.1 %***
Large	423	0.1 %	*0.2 %*	290 547	14.2 %	*33.1 %*	13	27.9 %	*41.9 %*
Total	654 367	**100.0 %**	***100.0 %***	**2 047 676**	**100.0 %**	***100.0 %***	48	**100.0 %**	***100.0 %***

(SBA, 2015).

Table 14: SME in Greece – Basic figures (2015)

	Number of enterprises			**Number of persons employed**			**Value added**		
	Greece		***EU-28***	**Greece**		***EU-28***	**Greece**		***EU-28***
	Number	**Share**	***Share***	**Number**	**Share**	***Share***	**Billion €**	**Share**	***Share***
Micro	669 773	96.7 %	*92.7 %*	1 225 566	58.7 %	*29.2 %*	18	37.4 %	*21.1 %*
Small	20 058	2.9 %	*6.1 %*	361 207	17.3 %	*20.4 %*	10	20.9 %	*18.2 %*
Medium	2 455	0.4 %	*1.0 %*	228 692	10.9 %	*17.3 %*	8	16.6 %	*18.5 %*
SME	**692 286**	**99.9 %**	***99.8 %***	**1 815 465**	**86.9 %**	***66.9 %***	**37**	**74.8 %**	***57.8 %***

Large	400	0.1 %	*0.2 %*	273 587	13.1 %	*33.1 %*	12	25.2 %	*42.2 %*
Total	692 686	**100.0%**	***100.0 %***	**2 089 052**	**100.0 %**	***100.0 %***	49	**100.0 %**	***100.0 %***

(SBA, 2015).

From the tables above, it is apparent that the Greek SME experienced continuous increase in their number and in their added value. In 2015, their value added (74.8%) is significantly larger than the average European added value (57.8%).

Table 15, which depicts the Greek SME sector ,shows that after the tremendous decrease in their number (-27.04%) in the period 2012-13, a tremendous increase (23.14%) occurred in the period 2013-14, followed by a smaller increase (5.86%) in the period 2014-15.

Table 15: The Greek SME Sector (% changes)

	2012-2013		
	No of Enterprises	Employment	Value Added
SMEs	**-27.04%**	**-28.60%**	**-27.66%**
Large	**-5.26%**	**-26.22%**	**-25.00%**
	2013-2014		
	No of Enterprises	Employment	Value Added
SMEs	**23.14%**	**23.15%**	**0.00%**
Large	**11.90%**	**13.76%**	**-13.33%**
	2014-2015		
	No of Enterprises	Employment	Value Added
SMEs	**5.86%**	**3.32%**	**8.82%**
Large	**-5.44%**	**-5.84%**	**-7.69%**

Their employment rates and added value, experienced similar fluctuations. Greece as a member of the European Union is obligated to follow the rules and the regulations imposed by the European commission. The role that SME have in the European Union impacts the development of the SME in Greece. Since 2000 the European commission imposed a number of measures that have tried to support the SME both financially and non-financially. Indicative tools used for that purpose include the Lisbon strategy, the Europe 2020 strategy; the European initiative for SME in Europe (SBA) and many others. The most important, is the SBA (Small Business Act) program which is comprised of a set of policies and measures, suitable aimed at assisting each member State and its SME to develop those strategies that will support their development (Hellenic Chamber of Commerce, 2014).

The SBA's basic achievement was to improve the financial position of SME within the European economy, through politically supporting them and streamlining the policies

for all members. The problem with this program was that not all its principles supported the needs of SME efficiently. Figure 15 delineates the results of this deficiency which in turn reduced or stunted SME performance and progress averages in different management fields (entrepreneurship, Responsive administration).

The SBA program consists of many policies, including the "think small first" policy which requires that all legislations, administrative rules and procedures be simple and suitable for SME right from the beginning. The "entrepreneurial activity" principle, refers to the opportunities individuals have to start their own business. It is believed, that the shortage of available opportunities for new entrepreneurs, is the reason why this activity (becoming an entrepreneur) is regarded as valuable for all members in the European Union. The "second chance" principle, refers to the opportunity offered to individuals who didn't manage to maintain their business under the crisis conditions.

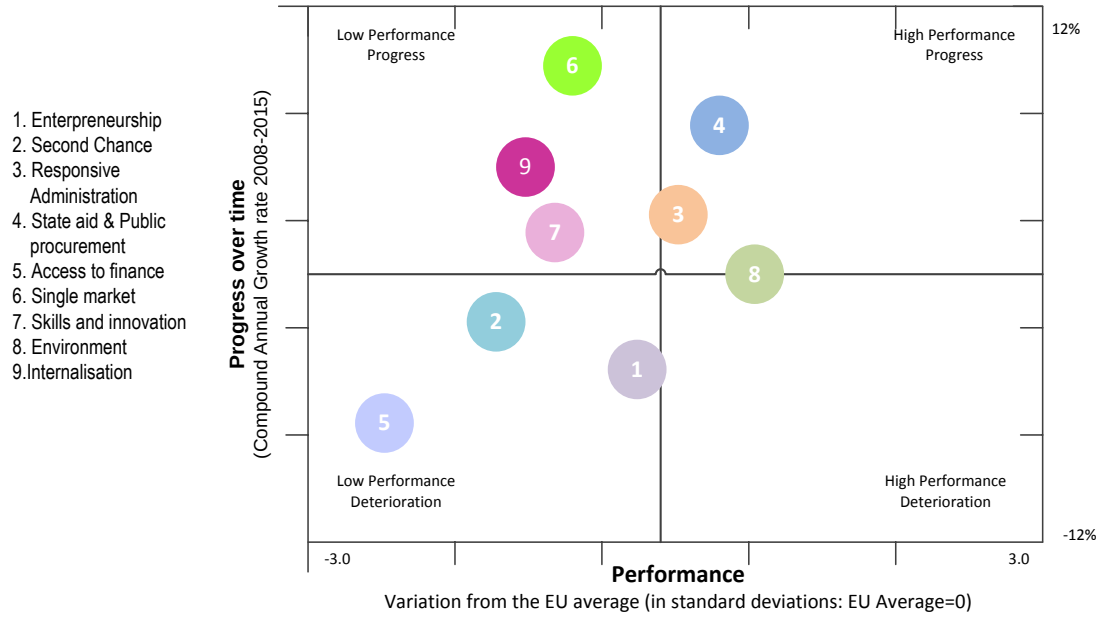


Figure 15: SBA - Performance of Greece (Period: 2008-2015).

The "responsive administration" addresses the inability of the Greek public administration to support SME operations. The bureaucracy and the lack of coordination between different public administration authorities, inhibit the development of new and innovative entrepreneurial activities. The continuously changing legislation worsens the problem. The survey "Aid and Public Procurement", refers to SME performance in relation to other European SME. More than 50% of Greek SME are in agreements with the public sector, which delays payments (up to four times more than average) which in turn reduces the level of liquidity for the majority

of SME. Access to financial aid is very difficult for Greek companies and for SME in particular as all sources of new funds like loans, venture capital and cash flow funds, have been restricted, The "single market" policy refers to the ability of the Greek companies and Greece as a whole, to share goods, services and policies with all other European companies or members of the EU. Greece has been improved by this policy, considering that it adopts single market legislations from all other members, and passes them as Greek national laws. However trade rates are still very low. For the "skills and innovation" and the "environmental" policies, the country's response was promising and in line with all other European members. Though, improvements still need to be made. A number of programs like the "Green Business 2010", the "Green Infrastructure" and the "Green Tourism" launched in 2010, improved the environmental culture in all SME. The last and most important policy is the "internationalization policy". The inability of Greek SME to export, is due to the extended periods of time required to complete the process. In fact, it takes an additional one third more time than it takes any other member in the EU, placing Greece behind all other countries. A set of laws introduced in 2011 improved the situation slightly, but more actions need to be initiated (SBA, 2015).

To support the European SME, the European Commission developed the SBA policy and its sub-policies, divided into three axes. The first axis, deals with issues related to the business environment, and the second with the structure and the support of the entrepreneurships as a means of developing a sustainable business environment. The third axis, as the most important for the SME development deals with the division of its policies and regulations into sub groups. Each group is related to insurance, infrastructure and fund raising access issues. Each group is independent and does not affect or influence the others.

The EU's annual report in 2013 clearly shows that all SME experience lower liquidity levels and higher unemployment rates. The only exception is the high technology sector which has managed better under crisis conditions. As a result, SME have slightly increased the adding value to the Greek economy (72.1%, 74.8%, 75.1% in the years 2014, 2015 and 2016). The ability of a country to implement the SBA's measures and policies more efficiently depends on how it will manage to support the continuation of the operations performed by its SME. This is something that Greek Government and the official authorities still haven't managed to achieve completely (Hellenic Chamber of Commerce, 2014).

For almost eight years Greece has battled the consequences of the economic crisis. Its SME are trying to endure the austerity measures imposed from the Central European Bank and the IMF (International Monetary Fund) (i.e. Tax increase, wage and pension decreases) but are facing problems related to the nature of the business environment they operate in. The problems they face are mostly related to the market's low liquidity and the high credit risk (Inability to offer loans). This lead to them attaining a negative deviation from what the other members of the European Union show, in areas such as the SBA's fund adaptation, the areas of entrepreneurship, the public administration, the financing, the skills and innovation, and the internationalization (Hellenic Chamber of Commerce, 2014).

SME performance in Europe during the period 2008-2015 was considered "adequate", compared to the large sized companies which have been influenced the most from the economic crisis. The decline for SME begun in 2012, and was accompanied by a loss of 610,000 jobs, and a decrease of 1.3% in GDP. Greece is currently one of the most vulnerable European member states. Greek SME have reduced in number, and have incurred changes in their value and the number of people they employ at a higher rate than almost any other member state. In the year 2012, two years before the crisis consequences begin, the large companies lost almost 8.6 billion of their value, compared to SME that lost specifically, from the medium SME a total of 17 billion, from the micro SME 14 billion and from the micro SME the 13.2 billion Euros in value (Hellenic Chamber of Commerce, 2014).

	2011	2012	2013	2011-12	2012-13
Enterprises - GR	745,677	727,883	531,059	-2%	-27%
Enterprises - EU 27 (Average).	770, 973	753,920	763,486	-2%	1%
Gross Value Added (million Á) - GR	55,000	47,000	34,000	-15%	-28%
Gross Value Added (million Á) - EU 27 (Average).	126,186	125,755	127,036	0%	1%
Number of persons employed GR	2,150,438	1,998,453	1,426,840	-7%	-29%
Number of persons employed EU 27 (Average).	3,239,916	3,215,360	3,225,641	-1%	0%

(Hellenic Chamber of Commerce, 2014).

Figure 16: EU (27). Average and respective data of Greece concerning the SME 2010-2013

The changes in added value and the number of employees working in Greek SME for the period 2010-2013 are shown in . All values indicate a larger decline compared to the equivalent changes in the values of the remaining EU states

The economic crisis, has been influenced mainly by the European domestic demand, a key element for SME growth. The large companies benefited from that increase and their performance improved especially in the exports market. Signs of recovery for the SME were also evident.. Specifically in the high tech and manufacturing sectors, growth rates indicate the creation of 0.5 million new net jobs for the period 2008-2012 (Hellenic Chamber of Commerce, 2014).

Greek SME, make up 85% of private employment in the Greek economy, 50% of which mainly comes from the micro SME. In the construction sector, SME suffered the biggest decline in employment rates during the period 2010-2013. Their value added also declined due to the reduction of public contracts, which were handled in their majority by the larger companies. Up to that time, a large number of public contracts were assigned to SME. The majority of public projects are now focused on environmental, energy, waste and recycling processing and characterised as large investment projects which demand large contractors. This leaves no room for SME which can only focus on the private sector which started to decline in the year 2009 as this was also mentioned in the Hellenic Chamber of Commerce report (2014).

The austerity measures imposed on the Greek economy by the IMF, resulted in tax increases and reductions in the level of wages and pensions, which directly affected all economic sectors, but mostly the sectors of construction and manufacturing. The consumers' purchasing power was directly influenced, increasing the financial burden and the SME obligations towards third parties. In addition, the inability of the banking sector to support the SME's funding needs, influenced the trade sector. Starting in the year 2008, heavy losses were incurred, when approximately 130,000 SME declared bankruptcy, because of their inability to meet their immediate obligations. (Hellenic Chamber of Commerce, 2014).

The European commission proposed the development of a National policy that would support the development of SME in Greece. That policy would intervene in three main areas for SME: the strategic policy-planning, the long term infrastructure planning, the enforcement and monitoring of policies and the development of specific measures per thematic area. Regarding strategic policy planning, the proposal from the European commission, was to implement a long term policy that would support SME operation in a healthy, competitive and friendly environment. The second area of intervention, would be implemented due to the complete lack of principles and measures capable of supporting the implementation of a strategic objective. Thus, the proposal referred

to all the components that would develop a long term SME policy infrastructure. This policy would support (a) the enforcement of SBA and (b) the strengthening of the SME envoy institution, tasked with promoting SME interests, and acting as a key intermediary between the commission and the national representatives that contribute to the SBA's assessments and report development. It would also support the (c) implementation of an SME test, comprised of four stages that measures the impact of any new legislation. The first stage of that test, called the consultation stage, would include the SME bodies. Following is the SME evaluation stage that would examine all possible influences from new legislation and the measurement stage which would measure the impact on SME. Finally, the use of these measures would be appropriate as a means of mitigating the legislation impact on SME (Hellenic Chamber of Commerce, 2014).

The policy measures were also categorized per thematic area. Three were the thematic axes developed and eleven the thematic areas assigned to each axis, as is shown in Table 16. All were then integrated into the SBA program.

Table 16: Thematic Axis and Areas. (Hellenic Chamber of Commerce, 2014)

Axis A: Business Environment Issues	**Axis B: Business Development and support issues**	**Axis C: Other SME Policy Issues**
• Taxation	• Advisory Structures	• Insurance
• Competition	• Innovation structures	• Infrastructure
• Bureaucracy	• Clustering structures	• Access to Finance
	• Education / Training	
	• Structures supporting internationalization	

A European commission study (2014), presents possible problems related to the thematic axes that would influence the Greek economy.

Regarding Axis A', Greece is the member with the highest VAT rates than any other European Union member. It is also the country that over the past years has implemented approximately eleven changes in its VAT rates. This constitutes one of the most serious problems related to the increase in the country's operational and production costs. In addition, self-employed workers and SME employers are excluded from the right to be tax exempted. From the 1/1/2015 and under a new tax law, which will definitely influence all the investments undertaken by businesses. Regarding competition, it is known that in Greece, the black market, significantly reduces the

public revenues as it influences commercial business and tradesmen. This phenomenon is also supported by the lack of control in pricing, specifically in intra-group transactions and in the triangular trade. Both frequently lead to the development of oligopolistic markets. Though, the commercial rentals were not reduced in proportion to the reduction in the wages and the pensions. This further increased the costs for an SME, making the recession in Greece even more severe and extensive. From a survey conducted by the Hellenic Confederation of Professionals, Craftsmen & Merchants (GSEVEE-2014), it was found that wholesaling has the highest concentration of SME competition and retailing has the lowest. That tendency developed the expectation, that over time, SME would increase in size and reduce in number. The ones that manage to survive will be able to face the strong competition.

Bureaucracy is another nuisance for the Greek economy that greatly impacts the SBA structure and development. Bureaucracy causes a number of problems for SME that are trying to recover from the crisis, like the time-consuming licensing procedures, the lack of information, the uncertainty of the land use and value across the country,

Axe B', is related to the structure that supports entrepreneurship. The key feature of an entrepreneurship in a developed economy, is "the development of an innovative entrepreneurial activity that emphasizes the high value added element" (Hellenic Chamber of Commerce, 2014). Innovation, clusters and highly qualified personnel, is what will produce high quality products and services capable of appealing to European and international markets. But for SME given their size, their available resources features and skills, this cannot be easily obtained. Thus, the need to support their existing structure, is what will help them develop a revised set of key features and business activities.

In the area of innovation and value added decisions, Greece displays the worst image. Businesses, especially young entrepreneurships operating under crisis conditions, are not in a position to invest in any counselling. The restructuring of their operational planning could result in irrational decisions that would have direct consequences on their future. The development of clusters that "contribute to the creation of a better business environment by enhancing collaboration and networking" can contribute to the development of innovative products and services that would support their survival. Though, clusters are against the Greek entrepreneurial culture, though they could support their operations with a counselling configuration that may be the only available

option they have as this was also pointed out and in the Hellenic Chamber of Commerce report (2014).

One of the major goals of the SBA program in to introduce innovativeness. Efficiency and sustainability are the two key features that will enable an SME to be innovative. Research and development is what will bring innovativeness to an SME. It can take place either within business operations and/ or through the Educational processing that will transfer innovativeness into the business operations. Greece in Europe is ranked third out of four, regarding innovativeness and holds the lowest rank in the Global competitiveness list. The reason for that is that SME, and more specifically micro SME, are not capable of developing strategic tools that will contribute to the development of new and improved products. This inability results in the loss of a number of opportunities. Opportunities that in order to be utilized they need from the SME to be strategically structured in order to emerge any innovative ideas into their production process. Consequently those innovative ideas could open new opportunities for the development of new innovative financing tools. Tools that would help SME find the necessary funds they need for research and development. This would help them keep their innovative character longer (Hellenic Chamber of Commerce, 2014).

Employing and maintaining highly skilled personnel, is of paramount importance in all companies and for SME in particular. One of the reasons contributing to Greece's' failing economy and the poor economic performance of Greek SME compared to their counterparts in the rest of Europe, is their failure to realize how ongoing professional training can reduce unemployment rates (SBA fact sheet, 2013). From the entrepreneurs' perspective it should be viewed as a productive investment and from the individual/ employee perspective as a personal development plan. Instead, entrepreneurs don't offer their employees any incentives, such as job protection or/and enhancement or even a remuneration increase in order to motivate them (SBA, 2014). Recognition however of the institutionally acknowledged benefits from both sides, would inspire the necessary motivation for learning and training which is otherwise totally absent (SBA, 2014).

One of the goals of the SBA is to strengthen and support the close collaboration between small and large enterprises. This collaboration would internationalize the SME and increase their opportunities for growth and expansion. It also tries to promote and support homogenization and standardization in the inner market (EU) giving

emphasis to patents and trademarks. The most serious problem Greece is currently facing, is its trade deficit (imports are by far larger than exports). The European commission motivates and requires that all member states develop their markets inside and outside Europe. However, the incentives for developing cooperation with International and other European markets for trading Greek products, do not seem to exist. The result of the general elections that took place in 2015 and the reduced support from the European Enterprise networks, is worrisome and the risks associated with the survival of Greek companies have increased.

The insurance sector which is not included in the SBA policy, is another sector with a deteriorated financial position. A large number of businesses have closed down and the entrepreneurships that are still operating, face serious difficulties in fulfilling their insurance obligations. The social insurance organizations, i.e. the Social Insurance Organisation of Freelance Professionals (OAEE), the Engineers' and Public Contractors' Pension Fund (TSMEDE), the Medical Profession Pension and Insurance Fund (TSAY) and the Ancillary Insurance Fund for Retail Store Employees (TEAIEK), and the insurance system as a whole, lost a tremendous number of funds leading it to its collapse.

The infrastructure, meaning Greece's Technology, Communication and Transport sectors are crucial. . Even though the SBA policy does not refer to them, they are still important for the sustainability and growth of all SME. In Greece, internet is still a cheap resource and the use of e-invoicing services still remain relatively low cost. So, their use could improve the efficiency of the Greek SME in trading. Tourism, supported from a number of SME, remains a valuable sector in the Greek economy, making the transport infrastructure requirements and needs even more important and valuable for its growth (SBA, 2014).

The SBA's proposal to the EU member states, is to allow SME access to new funds through risk capital, micro-credit and mezzanine financing. It also proposes the development of a legal and business environment that will facilitate the timely occurrence of all commercial transactions (Greek SME need to wait 104 days until customers pay them, compared to all other European SME which wait 52 days).

The main source for financing for Greek SME's is Bank financing. The total number and value of the bank loans offered to corporations was reduced by 5.3% from March 2013 to March 2014. Their cost has been increased by 2% and the cost of bankruptcy (financial distress) remained at high levels.

According to the SBA report of 2013, 34% of the Greek SME that submitted an application for a loan, were rejected in comparison to the 27% average rejection rate for EU SME. Given that banks usually request real estate as collateral from loan applicants (L/T borrowing) and that since 2008 the Greek real estate sector has lost about 35% of its value, borrowing costs have increased. Also, the non-performing loans (named: RED-Loans) offered to the Greek SME in 2013, exceeded the 35% of the total amount of loans offered. This rate was increased in 2014 and 2015. Though, and for the performing loans better and long term payments have been assigned.. Consequently the lending Banks had to bear the risk of a loan default, which lead to denying many SME additional financing. It is important to note that since April 2014, Greece has borrowed an additional amount of 62 billion Euros and simultaneously incurred a decrease of 76.5 billion in bank deposits (from 2009 till 2014).

Ultimately, the main and only source of funding for the Greek SME was the EU structural funds or the European funds, which the Government will invest in energy, innovation, commercial and Industrial cooperation projects. This fact significantly reduces the available opportunities for the Greek SME (Hellenic Chamber of Commerce, 2014).

4.3. Crisis Conditions for SME.

Seeger et al., (1998) stated that three components characterise a crisis: the threat the surprise and the limited decision time that management has in order to respond to the situation. Given that a strategic plan, deals with a company's short term future, it deals with its short term threats, opportunities, weaknesses and strengths, which are characterised from economic, financial and social crisis components. What relates a strategic plan with the crisis management is that the first, deals with opportunities, while the second deals with threats. But threats can potentially become opportunities (Vargo & Seville, 2011).

SME focus mainly on the development of a short term strategic plan, as the crisis conditions make their long term projections more risky. Developing a strategic plan with a long term horizon is necessary, albeit it is not easy and may not be correct and valid from the beginning. To cope with the continuously changing conditions, SME leaders should inspire. They need to develop a supportive organizational culture capable of reinforcing innovation and the development of a disciplinary plan. This plan should incorporate a structured decision process and an adequate set of feedback loops. In addition to that, the use of teamwork and the existence of individuals capable

of relating information and identifying patterns are needed. All of the above, will make SME capable of projecting possible changes and incorporating them into their strategic and quality plan.

SME operate in an economic environment where organizations and new technologies need to be closely related. Their inability to incorporate new technologies into their operations, could create a domino effect that could negatively influence other factors in the economy, such as social and/or cultural factors. (Vargo & Seville, 2011). Introducing new technologies supported from high quality into their operations, will not only give them higher protection, but will also give incentives to sustain their growth.

SME that face strong economic, social and cultural uncertainties due to their continuously changing environment, can respond by either trying to survive or become more flexible. Flexibility as stated by Seville (2009) is the ability of a company to thrive under difficult and continuous changing conditions. “Thrive” actions should be incorporated into a company’s strategic plan and not simply be part of the crisis management actions (Vargo & Seville, 2011).

Seeger et al., (1998) noted that corporations and SME in particular, are susceptible to threats, unexpected events and have limited time to deal with changes. To face these conditions, companies should utilize crisis management which attempts to utilize the available resources and reform a company’s organizational structure, by responding to the new conditions in an effective way. Under crisis conditions any new opportunities that will appear should be evaluated. The strategic planning in the crisis management discipline should include all the concepts that will identify and analyse those opportunities and decide on the actions taken (Vargo & Seville, 2011).

The analysis of Strengths, Weaknesses, Opportunities and Threats (S.W.O.T) is the part of a strategic plan that will guide the decisions and subsequent future actions towards the development of process plans, the restructuring of required resources and the eradication of arising weaknesses and threats. Proactive seeking, leadership, culture, decision making and situation awareness, are the key elements that literature designates according to Vargo (2011), for assessing the effectiveness of a strategic plan The aim of introducing a quality plan into a strategic plan, is to support the optimum development of all the required process plans. With those process plans, the company will manage to achieve the most reliable restructuring of its resources and will support any proactive actions needed. Those new process plans will help develop

a new leadership style that will enable the development of a cultural environment geared towards “excellence”.

Some scholars maintain that strategic planning and crisis management are similar, because they both examine the environmental conditions, the stakeholders position, the top management’s involvement and effectiveness (Preble, 1997). They also both identify the key risk factors that determine the level of the plan’s implementation. What makes them differ is that the first (strategic planning) focuses on opportunities and how to thrive, while crisis management focuses on threats and how to survive. Being able to thrive, depends on a company’s ability to develop a plan that incorporates actions related to crisis (short term) and non-crisis (long term) decisions. Having that is, a plan to impose control over the processes under both occasions (S/T and L/T) and take actions depending on the seriousness and importance of the threat, which if left unresolved may prevent a company from formulating and implementing its strategic plan. Quality and TQM, may be the key element for protecting a company from such an occasion. Introducing crisis elements into a company’s strategic plan can substantially increase the availability of new opportunities if and when crisis conditions emerge (Vargo & Seville, 2011).

Mitroff (1988), Smith (1990), Alesch et al., (2001) and Berman et al., (1997) have recognized that in order to survive under crisis conditions an SME, needs to develop a reliable and accurate plan. that would take into account its growth rate and revenue. The more decentralized the companies are, the more they will allow the use of a more structured decision making processes. The more structures the processes has the more opportunities will be to cope with unstable and unpredictable environmental crisis conditions. The use of working teams will allow a swift response to the fast changing conditions. This will be achieved from integrating the strategic decisions with the tactical plans as Bourgeous and Eisenhardt (1988) have noted. They also found that being fast, is related with the amount of information processed and the number of the alternatives examined. These will eventually lead the company’s manager (s) to make correct and accurate decisions. The contribution of TQM to the fastness of the data processing and alternative evaluation supports the accuracy and the efficiency of the results derived.

Mitroff (1988) suggested that in order for SME to face unexpected environmental changes they need to be prepared beforehand. Being prepared means being in coordination and sharing information with the team members responsible for dealing

with crisis conditions. Introducing a quality plan that supports the TQM elements and practises will further support the coordination and sharing of those team members.. This will offer homogeneity and a unique pattern to the SME's behaviour.

Crisis conditions can have a direct effect on the implementation of the originally designed strategic plan. Burnett (1998) notes that integrating crisis management techniques into a strategic plan, is important for a company that wants to overcome those crisis conditions. The effectiveness of the applied techniques however, depends on the time it took to implement them. When faced with a threat, there is need for immediate action but time is required in order to organise and implement that action. . In addition, the control processes related to a crisis condition, may overlap due to the threat's magnitude and severity.

Burnett (1998) noted that a company operating in a crisis, may face seven different types of opportunities. These could be: (a) the development of heroes (b) the changes being accelerated (c) the concealed problems that may appear (d) the people's behaviour that may change (e) the new strategies that may be developed (f) the warning systems that need to be developed and (g) the competitive threats that may appear. Having incorporated all the possible opportunities mentioned above into the company's strategic plan, and developing the appropriate strategies to support them, the SME can obtain an advantage and potentially turn a crisis condition into an opportunity.

But, strategic decisions taken under crisis conditions sometimes create inconsistencies. For example, decisions taken in such a condition are made quickly and not after careful consideration, thus may be made without all the necessary information and without considering the level of riskiness of each alternative. Another inconsistency could be to have a very strong team with a strong decision maker as a leader. This strong team and leader should also pose a clear understanding of the mission and company goals, familiarisation with the processes of operation and capability of exchanging all the available information. From those operational processes, new opportunities could be revealed and determine the way they should be handled. Another inconsistency considered is to be exposed to risky decisions that need to be carefully implemented (Bourgeouis & Eisenhardt, 1988; Vargo & Seville, 2011; Regan, 2000).

Leadership is important when faced with a crisis condition. Cammock (2001)., proposed that a leader needs to envision, to engage and to enact in order to handle

crisis conditions. For that, an organization's culture included in a company's strategic plan, should be adjusted in order to face the crisis conditions. That is to change the company's attitudes, values and behaviour in order to face crisis conditions. Heifetz (1994) identified that what is actually needed is the willingness of employees to see an SME's problem(s) as they would their own. This is not so difficult to achieve, given that the small number of people employed in SME fosters the development of close relationships and camaraderie with owner(s) and manager(s).

Alesch et al., (2001) have stated that the accuracy of an SME's strategic plan, is related to the actions it undertakes under crisis conditions and how these determine the possibility of its survival. That was also supported from Berman's study (Berman et al., 1997) who identified that the planning process is positively related to an SME's income growth.

SME are far more exposed to risky conditions than large companies. This is because of their limited resources that influence their interconnectivity with their cooperation's and technology exchanges. Contrarily SME's competitive advantage is their ability to adapt in a continuously changing environment characterised from, crisis conditions that differ in their significance. (Regan, 2000). All quality elements implemented to an SME is what would support the adoption of information technology that in turn would improve further its operational and consequently its financial performance (Widyaningrum, et.al., 2017).

4.4. TQM implementation level and financial performance

Extensive research has been conducted regarding the use and the benefits of implementing TQM in all sized companies. The willingness of the Greek ISO SME to continue their quality journey and the readiness of the large organizations to set quality as their primary corporate objective, proves that companies operating in all sectors, from construction, merchandising, servicing to public sectors, have achieved various benefits from implementing quality and TQM in particular, including higher product quality, increased efficiency and improved business performance.

Companies who managed to show a remarkable performance were also awarded excellence awards such as the US Malcolm Baldrige National Quality Award and others. Those companies were also questioned if they have performed better and in the areas of profitability, market share, productivity, efficiency, solvency, as well as in quality costs and in employee relations (Saunders & Preston, 2006).

TQM and its contribution to operational and financial performance are accepted from both the industry and entrepreneurs as a means of adding value to a company. However, TQM's relationship with a company's *overall* improved financial performance has not been verified yet. Researchers have tried to prove this relationship, using different financial performance measures (i.e. ROA, ROE, profit margin). They attempted to identify possible deficiencies in the way that financial and quality data were statistically processed and correlated and pinpoint the consequences from TQM implementation in a company's overall financial performance (Wayhan & Balderson, 2007). Their analysis indicated that the market tends to find ways to improve its quality. Companies operating in this market view these improvements as a means of adding value through improving their financial performance (Hendricks & Singhal, 2000).

As SME's consider ISO as an investment, they implement it initially as a means of improving, their operational performance. The required new funds for such an investment, should be compared with the expected returns and the evaluation of the company's overall rate of growth and its profitability. The expected rate of return of that investment would further support management's decision to accept and further implement quality in the SME's operations (Tsekouras et al., 2002).

Using the return on assets ratio, that is the EBITA (Earnings before Interest Taxes and Amortization) over rate as a criterion on an ISO certified SME's total Assets, to measure its financial performance and after comparing it with an non ISO certified SME , Aba et al., (2016) in their study revealed that the first performed better than the second. A possible explanation for that was the ability of the first to establish a more thorough management system that managed to better utilize the SME limited resources (Pantouvakis & Dimas, 2010).

The survey by Santos et al., (2011) showed that the SME manufacturing companies managed to recover their investment in ISO certification, in a much shorter period than the servicing companies. The reason for that was it took the servicing companies, an extended period of time to implement the ISO standards in order to receive their certification. This seems to indicate that companies for which the ISO certification is a prerequisite to remain in business, like in the manufacturing sector, an immediate and more effective implementation of the quality standards is achieved. However it was also found that after the companies were granted the ISO certification, the level of their financial performance remained either constant or in many cases deteriorated. This

was due to the fact that the costs incurred to keep the system functional, were larger that the financial benefits derived from its use (Aba et al., 2016).

Hendricks and Singhal (1996) were among the first to examine TQM implementation in relation to a company's financial performance. Using a conceptual level of analysis and not a dimensional, they empirically tested the relationship between a company's level of TQM implementation, with its financial performance. To examine the level of TQM implementation, they focused on companies that were quality award winners. In order to determine the rate of their financial performance, they used their market value determined from their equivalent stock prices. The evaluation process took place before and after the date the award was granted. The results, showed that the smaller sized companies and the companies that had received the award from an independent organization (i.e. Baldrige Award) performed better. This result was an indication that for SME there was a higher possibility of achieving better financial results through the implementation of quality and TQM.

Another study, conducted by the same researchers, using the same parameters but different sample size, produced the same results but at a higher level (Hendricks and Singhal, 1997). From their analysis, it was clear that the different data bases can produce 'dramatic' differences in the sample size, something which they hadn't addressed (Wayhan and Balderson, 2007). The methodology they used was an event study and the data used was annual, not daily as in their initial study. Specifically, the data collected, came for a ten year period and the financial variables included income, sales and cost based measures. The results derived showed that the effective implementation of TQM has a strong impact on a company's operating-based measures, a modest impact on the revenue-based measures and a weak impact on the cost-based measures. The results derived emphasized the operational character of TQM even more. However this trend was altered in recent years, when cultural issues were also found to affect TQM implementation.

The TQM elements influencing a company's financial performance were also examined in a survey conducted by Easton and Jarrell (1998). The researchers used a methodology based on an interview-research approach and fourteen financial performance measures in their analysis, which were related to the Industry, the market size and the leverage (debt to equity) rate. It was concluded that the performance improvements achieved due to the implementation of TQM, were more long-term. However it was also found that the more mature the level of TQM implementation was,

the better were the financial results derived for both the short and the long term periods examined (Easton and Jarrell, 1999).

A study conducted by Herzallah et al., (2014) proved the indirect relationship between the TQM practices and the SME's financial performance. The main factor influencing that relationship, was the competitive/ differentiation strategies developed by the SME. Those strategies were shown to have a direct and significantly positive relationship with the hard elements of TQM, more specifically an SME's cost leadership strategy and because of that to its financial performance. However, an indirect relationship was found to exist between the soft and hard TQM elements. This explains why the relationship between the SME differentiation strategy and their financial performance was found to be weak. (Herzallah et al., 2014; Hendricks & Singhal, 2001; Douglas & Judge, 2001). The characteristics of the SME that were examined in this survey, were close to the characteristics of the Greek SME. They were mostly family-owned companies which focused more on profits and less on customer's satisfaction.

As York (2004) states, companies that have adopted the TQM practices are the ones that have also received awards (i.e. Baldrige or state awards). For them in order to get the award they should present, among others, and an improved financial performance. This implies that these companies have already improved their financial performance. His research recognized the successful implementation of TQM (award), but did not examine the cause(s) that lead to their improved financial performance. For that purpose, the research's conclusion supports the controversy that is the relationship between the two variables; the TQM and the financial performance. York's survey, also clearly established that the TQM companies show a long-term pattern of improved financial performance in an array of financial performance measurements.

Table 17, presents the information and the variables used from a number of empirical studies and researchers, in order to compare TQM implementation and financial performance.

Table 17: Empirical Studies on TQM and Financial Performance (York & Miree, 2004).

Dimension	Hendricks & Singhal (1997).	Easton and Jarrel (1998).	Hendricks and Singhal (2001a).
Sample size	394	108	435
Data source, data used	Compustat Annual Industrial File, Parent Firm	Compustat Annual Industrial File, Parent Firm	Compustat Annual Industrial File, Parent Firm
Time frame	10 years (6 yrs. before and 3 yrs. after the award grand	5 years after the award grand	4-5 years after the award grad
Types of quality awards included	Not explicitly stated	Not explicitly stated	Not explicitly stated
Categories of performance measures	1. Operating Income 2. Annual percentage change in sales 3. Percent change in total cost per dollar of sales	a. Net Income b. Operating Income c. Sales d. Continuously compounded stock returns	a. Operating income b. Annual percent change in sales c. Percent change in cost per dollar of sales
Key findings	Firms winning quality awards outperform the control firms on operating income-based measures and sales growth, and are more successful at controlling costs	Long-term performance of TQM firms is improved, as measured by median cumulative positive abnormal return at the end of 5 years.	Overall, TQM firms experience better financial performance than control firms; smaller firms do better than larger firms; less capital intensive firms do better than more capital intensive; less diversifies firms outperform more diversified firms; no significant differences between early and later adopters of TQM.

Thorough examination of these empirical surveys indicated a number of limitations, including: (a) the randomness of the sample selected for the TQM and the non-TQM adopters; (b) the sample that included only company-wide quality award winners, ignoring the majority of the companies operating within a market; (c) overlooking the changes incurred in the criteria, the standards and the level of competition for each different award and (d) disregard of the process management techniques, used for the evaluation of a company's performance (York and Miree, 2004). These limitations, deteriorate the reliability of the outcome derived from all those surveys, rendering them unreliable.

But the benefits derived from the implementation of TQM shouldn't be occasional. This randomness caused due to a company's organizational slack, or its long standing patent or its unique production process, that lead to improved performance should be identified and isolated before it is evaluated (Porter, 1996., Garvin, 1991). Though, possible differences in a company's organizational structure and in its leadership style could be considered as an opportunity and have a positive effect on the level of its operational performance. For example, the company's ability to enter into new markets utilizing all those environmental changes could be such an opportunity (Jennings and Seaman, 1994, Bourgeois and Eisenhardt, 1988).

Hendricks and Singhal (2001) proved the existence of a relationship between TQM and financial performance. This relationship was derived and determined from the characteristics of each different firm. They specifically argued that SME performed better financially compared to the larger firms due to their Capital-intensity. They also realized that the level and the point in time that quality was introduced into their operations, was what defined its maturity level, but failed to directly relate this to the level of the SME financial performance.

In measuring an SME's financial performance, Agus and Hassan, (2000), used the variables that were related to its quality level and its industry characteristics as financial indicators. He determined the financial performance of an SME, in relation to its competitor's performance within the same industry. He examined the rate by which the financial performance of a quality company exceeded the financial performance of its non-quality competitors. The variables he used in measuring their financial performance were their profitability and their revenue growth. Agus (2005) continued with another survey where he used (a) top management commitment, (b) customers focus, (c) supplier's relationships, (d) the level of training and (e) employees focus, as quality management variables. The criteria he used in measuring their performance were related to a number of competitive advantage factors (barriers to entry and rivalry/competition) and a number of differentiation factors (product differentiation, personnel differentiation, and price/cost differentiation). To the above criteria, he added a number of financial performance indicators, like the total assets, the net profit and the turnover per employee.

From the different studies conducted, on the relationship between TQM and financial performance, different results were produced. One set of them were supporting the contribution of quality to a company's financial performance i.e. Fleming et.al (2005);

Germanos (2011), and another set showed mixed or no evidence of the relationship i.e. Kaynak (2003); Watson et.al., (2003) . For this reason, a research standard was developed, so as to identify a more standardized way of assessing the relationship between the two variables (Wayhan and Balderson, 2007a). This standard was based on the answers collected from a set of questions that are shown below. With the available answers, a comparative study of all the results derived from different surveys could be compared and contrasted.

The questions used were the following:

a) Has TQM been fully implemented?
b) Has the implementation of TQM impacted organizational processes?
c) Have the longitudinal data analysis assumptions been met? If not, have the raw data been orthonormalized and / or an appropriate data analytic technique utilized?
d) Have three or more post-event measurement periods been incorporated into the research design to allow the exact nature of the longitudinal effect to be specified?
e) Have multiple pre-event measurement periods been incorporated into the research design to determine whether comparison groups are equivalent?
f) Has the theorized impact of the intervention been tested simultaneously on multiple dependent variables in the analytic model?
g) Has the theorized impact of the intervention been tested through an omnibus test of main effects with sufficient controls in place?
h) Has TQM impacted financial performance across time?
i) Has the effect size and statistical power to determine an effect of this size been determined on a post hoc basis?

Up to now however no one has managed to address all nine items leaving the linkage between TQM and financial performance a pending research question.

From the surveys that tried to examine the link between TQM and financial performance, it was found that the 80% of them were subjective (Wayhan and Balderson, 2007b). As most surveys focused on the implementation process and the outcomes derived, they mainly compared the quality initiatives undertaken from different companies (Flynn et al., 1995, Hackman and Wageman, 1995) a fact that created doubts pertaining to the accuracy and reliability of the outcomes.

Other studies conducted were based on practitioners work, but the validity of the results were questionable, because they were derived from self-response type surveys and relied on the perception of the company's executives (Hiam, 1993).

Scholars have also tried to relate the variables used in measuring SME financial performance. The results of these studies, have been used and/ or presented in different conferences and studies like in the conference Board (a NY business research group-149 large manufacturing and service business), in the International Quality study (584 automotive, computer, banking and health care firms in Canada, Europe, Japan and USA), in the American Society for Quality Control (ASQC) study (Assess the perception of 604 senior executives or directors) and in the Sirota and Alper study (1992-Research company that surveyed a cross-section of employees from 30 companies and not just one interviewee from each company). From all those studies presented only three included numeric results regarding the impact of TQM on a company's financial performance. The first study, which was conducted by the General Accounting Office (1991) used the market share, the sales per employee, the return on sales and the return on assets as financial performance criteria. The second study, by Fitzerland and Erdmann (1992) examined the supplier's financial characteristics and the third by IBM (1993) used criteria such as customer service, employee morale, product and service quality, as well as the companies' financial results and market share.

It should be noted that the studies that demonstrated the existence of a positive relationship between financial performance and TQM, depend mostly on individual perceptions, and the limitations due to the statistical methods used for data analysis, rendered their results unreliable (Wayhan and Balderson, 2007).

In addition to the empirical surveys conducted, Powel (1995) was the first who worked on an single TQM dimension examined in relation to its financial performance. He used five perpetual measures and concluded that TQM implementation depends more on intangible rather than tangible factors. The need to change a company's corporate culture is what would affect the TQM elements behaviour and consequently the company's financial performance. So, the reason why companies didn't manage to accomplish the TQM level, was their unwillingness and inability to implement all those intangible factors that would change their corporate culture (Kolesar, 1995).

In the studies conducted by Curkovic et al., (2000) and by Douglas and Judge (2001) a positive relationship was also shown between TQM and financial performance.

However, the results derived by the studies were contradictory. The first, assessed the level of implementation of TQM dimensions in relation to a company's operational performance and then compared these results with their competitors' performance (Use of 8 variables). Six different financial and market related variables were used as financial performance criteria. The second study, assessed the consequences imposed on a company's organizational structure from the relationship existing among the TQM elements and the company's financial performance. The main conclusion derived was that only some of the TQM elements affect a company's financial performance. Those were the ones that have mainly determined the TQM's maturity level, as for example the quality culture and/ or the appraisal techniques.

Onuwa (2008) tried to examine the relationship between the quality management elements and the financial and non-financial performance measures. The study revealed that the client's focus, the human resource capabilities, the internal culture and the organizational alignment, were the quality elements that mostly influenced a company's financial performance. Leadership and commitment were the quality elements mostly affecting the non-financial criteria, like for example the employees and customers satisfaction, the organizational learning and the process efficiency.

Douglas and Judge (2001) also showed a strong positive relationship with all the seven quality dimensions[4] they used. However the significance of that survey, was the high correlation identified between all the TQM elements and all the financial performance measures they used. It revealed the strong relationships between the successful implementation of TQM elements and the change in a company's philosophy, with the control procedures applied and the maturity level of quality recognized.

The use of the TQM elements from an SME, in the process of implementing TQM, requires considerable energy from all its stakeholders and particularly from its employees. This could result in their being distracted from their main tasks, which in turn would negatively influence a company's overall financial performance, ultimately leading to a reduction in the company's return on investment (ROI) ratio. . Given that certain financial goals would be missed, potentially the whole system may fail (Price and Chen, 1993).

What really matters is to understand that TQM is adopted not just because of the company's internal needs (cost minimization and quality improvement), but because

[4] 1. Top management support, 2.Quality information, 3. Process Management, 4. Product design, 5. Workforce management, 6, Supplier involvement, 7. Customer involvement

of external tensions realized. Tensions that arise due to their strong level of competition and the higher level of their performance evaluation criteria. In addition to the above and given that the availability of the needed financial information, are not easily accessible -especially from the non-listed companies- the use of a 'self-assessment' technique could be used from the researchers. This technique could eliminate bias and subjectiveness from the survey and its conclusions (Watson et al., 2003).

4.5. Measuring Financial Performance with Ratio Analysis

The most traditional, quick and reliable method used in measuring a company's financial performance is the ratio analysis. In almost all articles that have been studied, related to searching for the ways different researchers have attempted to measure a company's operational and financial performance, ratios were among the criteria they have used. Measuring and analysing the financial ratios gives the opportunity to stakeholders and analysts' to evaluate the operating and financial performance of a company (Hirt et al.. 2013).

Financial ratios acquired from a company's financial statement data are capable of offering valuable information regarding its overall performance. The use of the financial statement's historic data, can support management's forecasting process and the valuation of its financial performance, as well as its financial and competitive position within the market (Ross et al., 2007).

Ratio analysis, offers a company the opportunity to have a clear and unbiased representation of the environmental conditions it operate in. It also supports management in all types of decisions it has to make and it can be used as a tool to identify possible abnormalities in a company's behaviour and detect future corrective actions (Voulgaris et al., 2000).

The questions that may arise in the evaluation process of a company's financial performance, are related to the selection and use of the appropriate parameters which originate from its micro and/ or its macro-economic environment.

Various studies, have used different ratios or groups of ratios in order to identify a company's operational and financial performance. In their study, Hall and Weiss (1967, cited by Erdoğan et al., 2015) supported a positive relationship among a company's profitability and its size. They also identified the impact of policy changes on financial performance, highlighting major consequences such as the reduction of employees,

the narrowing of operational activities and the decrease of operational costs. Icerli and Akkaya (2006 cited by Erdoğan et al., 2015) also established that liquidity ratios, can significantly be used to evaluate a company's business performance.

The ratios most commonly used in ratio analysis, include among others, the return on assets, the return on equity and the profit margin ratio. Researchers have additionally incorporated a number of qualitative variables, such as customer's satisfaction and the company's competitiveness into their models. (Klingenberg et al., 2013).

Models that were developed in measuring an SME's operational and financial performance have used the organizational performance measurement (OPM) system. The OPM was developed by Channell et al., in 2000, integrating performance measurement techniques suitable for small enterprises (IPMS) that were developed by Laitinen in 1998 (Munir Ahmad & Alaskari, 2014). Laitinen tried to identify the financial performance of SME using selected financial ratios in measuring a company's profitability, liquidity and solvency competences. In his research Laitinen, selected two dimensions the internal and the external dimension, with their equivalent criteria. The external dimension, was used in measuring a company's financial performance and competitiveness and the internal dimension, was used in realizing and measuring the level of their costs, their activities, their products, their revenues and the determinant factors of their production processes.

Klingenberg et al., (2013) conducted a similar study, in which the aim was to identify any relationship between a company's operational innovation and its financial performance. Innovation was accomplished through introducing lean management and JIT production techniques. Using profitability ratios like the return on assets (ROA), the return on equity (ROE) and the Basic earnings power (BEP) ratios; inventory management ratios, like the inventory turnover ratio; it was found that no relationship existed amongst the variables.. This could be explained from the fact that that the company's profitability was influenced heavily from its exposure to an increased debt financing and reduced operational performance.

Various studies, have measured a company's financial and operational performance, with a myriad of different ratios. In their research, Gombola and Ketz (1983), used 58 ratios. Ho and Wu (2006), used 59 ratios, and Uyar and Okumus (2010) used only 15 ratios. Among all the studies that have tried to measure a company's financial and operational performance, a number of ratios (twenty to thirty) were common and were considered crucial for that measurement (Delen et al., 2013) and those are presented

in Table 18 that follows. From all the ratios shown in each different category, specific ratios were the ones chosen and used in this survey as being the stricter in evaluating a company's (SME) financial performance.

Table 18: Financial Ratios (Delen et al., 2013)

Liquidity Ratios	
Quick Ratio	(Current Assets – Inventory). / Current Liabilities
Liquidity Ratio	Current Assets / Current Liabilities
Cash Ratio	Cash and Cash Equivalents / Current Liabilities
Asset Utilization or Turnover Ratios	
Receivable Turnover Rate	Sales / Accounts Receivable
Inventory Turnover Rate	Cost of Goods Sold / Inventory
Net Working Capital Turnover Rate	Sales / (Current Assets – Current Liabilities).
Asset Turnover Rate	Sales / Total Assets
Equity Turnover Rate	Sales / Owners' Equity
Fixed Asset Turnover Rate	Sales / Fixed Assets
Long-term Assets Turnover Rate	Sales / Long-term Assets
Current Assets Turnover Rate	Sales / Current Assets
Profitability Ratios	
Gross Profit Margin	Gross Profit / Sales
EBITDA Margin	Earnings Before Interest, Tax, Depreciation, and Amortization / Sales
Net Profit Margin	Net Income / Sales
Earnings Before Tax-to-Equity Ratio	Earnings Before Tax / Owners' Equity
Return on Equity	Net Income / Owners' Equity
Return on Assets	Net Income / Total Assets
Operating Expense-to-Net Sales Ratio	Operating Expense / Net Sales
Growth Ratios	
Assets Growth Rate	(Total Assets – Total Assets$_{t-1}$). / Total Assets$_{t-1}$
Net Profit Growth Rate	(Net Income – Net Income$_{t-1}$). / Net Income$_{t-1}$
Sales Growth Rate	(Sales – Sales$_{t-1}$). / Sales$_{t-1}$[5]
Asset Structure Ratios	
Current Assets-to-Total Assets Ratio	Current Assets / Total Assets
Inventory-to-Current Assets Ratio	Inventory / Current Assets
Cash and Cash Equivalents-to-Current Assets Ratio	Cash and Cash Equivalents / Current Assets
Long-term Assets-to-Total Assets Ratio	Long-term Assets / Total Assets
Solvency Ratios	
Short Term Financial Debt-to-Total Debt	Short Term Financial Debt / Total Liabilities
Short Term Debt-to-Total Debt	Current Liabilities / Total Liabilities
Interest Coverage Ratio	Earnings Before Interest and Tax / Interest
Solvency Ratios (Continue.)	
Debt Ratio	Total Liabilities / Owners' Equity
Leverage Ratio	Total Liabilities / Total Assets
Total Financial Debt-to-Total Debt	Total Financial Debt / Total Liabilities

[5] T-1: refers to one period before.

Following the principal component analysis and the factor analysis, Delen et al., (2013) managed to identify the group of ratios that mostly influence the two basic performance measurement ratios, the ROA and the ROE. They identified that 70.4% of the total variance was explained from those two profitability factors. The remaining 11.5% was explained from the liquidity group of ratios, the 9.6% from the asset structure group and the 9.1% from the asset and equity turnover group. The specific ratios identified were the Gross profit margin factor, the debt ratio factor, the current asset factor, the leverage factor, the Net profit factor, the net working capital turnover factor and the sales, the profit growth factor and the asset growth factor. From the analysis conducted, it was evident that the Debt ratio, the earnings before taxes to equity ratio, the leverage and debt ratio as well as the asset turnover and sales growth ratios were considered the most determinant for the ROA and ROE ratios.

In an attempt to examine the impact of quality and process management on the financial performance of Greek SME operating in the construction sector, Kampouridis et al., (2015) used ratio analysis. The researchers specifically selected the cash ratio, the current ratio, the inventory and receivable turnover ratio, the gross and net profit margin ratio, the return on capital and equity ratios and the debt to equity ratio. From the analysis conducted, they concluded that SME's didn't manage to prevent the decline in their financial performance despite having introduced quality in their operations .due to the severity of the crisis conditions they operated in. The incompetence of the ISO 9001:2008 model and the level of implementation of the TQM elements, were not capable of supporting the sustainability of the SME under crisis conditions.

Shahin (2011) examined and compared the financial performance of a single company that had adopted TQM with another three that hadn't. For the analysis, the current and quick ratios, the return on assets ratio, the return on equity, the debt to total assets and the asset turnover ratio were used. Positive correlation between TQM with almost all financial ratios was identified, except with the debt to total assets ratio. It was obvious that the overall financial performance of that single (TQM adopter) company improved more in relation to all other three companies (non TQM adopters).

Considering the severe economic decline that Europe and more specifically Greece are facing in recent years, financial ratios were extensively used in measuring the companies' financial distress rate (showing their probability for bankruptcy) and projecting their financial position in the market in relation to their capital structure policy

that is the relationship between their debt and equity financing level. The use of financial ratios like the debt to turnover ratio and its comparison with the SME's investment strategy and its employment policy were presented in a survey conducted by Lawless et al. (2015).

Over the last years, more and more SME were in a debt overhang condition meaning that their debt was so immense that it was difficult for them to increase it further. So, in order to continue investing in profitable investments they would convince their potential lenders (mainly Banks), to supply them with additional financing, exceeding their allowable limits. Companies incurring a high level of leverage, have also realized a negative trend on their investment opportunities. Having some debt can be considered productive, because it gives a company the possibility to continue its investment strategy. But when it exceeds its debt limits, then the results are reversed. A company with an increased financial distress level would also reduce its productivity (Costanzo et al., 2013). This inverse relationship is stronger when the company has fewer investment opportunities, as this was proved by Tobin's Q Ratio (Q' Ratio) (Lawless et al., 2015).

Altman's z-score is a ratio that tries to identify the level of a company's financial distress. It is accepted and has been used by the market for many years, but its role in influencing a company's strategic plan has not yet been recognized (Calandro, 2007). The Z-score, is composed of a set of four ratios, that examine the level of efficiency, profitability, liquidity and solvency of a public (no-public) held company. The Z-score ratios include the working capital over total assets ratio, the retained earnings over total assets, the EBIT (Earnings before interest and taxes) over total assets and the company's net worth over total liabilities. Each ratio is accompanied by a coefficient that increases or decreases its importance to the function and to the company's distress condition. Specifically,the coefficient assigned to the first ratio is 1.2, to the second ratio is 1.4, for the third is 3.3, for the fourth 0.6 and for the fifth ratio is 0.99. Using the Z-Score ratio a company's financial distress condition is measured. If the ratio is greater than 2.60 the company is in risk (safe zone),if it is lower than 1.10, then the company is most likely going to go bankrupt (distress zone) and when the ratio is in between 2.69 and 1.10 then the company is at risk of financial distress and bankruptcy (grey zone). (Calandro, 2007).

The critical value of the z-score ratio for all companies tested is a score of 2.675 (Pan, 2009). The applicability of the model in measuring a company's management

performance including risk management, has been statistically tested from a number of scholars, like the Carton and Hofer (Calandro, 2007).

Different methodological models suitable for evaluating an SME's performance have been developed like the discriminant analysis (DA), the logit and probit analysis (LA, PA) and the UTATIS analysis. All three, are sustainable econometric multivariate techniques that attempt to find ways of allocating different values or scores to different formed groups.

Voulgaris et al., (2000) stated that the UTATIS models should be considered as the one that presented the highest classification accuracy. However the PA (Probit Analysis) model was the model that showed the best results in classifying SME into three different groups, namely the "dynamic", the "medium" and the "weak" group. The "weak" group was the one containing the most companies faced with financial distress and the possibilities of business failure. Data collected referred to the period of 1988-1996 and twelve financial ratios were used.[6] The analysis revealed the increase in the number of the dynamic SME in relation to the other two groups, due to the changes and improvements which took place in the economic and the social environment in Greece during that period, which increasingly supported dynamic and risk taking companies.

Among all the ratios used in the UTATIS model, a number of ratios showed higher significance than others. The ratios with the higher significance were the inventory turnover, the fixed asset turnover, the solvency ratio, the working capital ratio and a number of profitability ratios like the operating profit margin, the net profit margin, the ROA (Return on Assets) and the ROE (Return on Equity). From their behaviour, it became clear that the Greek SME operating in a booming market, would have managed to efficiently and effectively employ all the needed inventory management policies and the working capital management policies to improve their ability of utilizing their productive assets (fixed assets) (Voulgaris et al., 2000).

4.6. Concluding Remarks

Given their significant role in the Greek economy, SME need to be adequately equipped to face the financial distress conditions brought on by the crisis.

[6] The current ratio, the quick ratio, the debt to assets ratio, the long term debt to assets, the long term debt and Equity to total fixed assets, the new worth to capital, the current liabilities to total assets, the inventory turnover, the fixed asset turnover, the profit margin, the profits to Equity and the net profit to total assets.

However the inefficient public sector, the inability to receive external finance, the high taxation levels and the high unemployment rates, have led to the dissolution of almost one third of the Greek SME.

Those companies which have managed to survive, experience growth at a rate lower than that of the remaining European Union members, due to the austerity measures imposed on the Greek economy from its creditors. Possible causes for that is the Greek legislation that tremendously reduced their productivity, their innovativeness and their ability to raise new funds. Somewhat encouraging is the fact that the SME operating in tourism and high technology sectors, have experienced growth. Based on crisis management theory and on the research by Seeger et al. (1998) who proposed that SME should reform their organizational structure, incorporating into their quality plan a strategic plan, with the aim of establishing a cultural environment geared towards "excellence". It is agreed that a strategic plan should positively contribute in further implementing the quality elements and support the SME financial performance. Quality contributes to a company's and in particular an SME's financial performance but the limited set of variables used and their subjective character due to the individual perceptions used reduces their results value. So, the relationship existing between TQM and financial performance is a pending research question which will be further examined in the current survey.

To measure operational performance and the level of an SME financial distress, financial ratio analysis was adopted. Different surveys have proposed different financial ratios, but the ratios more commonly used were the ROA and ROE ratios, the current ratio, a set of turnover ratios and the Debt to Equity ratio. The Altman Z-score, despite criticism has been used, has been statistically tested and proved its contribution in measuring a company's financial performance and because of this it will be one of the ratios used in the current survey

Chapter 5
Research Methodology

Chapter 5. Research Methodology

5.1. Introduction to Chapter 5

The theoretical perspective, the research design and methodology approach used in collecting, processing and interpreting the primary and secondary data, are presented in this chapter. The aim of the survey is to address the research objectives and manage to obtain comprehensible results that are, relevant to the research question, and contributable to the academic and professional knowledge.

This chapter has seven sections and a number of subsections including the introduction. Section 5.2 examines possible alternative research approaches and analyses the approach selected and used in the current survey. Section 5.3 defines and examines the possible quality variables and the ones selected for determining the quality level applied in a company and an SME. Section 5.4 explicitly describes the methodology followed for the qualitative survey conducted, while section 5.5 and its subsections depict the methodology used in the quantitative survey. It also includes how the decision for the sample size was taken, how the design and development of the questionnaire was made as well as which statistical methods were used in the data and financial analysis. Section 5.6 shows the methodology followed for the collection and analysis of the financial data (secondary data) used in examining the SME financial performance. Section 5.7 acts as a summary of what has been delineated in this chapter, and includes a short introduction of what will follow in the subsequent chapter.

The flow of the above referred methods and techniques is presented in the next page.in Figure 17 supported by the ACG[7] e-project software and the Hellastat i-mentor database.

[7] ACG: American College of Greece (Deree College)

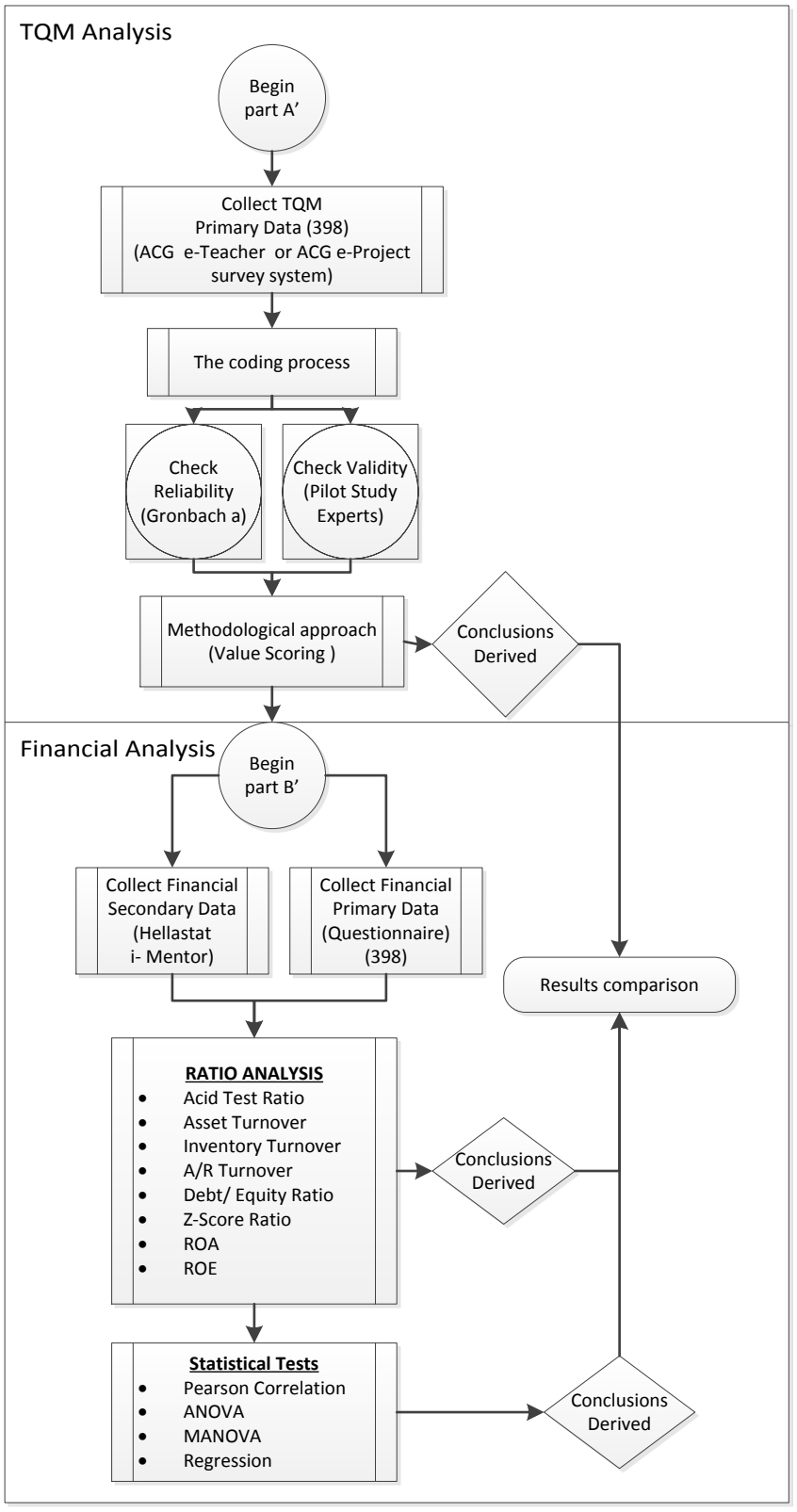


Figure 17: Data Analysis Methods & Techniques

5.2. Research approaches

When developing a survey and adopting a research methodology a researcher has many strategies to choose from. Understanding of the weaknesses and the strengths of each strategy and methodology approach, can assist the researcher in making the appropriate choice. Within this context, different philosophies, strategies, techniques and methods used in collecting data are presented. These are supported from the appropriate quantitative methods available in analysing the data collected and contributing to the results and conclusions derived (Rudestam and Newton, 1992).

A researcher's objective is to search for possible answers on different research questions. This should be achieved using scientifically approved methods and procedures in collecting and processing the available data. In literature, a number of different methods and procedures exist. They all aim at assisting the researcher in collecting the needed information, in order to give reliable and unbiased answers to the selected research question(s) (Rudestam and Newton, 1992). Understandably the researcher has to prepare to be flexible if he/she wants to obtain answers, given that there is no right way of doing things in a research process. There will always be alternatives and decisions to be made for selecting the correct avenue. That is why the researcher needs to develop the strategy design. The decision taken, whether it is the right one or not, will be based on the researcher's available resources and the number of available alternatives (Robson, 2011).

As Robson (2011) states, the "real world" research, can be fixed and quantitative or flexible and qualitative. He admits that experiments have proven that the fixed ones are superior. He also supports that research, needs to be systematic, sceptical and ethical, offering conclusions of high quality, useful and socially responsible.

A researcher who conducts a survey needs to experiment, examine and investigate possible alternatives, following a systematic, critical, logical and objective method ("Impediments to the Adoption of Total Quality Management (TQM) in Jordanian ISO 9000 series Certified Manufacturing Companier Faisal Nayef Al-Madi Management and Management Sciences Research Institute School of Management Faculty of Business and Informat", 2005).

Considering that for the research design different approaches exist, Gill and Johnson (1997) found that the design depends on the number of variables examined in a survey. These variables, should be related to the amount and the type of information needed so their processing will allow the research question to be answered. In

addition, the type and the kind of the research question plays a role in the research design selection process.

In that process, it is vital to decide if the strategy followed is going to be a fixed, a flexible or a multi design strategy. The researcher also needs to decide if the survey is going to be an evaluation type or an action type survey (Robson, 2011). Defining the purpose of the survey, will help a researcher choose the most appropriate strategy. In turn the purpose of the survey, can be defined based on the survey's research question and sub-questions, as well as the tactics of the inquiry used.

Different perceptions exist regarding the quality of the research design. Gill and Johnson (1997) support that using a number of variables in a research is what will bring a solution to a problem in the most efficient and effective way. Oppenheim (1992) alternatively believes, that the suitability of a survey is what really matters. Blaxter et al., (2002) additionally place importance not only in identifying the "true" answer to a question, but also in developing a research that will be characterised by reliability, professionalism, honesty and feasibility that will reveal the "true" answer.

Included in a strategic research design are the different plans that describe the stages that should be covered. The stages refer to the research paradigms available to the researcher and the strategies and the approach that could be used. Following that is the methodology the researcher adopted for the data collection and the techniques used for their analysis and evaluation. Eventually this will reveal if the research's aim and objectives have been fulfilled (Creswell, 2003).

Table 19: Methodological Approaches

Positivism research Approach (Associated Methodologies)	**Phenomenological Research Approach (Associated Methodologies)**
Cross sectional studies	Action research
Experimental studies	Case studies
Longitudinal studies	Ethnography
Survey	Feminist perspective
	Grounded theory
	Hermeneutics
	Participative enquiry

Source: (Collis and Hussey, 2003)

The positivism (traditional) and the phenomenological approach are the two research perspectives that a researcher can adopt. In Table 19, the two research approaches and their equivalent methodologies are presented. “Perspectives” refers to the beliefs that the researcher has regarding the way the research components will be combined and how they will be used, in order to come to conclusions (Wisker, 2001; Saunders, et.al. 2003)

Positivism, as an approach is used by researchers, mostly in natural science research. It involves the use of objective methods and not subjective ones. With the term “objective” it is meant that the methods are based on hypothesis that needs to be tested, the researcher is assumed to be independent, and the variables selected are analysed using quantitative techniques. It mostly entails the decomposition of a problem that can and will be vertically and horizontally analysed using a cross sectional analysis (Collis and Hussey, 2003; Robson, 2011).

Johnson and Duberley (2003), have identified that in the management discipline, positivism, continues to be the most adopted epistemological method for research, despite its strong criticism.

The criticisms imposed on it, revealed the phenomenology method. The basic principle of governing that method is that all social events are images of the human mind. Reality can be presented only with quantitative means and humans cannot be treated as a “social unit”, but as a unit that has its own perceptions. Humans shouldn’t be treated as a scientific object, but as a partner who with his character, personality and beliefs, will contribute positively to a survey’s conclusions (Robson, 2011).

What phenomenology approach (post-positivism perspective) states, is that there is a need to take into consideration the differences existing between humans and objects. It requires from the researcher to subjectively consider the role of the social factor (Bryman, 2004). The way people think, feel, interpret phenomena and needs to be considered under the phenomenological approach.

However it is thought that the positivism’s approach variables, like the research hypothesis, the researcher’s values and the related theories, could potentially influence a survey’s outcome (Ghauri, et. al., 1995).

So, Collis et al., (2003) and Bryman (2004), concluded that there is a difference between the social and the natural science. Each one of them requires different research procedures and each one emphasizes and places different varying degrees of importance on the human factor and its characteristics.

Table 20: Contrasting assumptions of positivist and Phenomenological paradigm Easterhy-Smith et al., (2002)

Elements	Positivism	Phenomenological
I -The observer	Must be independent	Is part of what is being observed
2- Human interest	Should be irrelevant	Arc the main drivers of science
3- Explanations	Must demonstrate causality	Aim to increase general understanding of the situation
4- Research progresses through	Hypotheses and deductions	Gathering rich data from what ideas are induced
5- Concepts	Need to be operationalised so that they can be measured	Should incorporate stakeholder perspectives
6- Unit of analysis	Should be reduced to simplest terms	May include the complexity of “whole” situations
7- Generalisation through	Statistical probability	Theoretical abstraction
8- Sampling requires	Large numbers selected randomly	Small numbers of cases chosen for specific reasons

The assumptions imposed from each different method shown in Table 20 can, under different conditions, be merged or compromised as this is proposed by Easterby-Smith et al., (2002). This action would manage to bring the best results from the survey conducted given that the advantages of each method could be utilized.

The assumptions considered under both approaches (positivism and phenomenology) are the ontological, axiological, epistemological and methodological assumptions (Creswell, 1994). The ontology of a survey deals with the real conditions that the individual is influenced by. If the conditions are external to him or if they are imaginary, that means that the actual conditions realized are seen as objectively as possible. So, if they are not influenced or seen subjectively from a researcher (*realism*), but instead they were seen objectively, this would complicate the survey even more (*nominalism*). Researchers consider as a given that the involvement and perception of the individuals is what determines and influences the phenomena. For the current survey, it was valid

to consider that the use and the level of implementation of quality, could not be measured separately from the elements that characterise the company and the manager(s) who control it.

Realism, the perception that neither the company nor the managers' characteristics influence or determine the phenomena, explains how they could respond to those. Their response would not be affected from what they (managers) really believe or from what their internal characteristics (companies) are, but instead would be based on how they will be influenced from those and by other external factors. In the current survey, both approaches were adopted. The first, *nominalism*, was adopted for the qualitative research conducted (interviews) and the second, *realism*, was adopted for the quantitative research conducted (survey). The selection of the first (nominalism) for our study was due to the close relationship that exists between the decision for further implementing the quality elements and the characteristics of the company and the owner who controls it. The selection of the second (realism) was based on the assumption that objectivity is needed in order to understand and explain reality. No perceptions or beliefs should change or influence the description of what is actually happening. Under the objective approach, a problem should be identified and formulated, equivalent hypothesis or hypotheses should be defined based on the related data collected and analysed. Then the results from the subsequent analysis would lead the analyst to either accept or reject the hypothesis (Tull and Albaum, 1973).

The next group of assumptions is the *Axiological*, which can be either *deterministic* or *voluntaristic* (Burrell and Morgan, 1979). In the deterministic perception it is presumed that individuals' responses to their external environment are based on the assumption that they are an extension of the environment they operate in and that they are "shaped" from it. On the contrary the voluntaristic perception, assumes that the external environment is "shaped" from just the individuals (Creswell, 1994).

For the current survey, the *voluntaristic approach* was deemed suitable for the qualitative survey. It was considered that the individual's perceptions, values and beliefs are the determinants for implementing quality and the TQM elements in SME. The *deterministic approach* was then used for the quantitative analysis. It was chosen based on the premise that the selection of the quality elements and how they will be reinforced, is mostly based on the experience, training and education of the managers responsible for implementing them.

The *epistemological assumption* is related to the body of knowledge that a researcher will accept and use in his research analysis (Hussey and Hussey, 1997). It is related to what the characteristics that make that body of knowledge suitable and acceptable from a specialty (Bryman, 2004). In literature, variants assumptions exist regarding epistemology, like the *positivism, interpretivist, objectivism, subjectivism, constructionism* and *anti-positivism* (Burrell and Morgan, 1979). For *objectivism*, knowledge is achieved independently of the individual's perception and is based on what is easily identifiable and measurable. For *subjectivism*, the knowledge comes from the analysis of the subject itself. For *phenomenologist* the knowledge is based only on the phenomenon examined. For *constructionists* the body of knowledge is simply built from the beginning, using the individual's and/ or the group's perception and experience as building blocks.

The methodological assumptions are related to the process followed by a researcher. *Inductive* and *deductive* are the two methodological approaches that can be followed. In the first *(inductive),* the researcher is guided from the remarks collected in order to develop new theories; and in the second *(deductive),* the researcher is guided by the remarks in confirming and validating existing theories (Chileshe, 2004). Literature revealed that for quantitative surveys, the *confirmatory* and *inductive* assumptions are mainly used compared to qualitative surveys in which the *explanatory* and the *inductive* assumptions are chosen (Trochim, 2001). For the current survey and for the purpose of identifying the level of implementation of the TQM elements in the Greek, ISO certified SME and determining their influence on their financial performance, the triangulation approach was the selected methodology. Under this approach a combined set of methodologies are used in order to explain the same observations. It was considered that this approach would give a better understanding of the quality dimensions that influence the implementation of TQM. It would reveal the SME sustainability in the market given the remarkable economic, social and cultural changes that have taken place in the last eight years (Sieber, 1973). Using both approaches to support the current survey's aims and objectives will make the results derived more reliable and realistic. The interviews conducted and the questionnaires distributed would offer a better understanding of the level of quality implemented in the Greek SME. It would allow the strengths of the one approach to overcome the limitations of the other.

In the current survey, positivism is used as the basic approach for conducting the research supported from the phenomenological approach. The reason for this

selection is the belief that when a survey appeals to companies that have different organizational issues and management disciplines, positivism is the most appropriate approach to use. In addition, when a survey attempts to reveal the perception people within an organization have for quality, the phenomenological approach is the most appropriate approach to use. (Robson, 2011)

To select the appropriate research strategy for the study,, Table 21 below shows all the possible strategies (methodologies) used in developing the survey's research strategy.

Their categorization is based on the paradigm selected (meaning that it is based on the theoretical model used in the research).

Table 21 shows Yin's (2003) perspective regarding the variables used in deciding which research strategy to use.

Table 21: Research Strategy selection variables (Yin, 2003)

Strategies	Form of research question	Required control over behaviour	Focus on contemporary event
Experiment	How, Why	Yes	Yes
Survey	Who, What, When, How many, How much	No	Yes
Archival Analysis	Who, What, Where, How many, How much	No	Yes, No
History	How, Why	No	No
Case study	How, Why	No	Yes

The variables examined will enable the researcher to decide on which is the most appropriate strategy to follow; what form the research questions will have; the control on the participants' behaviour and the focus on any possible contemporary events.

Under the perspective of Johnson and Duberley (2003) as well as Robson (2011), survey strategy is the most commonly used positivistic strategy that best fits the management discipline and the research needs.

Positivism was the paradigm and survey the methodology selected for the current study. The aforementioned have been identified in literature as the best fit for the needs of a social survey. They both support that for accomplishing the expected outcome of a survey, the research question and the survey's aims should be supported from the use of a set of suitable statistical methods.

Three are the available research type surveys, the exploratory, the descriptive and the explanatory. For this survey, the last two were considered the most appropriate for the research question and the survey aims (Babbie, 2004).

The descriptive type of survey tries to identify and explain the behaviour of a set of variables, taken from a population's sample. For that, the use of a structured questionnaire completed from a number of respondents is needed. This type of survey would reveal the characteristics of the TQM implementation process, its element dimensions, and the importance of each dimension for the successful implementation in an SME.

But just the descriptive survey is not capable of reasoning the consequences of its implementation. This is why there is also a need to use an explanatory survey that will improve the overall understanding of the survey. The explanatory survey will identify if and by how much one variable influences all others individually. The longitudinal and the cross-sectional type of survey are characterised as descriptive studies. Given its low cost and its immediate feedback, the cross sectional type of survey was selected and used in this survey (Churchill, 1999).

In selecting the appropriate methodology for the survey, a researcher can choose among the qualitative and the quantitative approach and select the one that best fitted the research's needs (Robson, 2011).

However according to Blaxter (2002),,the two approaches could be combined,, offering more flexibility. There is no rule(s) regarding what to do and which method to select. It is supported nonetheless that for conducting a survey the most appropriate method to use is the quantitative one (Ghauri et al., 1995).

Table 22, presents a list of key features which characterise the two different survey approaches (Philips and Pugh, 2000).

Table 22: Survey Approaches (Philips and Pugh, 2000)

Qualitative	Quantitative
Uses small samples	Uses large samples
Concerned with generation of theories	Concerned with hypothesis testing
Data is rich and subjective	Data is highly specific and precise
The location is natural	The location is artificial

Qualitative	Quantitative
Reliability is low	Reliability is high
Validity is high	Validity is low
Generalizes from one setting to another	Generalizes from sample to population

From the analysis conducted previously, it was clear that positivism is more related to the quantitative approach and can be considered superior to the qualitative approach (Johnson and Duberley, 2003; Robson, 2011).

Following the quantitative survey data collection and analysis, conclusions will be derived. The conclusion(s) derived should be unique, irrespective of the person who conducted the survey. Attention should be paid to the control of the data the analysis of which would lead to deriving the conclusions.

According to Robson (2011) and Collis (2003) a quantitative survey should :

- Be objective (the outcome should not be influenced from the researcher)
- Be comparable and replicated
- Be reliable and valid
- Should address the research question which needs to be verified
- Assist the overall research through its simplicity and contribute to making the analysis of data easy

A quantitative analysis is less appropriate however, when the survey conducted aims at examining an event or condition in depth instead of examining a specific moment of an event or condition (Arnamtunga et al., 2002).

The availability of the required resources and the methodology selected in organizing the collected data is of a great importance. Using the cross sectional type of survey, a large number of data will be collected for a specific period of time (2008-2014). The data collected allowed the researcher to examine and answer the developed research question and sub-questions. The results were statistically tested in terms of their validity and reliability using an appropriate statistical package (E-Views and SPSS) and the final results were interpreted.

A research design and the methods used in order to give an answer to the survey's research questions and aims were selected. The research design was considered as the plan based on which data were collected and analysed (Yin, 2003). It contributed in identifying the methods that should be used for collecting, measuring and analysing

the needed set of information (Zikmund, 2003). Supported from the research methodology, referring to the methods and approaches used, an answer to the survey's research questions was obtained.

The research question in this survey is about determining the degree to which TQM elements have been implemented in the Greek ISO certified SME, and how this has affected their financial and operational performance. It will try to provide evidence that the Greek SME are better able to deal with the Greek crisis conditions, if they have continued their journey towards quality through implementing quality elements.

5.3. The Quality variables

For conducting the qualitative and quantitative survey, it was necessary to firstly identify the set of variables that would be used in determining the level of TQM implemented in SME. With the term "variables", we refer to the quality characteristics and properties that can be identified and measured (Nachmias and Nachmias, 2000). Different types of quality variables exist and are used in different surveys. In this study, the quality variables, were used as a means of identifying any causal relationships, meaning how they caused a specific outcome, i.e. if they caused any change (improve or worsen) in the level of quality implementation or if they caused any change in their financial performance. The existence of causal relationships, could help reveal which operational and/ or financial activities have been changed and the degree of that change.

The first group of variables used were the quality elements that support the TQM implementation in a company and more specifically in an SME. These were the quality tools and techniques, the quality processes, the performance appraisal and the quality culture. Secondly, the size of SME based on the number of employees they employee was used, to unveil three categories the Micro, the Small and the Medium SME. As it is explained in literature, SME are categorized into different groups based on different criteria. For their categorization, staff headcount was used similar to the criterion used by the European Union's directives. The Micro SME employed less than 10 persons, the Small SME employed 10 to 49 employees and the Medium SME employed 50 to 249 people. Companies that employed more than 250 employees are characterised as large Companies.(SBA, 2014a)

The identification of those variables came from a series of valid and ratified models used from different researchers that tried to examine the TQM implementation level in companies and more specifically in SME. The main sources used for the identification

of the quality variables adopted in measuring an SME's quality level was the S-P model developed by Saunders and Preston in 2006. In addition, other quality variables found in literature which have been developed and tested by different researchers in their attempt to identify the implementation level of TQM to SME were used. Among those were the surveys conducted by Hunt (1993) and the survey developed by Dandekar (2012). The selected variables constituted the basis for which the current survey's variables were identified and adopted.

To strengthen the survey's statistical analysis, the conversion of the variables used from ordinal to categorical was made. That is, instead of scoring the quality elements on all the ISO certified SME, they were scored after they were grouped, into different categories using size as the criterion. That criterion, given a number of other criteria available, i.e. the asset value, the liability or equity value, was selected as being in congruence to the effects that the size of a company has on its operational and financial performance (Bourlakis et al., 2014; Sedliacikova et al., 2016).

A third group of variables was also included, referring to the financial ratios used in supporting an SME's financial performance, explained from their liquidity, profitability, efficiency and solvency status. The specific group of variables are explained in a following section.

5.4. Phase One: The Qualitative Data Analysis: Methodology

Considering that a research area is clear and understandable, the use of the qualitative approach in exploring the key research areas in detail, can further reinforce a study's validity factor (Boynton and Greenhalgh, 2004). Another reason for conducting a qualitative survey was the opportunity the researchers had to verify the quality of the questions included in the questionnaire that was used in the quantitative survey conducted in phase two. This would allow the collection of information regarding the SME manager's actions and their intention to continue or discontinue the quality implementation process.

Qualitative data are frequently used as supplementary to quantitative data collection and analysis. The objective is to compare and contrast both sets of results. When a qualitative analysis is conducted as supportive to a quantitative survey, a small amount of data and a simple analysis justifies the conclusions derived (Robson, 2011)

The main characteristics of a qualitative survey which are simultaneously the main differentiators from a quantitative survey, are that it is more flexible, it can be used in

different conditions and it is capable of revealing information that are intentionally or unintentionally hidden.(King, 1994).

According to Brownell, (1995) the benefits derived from a qualitative survey and the use of interviews are:

- their flexibility - they can be used under different conditions,
- their high response rate,
- they allow the interviewer to identify non-verbal responses from the interviewees,
- they promote higher cooperative and communicative skills,
- they allow the interviewer to have better control and coordination of the communication,
- they allows the interviewer to have control over the sequence of the questions and clarify any misunderstandings,
- they allow the interviewer to have an instant follow-up,
- they allow the interviewer to introduce new and unrecognized issues that were revealed during the interview.

However interviews have a number of disadvantages with the most crucial being the bias of the interviewer, the high cost in terms of its value and in terms of the time used.

Different type of interviews exist, depending on the way the questions are offered to the interviewees and how the responses are controlled. The three possible type of interviews noted in literature are the structured, semi structured and unstructured type of interviews (Creswell, 2003). The current survey uses the semi-structured type of interviews which allows the interviewer to ask general and diverse type of questions and collect a large amount of valuable information (Bryman, 2001). An additional advantage of interviews is that they allow the interviewer to ask for clarifications so the meaning of the interviewees' responses are better understood. It also allows the introduction of topics and questions that were not included in the original set of questions, but were revealed during the discussion of the two participants.

The existence of biases originating either from the interviewer or the interviewee, requires that steps be taken to ensure the reliability of the information collected. The clarity of the questions asked is what could minimize the interviewer's bias. The possibility the interviewer states the question in such a way that will pre-determine or direct the interviewee's answer, should be eliminated. Also, during the interpretation of the interviewees' statements, the personal intervention of the interviewer may also cause bias in the results of the survey (Robson, 2011). Additionally, the lack of

standardisation in the interview process usually causes bias from the side of the respondent. The validity of the interview, also needs to be secured considering that the results derived from it should show the existence (or absence) of a relationship between the variables examined (Saunders et al., 2003). Designing an interview, having as controllable variables not questions, but the themes that support the questions is a means of overcoming the possibility of being biased, and not misinterpreting the interviewee's questions. Interviewees' responses were recorded into forms and confirmed by them for their accuracy via email, before they were processed for analysis.

The methodology approach used for their analysis was the thematic coding approach. Codes were defined and themes were formed, relevant to the research questions.

The themes defined and the codes chosen are presented below:

Section 1'	
Theme: Quality Culture	**Codes**
	Awareness of strategic challenge
	Vision for the future
	Innovation
	Quality Policy/Philosophy
	Value systems/ ethics
	Top Management Involvement
	Visible Commitment to Goals
	Role in Quality Improvement process
	Concern for improvement
	Systems/ Structure for Quality Improvement
	Awareness of Productivity/ Quality issues
	Attitudes/ Morale
	Cooperation
	Involvement
	Perceptions of work environment
	Social Interactions
	Task Characteristics
	Consequential constraints
	Customer Orientation
	Communication

Section 2'	
Theme: Quality Processes	**Codes**
	Job Analysis
	Higher Authority
	Quality Emphasis
	Top Management Leadership
	Customer/ Service Activities
	Define Improvements
	Unit Goals
	Organizational Goals
	Quality Planning
	Planning Strategy
	Organizational Streamlining
	Investment/ Appropriate Technology
	Methods/ Process Improvement
	New Ideas
	People-oriented Input
	Track Progress
	Measurement
	Feedback
	Evaluation
	Results
	Awards
	Personnel Evaluation

Section 3'	
Theme: Quality Tools & Techniques	**Codes**
	Assessments
	Definition of Tools
	Measurement / Process Analysis
	Awareness / Communication
	Organizational Development

Section 4'	
Theme: Performance Appraisal	**Codes**
	Work Flow/ Delays
	Waste
	Tools/ Equipment
	Staffing
	Facilities
	Training
	Supplies/ Parts
	Organization/ Group Structure
	Customer Quality Survey
	Quantity
	Reliability

The more codes identified in the interviewee responses, the higher the weight assigned to the respective theme related to the TQM elements examined.

The scale and rates used for each theme are shown below:

a/a	**Conditions**	**Weight**
a.	Meet ISO certification standards	1
b.	Meet ISO certification standards and goes for TQM	2
c.	Meet TQM standards	3

The score assigned to each theme, increased or decreased the value of each response towards quality implementation.

The average sum of all the participants of all the responses per theme, gives the value of quality theme and the element examined. From the sum of the theme and the element values, the value of quality implementation was identified. The maximum value that could be assigned is equal to 3 and the minimum to 1.

Ten Greek, ISO certified SME were selected from the i-Mentor Hellastat database, sample collected (1,245 SME) and the quality managers responsible for quality issues were interviewed.

The methodology followed in the selection of the ten SME interviewed was the systematic random sampling approach. Following that approach the selection of the

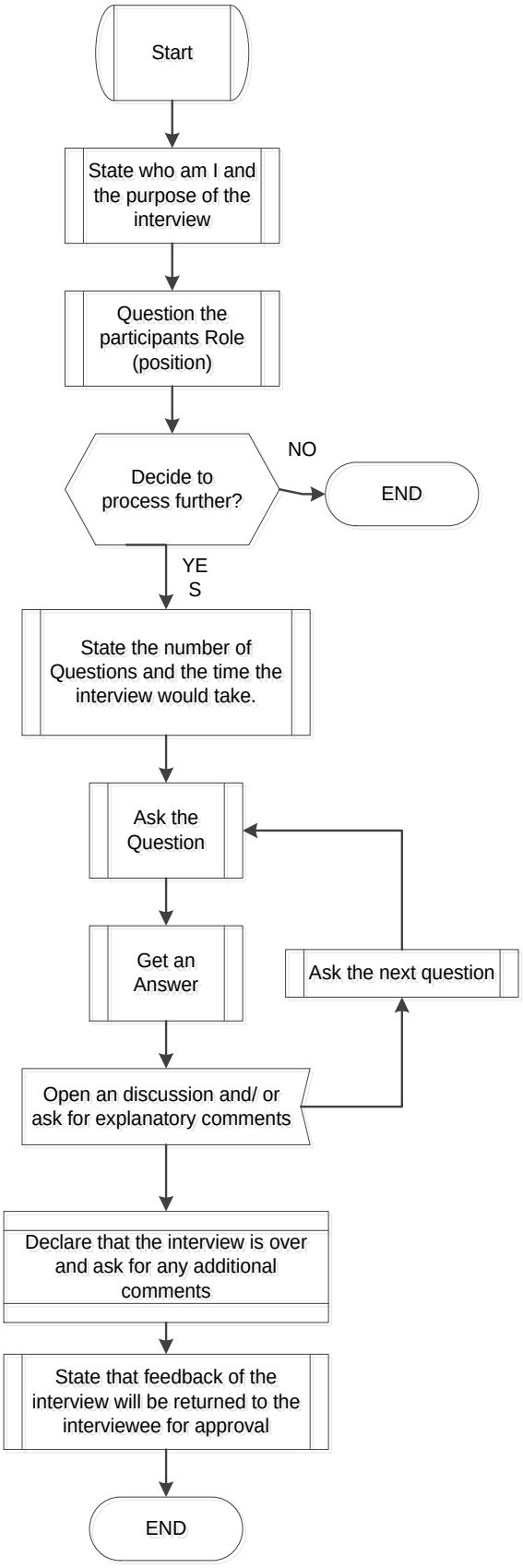


Figure 18: The Flow of Interviews

SME under every ten (10) SME were examined and if they satisfied the aforementioned criteria they were included in the sample.

The criteria for the selection of the companies interviewed were:

- SME had to be ISO certified
- SME had to operate in different industries
- SME had to operate in different areas of Greece
- Interviews were conducted with employees responsible for quality (Quality managers)

There was also a proposal to all quality managers interviewed to complete and the survey's web based survey's questionnaire.

Apart from being ISO certified, SME, were selected based on additional criteria, including being located in different areas of Greece and employing a different number of employees. The grouping of the SME that participated in the qualitative survey was similar in fashion to the quantitative survey.

The interviews were conducted either via skype or via telephone from the author who was trained following a seminar in UH. From the "i-Mentor Hellastat" database a random number of SME email addresses and phone numbers were collected, as described above and their respective quality managers were contacted by email or via telephone

to assess their willingness to participate in the interview. If the offer was accepted an appointment was arranged during which the interview was conducted. It is important to note, that all individuals approached, instantly responded positively to the request. Notes were kept of the interviewee's responses, in hard copy format. For confidentiality reasons, the names of the companies participating in the survey are not shown. Instead, in each form completed a code number was assigned, so it could be processed and filed. For example the first participant's code was the IP-1 (Interview Participant-1), the second's was the IP-2 till IP-10.

During the interview, a form with the questions that would be asked was available as a guide to the interviewer for the process of the interview. In Figure 18 the flow chart presented, shows and describes the structure and the flow of the interviews conducted. It was also crucial for the quality of the survey that the opinions, beliefs and the intentions recorded in each question came from the SME's quality expert. So, the managers responsible for the SME quality issues and the quality assurance certification, support and maintenance (i.e. quality manager, production manager, general manager) were the ones selected for the interview.

The interview form with the list of questions and the design of the interview was assessed by a number of academics and ultimately approved by my supervisors subject to minor corrections and improvements which related to the interview questions and their phrasing in the Greek language.

Through a set of open ended questions (Appendix B) that were asked and discussed with the SME quality managers, the role of quality in their company was determined and the level of the quality elements implemented was identified.

Finally, their perception regarding the overall role of quality in their company's operational and financial performance was questioned.

All interviews begun with the introduction of the interviewer and the purpose of the interview. After obtaining permission from the interviewee to continue the interview, a set of questions related to the demographics of the company followed, i.e. the role of the interviewee in the company, the number of employees, the industry in which the company operates, the period that the company is ISO certified.

The second section, with a total number of six thematic questions, tried to reveal information related to the level of TQM implementation and how each element is perceived. Two questions related to the importance placed on quality tools and techniques element in terms of implementing TQM. With three questions an attempt

was made to identify the role of the quality processes. With another two questions, the SME's quality culture was discussed and with one question the performance appraisal methods and techniques adopted was discussed and analysed. The interviewees were also asked about their perception of TQM as an idea and corporate philosophy and about the limitations or challenges they encountered from its implementation. They were also asked about how they perceived or realized the improvements to their operational activities-, if any existed furthering the implementation of quality.

In the third and final part of the interview, the interviewees were questioned about the company's financial performance. They were asked if they consider quality as being positively or negatively related to a company's financial performance and if its further implementation could result in the increase of the SME's overall value.

It is also important to note, that the interviewer apart from the form with the interview questions also had a list with the critical success factors corresponding to each quality element, as these were presented in table-7 in Chapter two. This helped the interviewer pose the questions in a clear, specific and understandable way.

It was considered as given that the company was a quality certified SME. Having been awarded a certificate from either ELOT or from Bureau Veritas Hellas or from TÜV HELLAS or from any other company authorized to issue standardization certificates, the employees working and the procedures designed in this company where subject to the ISO quality standards.

Regarding the questions in the interview, a set of ten open ended questions (in Greek and in English), presented in Appendix-E' were delivered to the interviewees. The first question, A1, was related to the level of implementing quality tools and techniques in the company's operations. Interviewees were expected to respond that the criterion has been fulfilled to a point that satisfies the ISO requirements. Alternatively that the ISO standards have been fully introduced and effort has been put into further introducing TQM tools and techniques. Another possible response could be admitting that the attempt to fully satisfy the TQM requirements and specifications was made. The second question, B2, examined the rate by which the level of training of the employees engaged in the company's operations, has been improved. Possible responses included that the ISO requirements have been satisfied or that the company has introduced training programs that satisfy the ISO requirements, together with new and more TQM oriented training programs. Another possible answer could be that the

company will attempt to introduce advanced training programs according to the specifications and the needs of TQM.

The next section referred to the level by which the TQM processes had been implemented. Question B1, referred to the level of cooperation and teamwork incorporated into the company's processes. Possible responses to this question included the use of formal and/or informal groups, the use of group evaluation procedures, or the formation of project groups only. Question B2 referred to the level of innovation and creativity that had been introduced to the company's quality processes. Interviewees possible responses included the implementation of the ISO requirement for the development of new ideas, the development of a new ideas plan, the introduction of a new ideas reward package, or the availability of a special fund, suitable for financing new highly rated ideas. Question B3 also referred to the TQM processes and specifically to the "continuous improvement" processes. Respondents were expected to answer either that they use the "continuous improvement" as it is specified by the ISO specifications, or that the "continuous improvement" idea spread over the whole organization, or through formal groups (assigned project) or informal groups (TQM level). Question D1 was developed in order to measure the level of implementation of the company's quality culture. At first the question tried to identify if the company has developed and operated according to a long term quality plan. The company's method of implementing this plan would reveal the elements related to its corporate culture and whether the quality cultural characteristics had been incorporated within it. In question E1, the interviewer tried to identify the extent to which performance appraisal techniques had been implemented into the SME's quality functions. Possible measurements used from measuring the quality cost and the time the company saved from introducing quality in its operations was what this question was trying to reveal. The interviewees' response would be evaluated based on whether they maintain the performance appraisal techniques at a level specified in the ISO standards, or if they had improved them further with the implementation of more advanced techniques (i.e. balance scorecard, six sigma). Finally, question F1 tried to assess the consequences of the TQM implementation level on the company's financial performance. The question referred to possible improvements in the company's liquidity, solvency, profitability and/or efficiency ratios. During the interview, interviewees, where asked about the rates of the ratios found in the i-Mentor Hellastat database during the period 2008-2014. Interviewees were likely to mention one of the following scenarios: an improvement in the company's financial performance, minor improvements in its financial performance, acknowledging that no improvements had

occurred or that the improved level of the quality elements implementation had led to the deterioration of the company's financial performance.

It is important to note that all the aforementioned questions were open ended questions. This meant that during the interview all interviewees were capable as well as encouraged, to propose different ways of answering the questions.

5.5. Phase Two: The Quantitative Data Analysis: Methodology

A quantitative approach gives a researcher the ability to collect numeric information capable of identifying and measuring different experiences, that come from different quality experts who work in the Greek ISO certified SME. (Maxim, 1999)

The selection of the quantitative survey aims at the collection of data that will manage to give an answer to the survey's research questions. The data also have to be statistically tested for their causes and for their relationships (Bryman and Cramer, 2001). An added value to a researcher's survey is the chance to identify something that can also be used in other occasions and surveys (Hussey and Hussey, 1997).

Selecting the most appropriate research design, a survey offers an opportunity to examine a number of social elements that are interrelated or mutually influential. The data collected from the survey conducted, after being analysed, could reveal explainable and rational information. Those could lead a researcher in developing a rational and explainable set of conclusions, models and/ or events. The results derived from it however, should appeal to the whole population and not only to the sample examined. It should also appeal to all the variables examined and to their in- between interrelationships. Following the cross sectional design, the advantages derived are the independence it offers the researcher in what it examines and the availability of the information needed. The method's inability to rationally explain any correlations among the used variables and the (mainly external) factors that influence their behaviour, are thought to be its major disadvantages (Bryman and Bell, 2003).

Given that the survey needs to examine different groups formed from the Greek, ISO certified SME, the cross sectional design, is considered the most appropriate method for comparing them. Under the cross sectional design, the analysis of the variability of the outcome is determined from the different characteristics of the groups being examined (Easterby-Smith et al., 2001).

5.5.1. Sample size selection and use in the survey

Using positivism as the research approach, and the mixed methodology approach (questionnaire and interviews), specific answers were explored as being related to the survey's research questions (Who, What, When, How many, How much). They also focused on the contemporary events associated with the Greek SME quality and TQM implementation level (Yin, 2003).

Regarding the process of collecting the survey's sample, it was important that the sample size be big enough to represent the population of SME that are currently operating in the Greek market. A company would be included in the sample, if it was at first a small in size entrepreneurship (SME), as this is defined in the 2015 SBA (Small Business Act) in Europe and if it was an ISO certified company.

The total population of SME in Greece according to the SBA fact sheets (SBA, 2014a) is equal to 653,944 of which 629,811 are micro companies, 21,669 are small and 2,464 are medium sized companies. The SME that are certified with the ISO-9001 standards, according to a sector study developed by the ICAP Group, the only Greek company that is recognized by the Bank of Greece as an external credit assessment Institution (ECAI), are equal to 6,000 companies. This number of companies will constitute the survey's population from which the sample will be derived. The size of the sample that could give reliable returns, was found with the use of a sample size calculator with a 95% confidence level, and a confidence interval of 6 points. The sample size that the formula returned was 400 SME (Creative Research Systems, 2015). This is also the amount of SME that should respond to the survey in order for it to be statistically significant.

The reasons for selecting the specific sample were:

- ✓ In recent years, the Greek SME have realized the importance of implementing the quality elements and becoming ISO certified. Without having the ISO certification, they couldn't participate in any of the public, private, local or international tenders. Without introducing quality to their operations they were directly and indirectly reducing their investment opportunities.
- ✓ To be ISO certified, the Greek SME have developed and implemented procedures and management processes, which offer them the capability of primarily measuring and valuing their operational performance.

- ✓ That it included SME operating in all the different sectors of the Greek economy into the sample of this survey. Including SME from various sectors of the Greek economy, has improved the reliability of the results derived. Using data selected from a single industry or sector, would reflect deficiencies or peculiarities of that economic sector in the analysis and the results derived from the thesis.

Having reviewed the questionnaire, an email was prepared and a memo was send to a number of recipients inviting them to participate in the survey. The memo also included the web-address (link) that would lead them to the appropriate site where the questionnaire was located.

The email was send to approximately 1,245 ISO certified SME. The email addresses were taken from the data base "i-Mentor Hellastat", in which the American College of Greece (Deree College), the institution that currently employs the researcher is officially registered. The database i-Mentor Hellastat is managed by Hellastat S.A, the Greek Statistical & Economic Data Service. It operates in the areas of business information, market research, decision support systems and advisory services. Hellastat is a strategic partner of Moody's and of Thomson-Reuters plc and is certified by Lloyd's Register for quality assurance process in information. It generally provides services related to the provision of economic and business information and services. Hellastat SA is also a member of SEV (the Federation of Greek Industries), EADP (the European Association of Database & Directories Publishers) and ESOMAR (the World Association of Opinion & Marketing Research Professionals). The database i-Mentor Hellastat constituted the main source for also collecting the secondary data (financial information - financial statements, ratios) of this survey for the examination of the Greek SME financial performance and sustainability.

The invitation email was send to 1.450 email addresses but only 1,245 recipients opened and read the message. From those only 413 questionnaires were fully or partially completed, giving a response rate equal to 28%. Further examination of the answered questionnaires, revealed that a number of them were not fully answered and thus were excluded from the analysis. Eventually, only 392 of them were considered as fully completed and constituted the survey's collected sample presented in Appendix A', resulting in a response rate equal to 27%. It is important to note, that the invitation email was send six consecutive times in regular intervals to all potential respondents –SME, recorded in the i-Mentor Hellastat database.

5.5.2. The statistical analysis adopted

Considering that this survey aims at finding and giving answers to a set of research questions; different quantitative methods were used in analysing and testing their correctness and accuracy, starting from simple descriptive statistics and moving towards more advanced techniques like scoring analysis; correlation coefficient analysis; analysis of variance (ANOVA) and multivariate analysis of variance (MANOVA). The use of a statistical package appropriate for social sciences like the E-Views and the SPSS packages were used.

In order to organize and summarize the collected data, descriptive statistics were used. Descriptive statistics give meaning to a set of data and help a researcher measure and derive those values that characterise their behaviour (Nachmias and Nachmias, 2000) Means, averages and standard deviations were used in describing the responses of the participants. Graphs and figures were also used in order to plot, measure and compare the performance of different variables.

Alpha coefficient or Cronbach alpha, was used to measure the consistency and reliability of the data collected. Alpha coefficient is considered as the average of all the correlations in a set of data. High rates of alpha coefficient is an indication that the data included in the analysis, share the same scope of the analysis. Low rates of alpha coefficient indicate that part of that data should be excluded from the group. The data eliminated would represent data that have low or zero correlation with the total score and would cause a reduction in the single to total correlation (Rollins et al., 2007).

Pearson correlation coefficient was used as a means of explaining the relationship between two variables. Pearson's "r" has a range between -1 to +1, depending if the correlation is positive or negative. When correlation among two variables is equal to 1 it means that the first variable explains the behaviour of the second and if it is equal to zero, it doesn't (Pallant, 2001)

The ANOVA and MANOVA analysis were used to identify possible existing differences among two or more groups of variables. In the current survey, ANOVA was used for the identification of possible differences between the different sized SME, in relation to the level of the implemented TQM elements and their financial performance. Supportive to the ANOVA and MANOVA analysis is the F-ratio and the P-value statistics. The first, refers to the ratio that shows the relationship between the mean variability of each group with the mean variability among the groups. The F-ratio measures the cause of variance due to a given action or in our case, a given SME's

size. Rejecting the null hypothesis is the result of a high F ratio, because it shows that there is no difference between the means among the groups. Regarding the p-value, its value should be equal to 0.5 or less in order to be considered significant (Tourna-Germanou, 2007).

5.5.3. The questionnaire design and the Pilot Study

The development of a questionnaire is regarded as the most important task a researcher has to undertake. It will guarantee the quality of the data collected and the quality of the research conducted. By designing a reliable, understandable and clear rated questionnaire a researcher will have the opportunity to collect all the necessary information needed to arrive to reliable conclusions (Oppenheim, 1992).

According to a number of researchers, Robson (2011), Bryman (Bryman, 2004), Sekaran (2003) and Ghauri et al., (1995), the reasons why a questionnaire is selected in a survey include the following:

1. The questionnaire covers the needs of the survey strategy
2. It can be broadly used in management studies;
3. It needs a limited amount of time to be completed, which is beneficial for the researcher but for the respondents as well;
4. It is effective in its use and its cost in collecting primary data
5. It minimizes the negative effect(s) realized from the presence of an interviewer, leaving the respondent to respond freely and without bias;
6. Values, beliefs and motives can be identified more easily and directly than in any other method used;
7. It can be completed on the web with the expectation for a high response rate.

The research conducted is an in depth research in literature related to TQM in SME and their financial performance. The research focuses on the period 2008-2014 during the economic crisis, which started in the years 2007-08 and during that time reached its peak. The eight year period will also examine the SME's financial performance and their financial and operational sustainability under the crisis conditions.

The questionnaire was distributed in a period that started on the 12th of August 2015 and ended on the 29th of February 2016. Equivalent approval from the University's Ethics Committee was granted. The interviews conducted with the Greek SME quality managers, took place within that same period.

A questionnaire is designed and constructed with the aim of collecting the information needed to answer the survey's research questions and sub questions. A number of drafts were prepared until a final version was developed and distributed to a number of experts in the field of quality or in the field of finance. Experts like the researcher's supervisors, a number of business people and experts in the quality assurance and TQM received, examined and commented on the final version of the questionnaire. The questionnaire was also given for review to a number of the researcher's colleagues who given their status as Professors/ Instructors of courses related to the area of quality management, operations management and finance, who have critically reviewed and evaluated the questionnaire and their comments were incorporated into the final version of it.

A questionnaire should allow the respondent the appropriate time and space, to express his/her opinion on the questions posed. At the same time, it should, not tire him/her, so the questions can't be too long nor too short. (Creswell, 2003) The main objective in the design of the questionnaire, is to have questions that are short, simple and meaningful. Thus those responding to the survey will understand what the questions ask and offer a correct answer(s) in return (Ghauri et al., 1995).

It is believed that a questionnaire's role is to offer "objective means of collecting information knowledge, beliefs, attitudes and behaviour" (Oppenheim, 1992). As it is supported from Boynton & Greenhalgh (2004), the use of a previously validated and published questionnaire is effective and helpful because it will save the researcher time and resources, enabling him to make comparisons between his findings and the findings originating from similar surveys.

So, to formulate a validated questionnaire for the survey, a set of questions were initially selected from a pool of questions, developed by Daniel Hunt (1993). The questions selected were related to the variables/critical factors that the survey is examining. A number of questions were combined and merged with questions presented in other questionnaires that have been developed and used. At first, the one developed by Sashkin M. and Rosenbach (2013) was used, which assessed the cultural variables implemented in an organization. At second, the questionnaires developed by Samson's and Terziovski (1999) who tried to identify the relationship between TQM implementation and operational performance were considered. In addition, the questionnaire developed by Sousa et. al., (2005) and the questionnaire developed for the examination and implementation of the EFQM quality model were used.

Keeping in line with the categorization of the selected and adjusted questions into different sections as Hunt D. (1993) and Phu V. (2011) proposed, different sections were formed. Each section would try to identify and measure the quality elements that characterise a TQM company. These sections refer to the organization's quality culture, the quality processes, the quality tools and techniques adopted and the quality methods used in appraising the company's operational performance. Each section also contains a set of assessment criteria that could be applied to an SME. The assessment criteria will not only assess the practices, policies, procedures and attitudes used to further support quality, but will also be used for checking the progress of the company from the quality assurance stage to the TQM implementation stage. The questions chosen were adjusted in their phrasing, to incorporate all the assessment criteria that was found in almost all five questionnaires used. In addition, all four groups of questions, were also related to the variables (quality elements) included in the four layers that Saunders and Preston (2006) presented and used in their S-P model. The layers used were named "the basic", "the prerequisites", "the ability to improve" and "the outcomes derived". They characterise a quality system as being a part of a company's and more specifically an SME's, business strategy. The test was conducted in order to identify and justify not only if an SME implements a TQM system, but also if any added value has been recognized from that. The analysis and evaluation of the Greek SME's financial performance would indicate the rate of growth of that added value.

In addition to the above mentioned sections, at the end of the questionnaire one more section was introduced asking participants to provide financial data relating to their company. The questions asked for the rates of a specific number of financial ratios to be used in the SME financial performance evaluation. The i-Mentor Hellastat database among other financial data (Financial statements) also includes data related to companies' financial performance (financial ratios). Given that the questionnaire was distributed only to SME that were registered in the i-Mentor Hellastat database, participants were requested to only use those rates when responding to the equivalent questions. These would be used to identify the consequences (positive or negative) from the implementation of the TQM elements on the SME selected financial position and financial performance.

With the aim of improving the quality of the instrument (questionnaire) used in collecting the necessary for the survey data, its reliability and validity were statistically examined. Both would increase its strength as a measurement tool and improve the

scale used in measuring the value of each variable examined. If the instrument is not adequately developed the low levels of consistency and accuracy of the results leaves room for criticism (Babbie, 2004).

Reliability deals with the accuracy of the scale. It tests if the scale used in measuring the value of a response is the same every time a specific issue is measured (Babbie, 2004). Reliability is measured through the Cronbach's alpha coefficient. It measures the internal reliability of a scale, that is, if each scale measures just one idea and not more than one. Values higher that 0.6 are considered as valid. In addition to the internal, the external reliability was also examined which determines how consistent a scale is over time. The method that can improve the external reliability of an instrument is the test-retest method which entails that, the same person completes the questionnaire at two different points in time. The closer the results derived, the higher the external reliability of the instrument. This process was followed with two of the quality consultants who participated in the questionnaire's design. The differences among the answers returned from the same people, on average, were less than 1.5%.

The instrument's (questionnaire) validity, refers to its ability of measuring what has to be measured (Babbie, 2004). Different types of Validity exist, the face validity, the content validity and the construct validity. The first deals with how the questionnaire looks. The questionnaire in this survey was a web based questionnaire so not many format options were available. The content validity, deals with the meaning and the concept of every question in the questionnaire and ensures that the instrument measures and examines all the dimensions of a concept (Babbie, 2004). The sources used for the design and preparation of the questionnaire's questions were instruments (questionnaires) that have already been used and verified for their validity. They have been defined as instruments that could measure what they intend to measure [Saskin and Galagan (1992), Hunt (1993), Sousa and Aspinwall (2010)]. Thus the current survey's questionnaire content validity was directly verified. Construct validity, mainly deals with the validity of the relationships that exist among the variables used in an instrument. For verifying the construct validity, different methods can be used, such as the internal structural analysis or the cross-structural analysis. The first examines the relationship between the questions and the scales selected and the second examines the relationship between the selected scales and the scales used in similar instruments (Babbie, 2004). It is commonly accepted that the best technique for combining (merging) similar questions and assigning the best scale, is the factor analysis and specifically the principle component factor analysis (Ford et al., 1986). Given that the

current questionnaire and the questions included, come from a set of an already validated set of questionnaires, our questionnaire's construct validity is directly verified.

The current survey is a combination of a purely descriptive research and an explanatory one. This means that it requires from the researchers to search on the steps and actions that have been taken from the Greek ISO certified SME in order to continue their quality journey, implementing further and at what level the TQM elements. It will try to assess the effect on their financial performance and will support the acceptance or the rejection of the survey's research questions examined.

The experimental strategy adopted has the following characteristics:

- The sample is selected from a known population;
- There is an allocation to different experimental conditions;
- The planned change is introduced on one or more variables;
- The measurement is on a small number of variables;
- There is control of all other variables;
- There is hypothesis testing involved. (Robson, 2011)

Literature proposes a different number of scales used in different surveys, including the Dichotomous scale, the rating scale (3, 5 and 7) or the semantic differential scale ("Explorable Psychology Experiments", 2015). Each one has advantages and disadvantages. The selection for this survey was made based on the researcher's personal judgment, the research question(s) and the objective (s) that characterise this research. In addition, the type and the kind of data collected, the population and the depth of the analysis selected, would also determine how reliable and accurate the outcome and the conclusions derived would be (Sekaran, 2003).

In this survey, the interval scale was used, because there was a need to measure the level of an individual's agreement to a specific question. Nominal questions, were included, to obtain discrete data like the respondent's age, education, staff headcount.

The five-point Likert scale was used in this questionnaire as it is the one that researchers mostly use when examining the level of quality and TQM in particular. It was thought that selecting the 5-point Likert scale would minimize confusion or misunderstandings that a larger or a smaller scale might have created. That choice was also supported from the opportunity and the ability to use the "item analysis" that is to use each question's discriminative factor (DP). The DP of each question would contribute to allocating respondents into different preference groups, depending on the level of quality and TQM implementation preference. It was found that managers can

be categorised into three groups depending on the level of TQM they prefer to implement in their SME: those that prefer to implement TQM strongly, not strongly or are satisfied with just the ISO certification. (Robson, 2011).

According to Oppenheim (1992) and Sekaran (2003) different reasons may lead a researcher to adopt a five (5) or a seven (7) Likert scales, including the fact that they have good reliability and return variables that are easily analysed from different statistical packages. They can be used in question formats that use different expressions and still be easy to conduct and understand them without confusing the participants. The major disadvantage of a Likert scale such as the 5 point Likert scale mainly used in this study (Table 23), is that respondents' options are limited to five.
In the current survey, the possibility of the respondents selecting the "middle road", not as a reflection of their beliefs but because they don't know what to answer, may return a possible statistical error. .

Table 23: Our 5-linkert Scale

		Applies for:
1	Does Not Apply	N
2	Applies Slightly	S
3	Applies Partly	P
4	Applies Mostly	M
5	Applies Completely	C

Before administering the questionnaire to the potential participants, a pilot study was conducted to verify that the questions were understandable from the respondents. This also revealed the time it could take a respondent to fill out the questionnaire. This information was also included in the invitation e-mail. As mentioned earlier, the questionnaire was reviewed from four experts in quality management and quality assurance. Their education and experience in quality originating from them being external or internal auditors in large and SME sized companies, made them the right persons to evaluate and make comments on the questionnaire. In addition to the above, an SME's CEO also reviewed the questionnaire. All were asked to respond to the questionnaire using their rational and knowledge. They were informed and asked about their availability and willingness to participate in this evaluation. Upon their acceptance, they were asked to critically evaluate the wording of the questions, identify possible vagueness in meaning, comment on the way the questionnaire was presented and on the time it took to complete. Comments should also be made regarding how functional it was for them to complete using the web based environment and comment on its validity and consistency. The comments received mostly referred to the wording of the questions and the way that questions were ranked in the group, as some were considered more important than others. Few comments were also made relating to the difficulty that

respondents would experience regarding the completion of the financial performance section.

All proposals and suggestions made by the experts, were considered and a revised version of the questionnaire was send to them together with a document which they had to sign to declare their agreement with the fact that the specific questionnaire was capable of collecting the information for which it was designed for.

In concluding the questionnaire's development process, special codes were assigned to each question and different groups of questions were formed in order to be further processed by a statistical package. The software used for this survey were the E-Views, the SPSS (Statistical Package for Social Sciences) and the Microsoft Excel package, each used in different occasions.

Before administering the questionnaire to the selected sample of SME, it was translated into Greek to increase its reliability. Despite the fact that the majority of Greek managers understand and speak the English language, the conceptual understanding of the questions posed was considered vital. It was thought that translation would minimize the possibility of the questions being misinterpreted so each question on the questionnaire was shown simultaneously in English and in Greek.

To verify the reliability of the translation, the "back translation" approach was followed. Based on this approach, the questionnaire was first translated from English to Greek, and the resulting document was translated from another person from Greek back to English. In this case the individual selected to "back translate" was a Greek-English instructor. The two "English versions" of the questionnaire were then compared, Minor differences were found between the two versions allowing the distribution of the questionnaire to begin.

The questionnaire that was finally produced was broken down into six sections, the first four were related to the quality elements of TQM applied to an SME, the fifth focused on the financial indicators (financial ratios) that characterise the SME and the sixth one was related to the participants demographics and the number of employees they are currently employ.

The sections developed are presented below along with their equivalent aim:

Section I: Quality Management Tools and techniques.

Based on Shaskin's and Kiser's research (1993) three are the uses of the statistical processing control tools adopted by TQM. The first is to understand and describe the

work processes and activities performed within a company's operations in order to be in a position to count, record and interpret the results derived from them. The second contributes in identifying, focusing on, understanding and correcting any abnormal variations and their causes and the third is to provide the required information in improving the performance of all the work processes and activities implemented. So, the role and the purpose of the statistical process control procedures is to establish a "continuous improvement process" to a company's operations.

The aim of this part of the questionnaire is to understand the participants' perception for the quality tools and techniques applied in terms of the level of training received from the involved employees and the level of their use in measuring the level of quality and its improvements.

Section II: Organizational Culture

As Deming stated "Tools are necessary but not sufficient" (Sashkin & Kiser, 1993). The Tools and techniques used are the most real evidence of TQM implementation. But statistical tools and only those cannot lead to quality and TQM. Additionally, J.M. Juran (February 6, 1990) stated that "a good way to lose time in improving quality is to focus on tools and try to apply them". Just using statistical tools will never bring quality and TQM to a company.

To implement TQM into an organization, all the values and beliefs that support the company's culture should be based on the TQM's assumptions (Sashkin and Kiser, 1993b). When we see and interpret TQM as being an element within an organization's cultural dimensions, it is important to also see and know what these cultural elements are. According to Sashkin (1993) the crucial cultural elements in an organizations are eight. The first is the quality information that needs to be used as a means of appraising and improving employees' performance and not just for evaluating or controlling them. A second element is the authority level that should be equal to the responsibility level assigned to all the people operating in an organization. A third one, is to have a rewarding system capable of supporting the results and conclusions derived. The fourth element is the sense of cooperation instead of competition among the people that are working as a team. A fifth element is the feeling of security transmitted to the people working in the organization and the sixth is the sense of fairness that exists in a company's environment. The seventh element is the equitability among the employees compensation plan and the eighth is the expectation that all employees of an organization have in ownership stake. Supporting all those eight elements is what could improve a company's quality and TQM cultural level.

Section III: Processes

In business literature it is realized that the constant improvement in a company's level of quality requires a continuous improvement in its processes. If a company wants to increase the level of its quality, it needs to reduce the variability of its processes. For that it needs to apply a set of quality performance measures to its processes. Some of those measures are identified from a number of authors, like Juran & Godfrey (1999), Hakes (2001), Divorski & Scheirer (2001) who among others pointed out the need for establishing and validating the objectives of the performance measures adopted for each and every different process implemented. These measures will guide a company and its management in making more accurate and reliable strategic decisions regarding the processes adopted. Performance measures would influence the company's behaviour and affect the implementation of its processes and its strategic plans (Neely et al., 1994). So, the actual work flow from suppliers to customers through work processes should incorporate quality management process that have a reverse direction. This would further support the quality character of a company's cultural environment and further encourage the TQM implementation.

Section IV: Organizational performance Assessment

The performance appraisal (assessment) system design and use is a critical factor in determining whether a company's quality journey has succeeded or not. It is important even if a TQM program is not successfully implemented in a company, that the appraisal systems remain functional. This is because, as Deming and other researchers have noted, such a system supports a company's operational and financial performance consistency. The idea to comprise a performance appraisal system into a company's quality management system (TQM) is supported extensively from literature (Blackburn and Rosen, 1993; Soltani et al., 2006). Specifically, it states the importance of implementing a quality system in terms of a company's training products that would standardise its review process and apply or adjust its progress reports. This would create a continuous monitoring process applied on the whole organization's agreed goals and objectives.

Section V: Financial Performance indicators

This section trys to identify a set of financial indicators that will characterise the financial performance of a company participating in the survey. Considering that the company's overall financial performance is expressed through its profitability, efficiency, liquidity and solvency level, a set of the most powerful and extensively used

in literature financial ratios were selected. They were used as a means of measuring the Greek SME financial performance. The financial ratios chosen and their rates requested were the quick ratio, the asset, inventory and receivable turnovers, the return on assets and equity and the debt to equity and the z-score rate. The values assigned to all those ratios come from those available in the i-Mentor Hellastat database, given that the SME to which the questionnaire was administered originated from that database.

Section VI: Demographics

This section includes all the information needed in order to identify the background of each participating legal entity and its respondent's. The information collected relates to the participant's management level, the position, the age, the gender, the experience, and the education. In addition, the number of employees working full time in the company and the number and type of acquired certificates (i.e. ISO 9001, ISO 22000, ISO 14000) were requested. The time period that those certificates were granted was also requested.

The development of the questionnaire, is presented in the next section. It is composed from a set of closed questions and it was distributed to 1.909 Greek, ISO certified SME, operating in all sectors of the Greek economy.

From that distribution, 392 questionnaires were accurately completed and a set of information (data) were collected that need to be analysed. The analysis of the collected data will be presented in the following chapter.

The quantitative approach was chosen for collecting, grouping and analysing data (primary data) which was used to measure the level of TQM implemented in the Greek ISO certified SME. Data (Primary and Secondary) were also collected and processed in order to evaluate their financial performance.

The questionnaire responses were downloaded from the web platform (e-teacher), six months after the questionnaire was uploaded. All the data were downloaded in an MS-Excel-2013 format and the web platform was shut down. The data as they were collected were saved in an excel file with the name, "Primary Data-TQM Survey".

The web platform software assigned a unique code to each different section, question and each response,. Having downloaded not just the responses but the codes as well thus ensuring reliability and consistency, the data ready to be processed , was saved into an excel file with the name "TQM Survey Analysis", ..

From the web platform e-teacher, the following information and codes were assigned. For each questionnaire, a code has been given (i.e. 1, 2, 3…) together with the date and the time that the questionnaire was completed (i.e. 2015-12-06 08:14:02). Codes were also given to each different response recorded (i.e. A1 or A2 or A3 or A4….). Finally the values given to each financial ratio were downloaded each with a different serial number (i.e. Z1 [SQ003]). Specifically, from the section Z1 (Profitability), the equivalent question answered had the code SQ003 (Acid Test ratio).

Based on the use of the five point Likert scale, the first part of the questionnaire that examined the Quality tools and techniques with seven questions, could get a maximum value equal to 35 and a minimum value equal to 7. The second part that examined the quality processes with sixteen questions, could obtain a maximum value of 80 and a minimum of 16. For the third and fourth part that examined the quality culture and the performance appraisal respectively, each with nine questions, the maximum value could be equal to 45 and the minimum to 9. The maximum value of the total score could be equal to 205 and the minimum to 41.

5.6 Phase Three - Financial Data Analysis: Methodology

In order to investigate the impact of TQM implementation on the financial performance of the Greek ISO certified SME's, financial data that refer and give a clear and reliable picture of that performance should be collected and analysed.

A number of tools have been used in different surveys trying to reveal a company's financial performance. However the easiest and more applicable method used in identifying a company's financial power and status, is the ratio analysis (Shahin, 2011). Through analysing a company's financial ratios we can identify, the outcomes of the internal decisions and the different and occasionally difficult environmental conditions in a quantifiable, unbiased and meaningful way (Voulgaris et al., 2000) Different sets of ratios are used for different purposes but they are mainly used to examine a company's comparative performance in terms of either their own historic data or in terms of their competition. Financial ratios are used in order to measure the operational and the financial performance of a company and specifically an SME. (Hirt et al., 2013)

Four different group of ratios are commonly used to measure a company's financial performance. These are the profitability ratios, the solvency ratios, the efficiency ratios and the liquidity ratios. Of the four groups of ratios, the ratios that were mostly used from other surveys and those that were stricter in evaluating a company's financial performance were selected as these are shown in the following graph. (Figure 19).

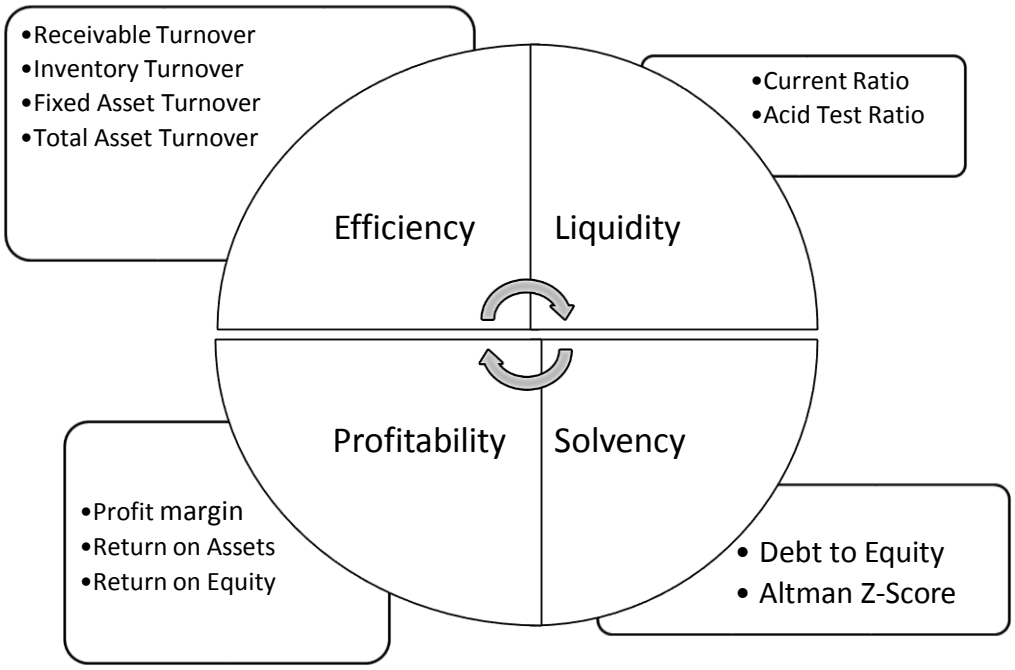


Figure 19: Ratios for Measuring Financial Performance

The selected number of financial ratios derived from the groups above, the quality data collected from the returned questionnaires and the financial data collected from i-Mentor Hellastat database, enabled the identification of the SME financial performance. This level was then related with the TQM implementation level from each different group of SME formed and examined.

Delen et al., (2013) have stated that ROA and ROE, (supported by the earnings before taxes over equity ratio and the net profit margin ratio) were considered the most valuable ratios among others for measuring a company's profitability. In addition, the debt ratio was one of the most valuable for measuring a company's level of solvency. From the group of ratios that examine a company's efficiency, the Asset turnover was considered as the most valuable.

In addition to the above ratios, a number of additional ratios were selected and used in this survey, taken from the group of ratios that Delen's et al.,(2013) survey revealed as the most valuable in measuring a company's financial performance. The ratios selected are shown in Figure 20, and refer to the ROA and ROE for measuring a company's profitability, the acid-test ratio for measuring the company's liquidity, the debt ratio and the Altman's Z-score ratio for valuing a company's solvency level and

the Asset turnover, the Inventory turnover, and the accounts receivable turnover for measuring a company's operational and financial efficiency.

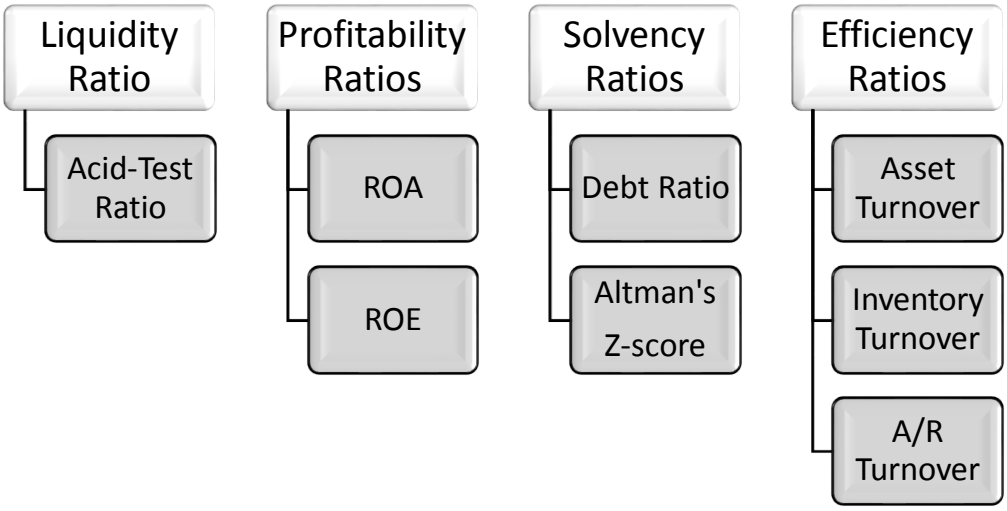


Figure 20: Ratios for measuring an SME's Financial Performance

The liquidity ratio, and the acid test (quick) ratio, mainly come from the current ratio (Current Assets over Current Liabilities) which becomes stricter, given that it excludes the less liquid, inventory account from the current assets. The company's ability to pay off its short term obligations was then determined. The profitability ratios examined the company's returns including its net income, in relation to its total assets, its total equity, its total capital invested or its sales revenues. The ROA (Net Profit / Total Assets) and the ROE (Net Profit / Net Worth) were the ratios selected in the current analysis. The efficiency or asset utilization ratios are those that can reveal a company's ability to effectively utilize its resources. The company's ability to utilize its accounts receivable and its inventories thus improving its overall asset productivity will be revealed, from the use of the Asset turnover (Sales/ Total Assets), the inventory turnover (Sales/ Inventory) and the accounts receivable turnover (Sales/ Accounts receivable) ratios. The last and most important for the purpose of this study is the solvency or debt utilization group of ratios. The debt ratio ($\frac{Debt}{Equity}$) and the Altman Z-score Ratio $[1.2\left(\frac{WC}{TA}\right) + 1.4\left(\frac{RE}{TA}\right) + 3.3\left(\frac{EBIT}{TA}\right) + 0.6\left(\frac{MVE}{TL}\right) + 1.0\left(\frac{S}{TA}\right)]$[8] are the ones that are capable

[8] WC=Working Capital, TA=Total Assets, RE=Retained Earnings, EBIT=Earnings before Interest and Taxes, MVE=Market Value of Equity, TL=Total Liabilities and S=Sales

of recognizing the borrowing intensity of a company, in relation to its assets, its equity and its earnings power (Hirt et al., 2013)

In addition, the value of all the selected ratios for all the SME sample size (1,245) were downloaded from the i-Mentor Hellastat data base. The analysis of all the SME ratios and the valuation of their financial performance was then processed. Within the 1,245 SME, the 392 that participated and responded to the questionnaire's questions are also included, but it was impossible to identify them from the rest, given the anonymous character of the survey. However, these SME also included into their response, the values of their financial ratios taken from the database i-Mentor Hellastat. It is important to notice that the email addresses used to send the invitation letter to the corresponding SME were also used to obtain the financial data used in determining those SME financial performance.

Comparative analysis was conducted on both groups (1.245 and 392) of SME financial ratios. The reason for that analysis was the availability of quality data only for the 392 SME included in the survey and their equivalent financial performance. This analysis could provide an indication of how the whole sample (1,245) behaves in terms of the TQM implementation if the criterion for implementation is the improvement of their financial performance.

The data downloaded from the i-Mentor Hellastat database referred to the period 2008 2014. It's a period where Greece experienced the most severe economic and sociocultural crisis conditions. For this period, financial data were available in the i-Mentor Hellastat database for the whole sample size that is the 1,245 ISO certified SME.

The data related to the quality elements implemented from the Greek, ISO certified SME refer to the period 2014-2015 during which the questionnaire was administered and the SME quality managers submitted their responses.

To eliminate the outliers from the financial data collected, data cleansing was adopted, substantially reducing the "noise" caused by mistakes identified in the data base.

The classification of all SME into three different groups followed, using the employees' headcount as the criterion. The names assigned to each group were exactly the same as the ones used from the European commission in categorizing and grouping the European SME (SBA, 2015) and included; "Micro SME", "Small SME" and "Medium SME". The same grouping, using the same criterion was used for categorizing the questionnaires collected.

The categorization of the 392 SME using as criteria their credit indicator, their z-score rate followed. Under this categorization SME were separated and named “High Risk” SME if they were almost bankrupt, “Medium Risk” SME if they were close to bankruptcy and “Low Risk” SME if they were not in danger of bankruptcy.

For each group of SME and for each SME separately, the financial ratios of all groups of ratios were calculated. The statistical analysis of all those ratios revealed the areas where the SME presented different levels of performance (good – medium – bad). It showed which ratios and which group of ratios were the strongest and which the weakest in the SME overall financial performance.

How those ratios and group of ratios behaved in each different group of SME (Micro, Small and Medium) was examined. The behaviour of the same ratios of the SME grouped as High, Medium and Low risk was examined. This type of analysis was made in both groups of SME, the 1,245 group and the 392 group of SME.

The analysis of their behaviour to all ratios and group of ratios, enabled the ranking of the SME according to their financial performance. The weight that was assigned to each different group, namely the liquidity, the profitability, the solvency and the efficiency group was equal to twenty five percent (25%). The ranking of the SME based on their financial performance was applied to all groups separately, namely the groups that were formed based on their size (No. of employees), on their credit level (riskiness) (Z-Score) and on both.

The final stage in our analysis is the identification of the correlation recorded among the TQM elements (Tools and techniques, processes, culture and appraisal) and the ratios examined. To record this correlation, the Spearman’s correlation coefficient (rho) was used. Spearman’s correlation is a non-parametric correlation model that was chosen because of its inability to identify any normality in the financial data collected (Asteriou and Hall, 2007) .

5.7 Concluding Remarks

In this chapter the research design and the methodologies used were presented. The different stages of the research were presented, and emphasis was placed on the methods used and the selection of the triangulation approach as a means of increasing the reliability of the survey’s results.

The survey’s reliability and validity were also addressed together with the design and the methods used in collecting the appropriate amount of data (primary and

secondary). The Statistical analysis methods used were also presented, leading to the analysis of the results derived that will be shown in the next chapter.

Chapter 6

Data Analysis & Results

Chapter- 6 Data Analysis and Results

6.1 Introduction to Chapter 6

This chapter contains the results derived from both the qualitative and the quantitative analysis conducted as well as the answers to the research question and sub questions. The data used to derive those results, was collected and subsequently analysed during a period of great economic, social and cultural turmoil in Greece, challenges which the country is still struggling with.

The analysis of the interviews conducted which is presented first, reveals the interviewees belief on quality and their SME' intention to continue the journey towards quality.

The scoring approach which was used for analysing the data collected, reveals which quality elements SME entrepreneurs pay greater attention to when implementing quality and TQM in their SME.

The same approach (scoring) was used on the quantitative data collected from the distributed questionnaire, to the sample of the ISO certified Greek SME. The questionnaire responses were collected from the web platform (e-teacher). The questionnaire which had been uploaded on that web platform was completed (fully or partially) by the quality managers or the general managers of the SME in the sample registered in the i-Mentor Hellastat database.

The sample of SME used, were grouped into three different groups based on the number of their employees. The data analysis conducted with the use of the scoring approach, revealed the level of quality adopted by each group of SME. It also revealed whether each group intended to continue its journey towards quality and how it determined its financial performance. For that analysis the use of the correlation and covariance analysis of the quality elements was adopted. The one-way analysis of variance (ANOVA) was used for testing the significance of the mean differences among each group. From the analysis of their equivalent p-values, the significance and the importance of each quality element was calculated as well as the relationships existing among them.

Further analysis was conducted regarding the SME financial performance. With the use of ratio analysis, the areas which indicated or did not indicate financial improvement, for all SME registered in the i-Mentor Hellastat database and the ones

which responded to the questionnaire, in total and per group (micro, small and medium), were identified. The analysis focused on their solvency, profitability, efficiency and liquidity level of performance. Different statistical tests (descriptive statistics, the Pearson's coefficient, the Pillai's F test, the Post Hoc analysis, the Levene's test) were used in order to verify the assumptions needed for applying the regression analysis and the significance of the conclusions derived from it.

A comparative analysis was also conducted among the Greek ISO certified SME financial ratios registered in the i-Mentor Hellastat (Hellastat) database and the SME that participated in the survey. The results from both sets of data were critically evaluated supporting further the answers to the research question and sub-questions. Similarities and differences between the two samples were identified thus offering a clearer picture of the financial behaviour of the SME population, impacted from the level of the quality elements implemented.

The extent to which the Greek SME implemented quality elements was used as the basis on which three different groups were formed. The first group, included the SME (which were named TQM SME) that continued their quality journey, the second included the SME (which were named ISO-Plus SME) that were cautiously continuing their quality journey; and the third group included the SME (labelled ISO SME) that maintained quality elements at a level that enabled them to be ISO certified. The behaviour of each group's financial ratios was identified and analysed to reveal the impact of quality on the SME' financial performance.

The number of transitions of the Greek SME from one quality level group to another (higher or lower), based on the rate of their Z-Score (level of riskiness), supported their financial sustainability despite the crisis conditions.

A specially designed dependence variable, called "extra variable" was developed with the use of the SPSS syntax function. That function was used to identify the coefficients assigned to each ratio, for each year in the eight year period examined. The coefficients revealed the importance of each financial ratio and its impact of the SME financial performance.

6.2 Qualitative Survey Analysis –Results

The qualitative survey being supportive to the quantitative survey conducted (Triangulation approach) was limited to ten interviews representing the 2.5% of the quantitative survey's sample size (400). From the ten interviews conducted, the response forms were completed. The conclusions derived from each of the ten forms

completed, are presented below. The duration of each interview was on average 30 to 45 minutes. Participants understood that the scope of this survey and the derived results could attest their decision to invest in quality with the scope of bringing them an accountable rate of return on their investment. Interviews were conducted following an approved procedure from the University's ethics committee. Due to confidentiality reasons, the names of the companies participating in the survey are not shown. Instead a coding system has been used were the names of the participant were expressed as a code, i.e. the first participant's code was the IP-1 (Interview Participant-1).

6.2.1. Interview Analysis and Results

a. Interview with IP1

The first SME interviewed is a private company, an organization in its legal form, with seventy employees working on its premises. Given the number of employees, the company was categorized as a medium SME. The company is specialized in the production of Chemicals and plastic products and received its first ISO certification in 2014, but has also been awarded with the ISO-9001:2008 the ISO-22000:2005. The quality manager of the company [IP1] has admitted that TQM is within the company's executive teams' first priorities. The company uses sophisticated and advanced tools and techniques like the "kaizen" and the "cobra" tools techniques through which cooperation and teamwork is established. Training and employee evaluation procedures are also introduced in the company's quality processes. The company follows an open door policy and there is a goal assignment in each operational unit (departmental and employee) based on which evaluation is established. A research and development department was inaugurated, where new and innovative ideas are examined and their implementation is structured. Different environmental, feasibility and risk analysis studies are performed together with studies focusing on establishing health and safety procedures and working regulations. Regular reviews of the operational procedures also take place.

IP1, stated that the company maintains a three year plan which also entails a quality plan. With those plans, implementation activities are introduced and responsibilities and deadlines are assigned. In addition, a set of control procedures and a feedback and rescheduling process, ensure that the quality processes are continuously appraised and improved.

IP1 responded affirmatively to the questions regarding the existence of any financial improvements caused from the implementation of an improved level of quality, but no specific data was provided to the interviewer.

b. Interview with IP2

The second SME interviewed, is an energy company that employs thirty people rendering it in the small SME category. The company is certified with the ISO-9001:2008 since 2005. The executive interviewed (IP2) was the quality manager of this private enterprise.

The executive's responses, indicated that the company tries to maintain the established quality system by merely satisfying the ISO standards. They organize weekly meetings in order to examine and evaluate the progress of the projects assigned. However the activities related to the employees training, are conducted and supported mainly by the Headquarters (Mother Company) and are focused mostly on hygiene and safety issues. Training processes also exist and are focused on inspection issues an important element for achieving the ISO standards. No processes have been introduced regarding quality culture issues.

For evaluating the quality processes and the SME's operational performance, management focuses on customers' complaints that are recorded but not analysed and evaluated. For every project they develop a quality plan, setting goals the achievement of which is simply measured but not linked to any equivalent reward plan.

The company is open to new partnerships, mostly with ISO certified companies, which contributes to keeping their quality at an acceptable level. They also create partnerships with non-ISO certified companies so as not to lose their flexibility and their level of productivity, but attempt to convince them to become at the very least ISO certified.

The development of new and innovative ideas mostly come from the technical department due to the initiatives taken from their Mother Company. A bonus is offered to those who have achieved personal improvement and this was recorded as the only internally oriented innovative attempt. The company's processes include a process which tries to support new and innovative ideas through simply testing and improving the existing processes.

For that SME, quality culture is limited to the short term horizon, the "ISO horizon". A long term plan focusing on the improvement of its quality elements exists, but focuses

only on the costs realized (reduction of cost).and the minimization of its production cycle through introducing effective and efficient procedures. However the element of "continuous improvement" is not applied at this company and penalties are assigned whenever specific costs exceed the pre-defined limits.

The performance appraisal elements focus mostly on the company's main operations and processes and not on any of the supportive or supplementary activities. These appraisal procedures are designed and controlled by the Mother Company and not from the SME itself.

IP2, is convinced that the introduction of quality only in the company's production operations and not in its administrative activities, will not enable the reduction of its operational costs, thus will not improve their financial performance.

Noteworthy is IP2's acceptance of the fact that all the cost reductions achieved, enabled the company to cope better with the difficult financial conditions associated with the Greek economic crisis.

c. Interview with IP3

IP3 is the quality manager of a private ISO-9001:2008 certified SME operating in the food and beverage industry which employs seven people, rendering it in the micro SME category.

The quality manager is the only person within the company that directs and coordinates the quality system's activities and stated that the company is concerned with maintaining the same level of quality in the products and services it produces and deliver's to its customers. No other quality elements are supported from the company's management.

The IP3's responses indicated that the company and its top management do not implement any quality plan. They simply assign and direct the SME projects and activities to individuals. Given the company's small size, teamwork and cooperation are achieved and further encouraged.

The company hasn't introduced any quality processes that focus on the development and evaluation of innovative ideas. The only source of innovative ideas are the discussions that take place among workers or the discussions during regular meetings. The evaluation and implementation of ideas however are entirely based on management's decision (Individualistic) and feasibility.

The company's quality cultural environment as it was stated by IP3 is "in the minds of the employees and of the top management". They are all ready to realize the 'continuous improvement' quality element, but they only follow it up to the level where the ISO standards are satisfied and their quality assurance certification is approved.

For appraising their operational performance, the company assesses the customer's satisfaction response rate. That rate is valuable and important for evaluating the company's operational activities, but no other quality ratio based on which they could evaluate their overall quality level is used.

IP3 states that "from the moment ISO was applied, the company is more organized. However, ISO hasn't contributed in the reduction of its operational costs or in the improvement of any other financial ratio. Instead, it increased its overall costs". In addition to that IP3 expressed apprehension regarding the bureaucratic procedures following the ISO-9001:2008, which have actually reduced the worker's available and productive time and increased the SME's overall production cost.

d. Interview with IP4

The next interview was conducted with a private enterprise operating in the logistics sector. The company is certified with the ISO-9001:2008 from the TUV Hellas since 2005. It currently employs eleven people so was categorized as a Micro SME. The executive (IP4) interviewed has the position of the quality manager in that SME. From the responses to the questions regarding the implementation of quality tools and techniques in the SME's operations, it became clear that management focuses only on satisfying the ISO requirements. They focus on training their employees on the ISO standards and on how well they know the quality manual and its procedures. They also test how clearly they have understood the authorities and responsibilities assigned to them. However, no statistical processes have been implemented to evaluate the outcome of their performance or that of any proposal (s) made for the improvement of employee activities. Instead, their implementation and evaluation are entirely based on the related costs. IP4 stated that there are cost limitations due to the company's limited resources. For that reason, tasks are assigned to single units in order to minimize the implementation costs. Teamwork is encouraged within the sales department, but not in other departments. Meetings take place on a daily basis (formal and informal) where possible proposals for improvements and innovative ideas are discussed, but they are presented in a undocumented way. IP4 admits that "the development and implementation of the quality elements and specifically the -continuous improvement- element of the company's products and processes is in the company's culture".

Attention is placed only on the short term plans and the long term development plan remains “on paper”. The crisis conditions that the company is facing limit the ability of developing long term plans.

IP4 also declared that even though they are familiar with the performance appraisal techniques used in implementing quality improvements; the company simply records customers complaints and customers returns as specified by the ISO manual; without further examination or analysis which could lead to meaningful conclusions and possible corrective actions.

IP4 also admitted that the ISO certification enables the company to cope better despite the crisis conditions that the Greek economy and the Greek market are facing.

e. Interview with IP5

The IP5 interviewee is the quality manager of a private company functioning in the Water bottling sector of the Greek economy. The company employees thirty-three people and is categorized as a small SME. It has been certified with the ISO-9001:2008 and the ISO-22000 (HACCP) since 2003.

IP5 stated, that the company’s employees adopt quality tools and techniques as a means of supporting the quality system established and currently implemented. A training program on the quality manual and it processes is applied to all employees. However special training regarding the use of special statistical tools and techniques which will contribute in measuring and evaluating the company’s operations, is offered to employees who work in the production department. However IP5 stated that “the company needs more training in order to further improve its quality level”.

Teamwork is encouraged from top management and from the employees themselves. IP5 stated however that “there are things that happen (informally) within the company, that if the TQM elements were implemented and adequately realized, they would contribute more to the company’s overall quality improvement”.

New and innovative ideas are developed and examined, but due to the difficult economic conditions, it is almost impossible to put them into action. It is encouraging however that these new ideas originate from all management areas, with the majority stemming from the production department.

SME’s management has decided to be a technologically advanced company. For this reason, new technologies are introduced in the production department, remarkably improving the quality of the products produced. Introducing advanced technology is

what gave them the opportunity to accurately measure incurred production delays and prohibit malfunctions.

The IP5 admitted that the company operates solely on a short term plan and there is no process or activity related to the development of a long term plan. However IP5, stressed that they aspire to maintain an adequate amount of ratios based on which they could measure their performance, such as ratios for measuring the scrap value from the units produced, which are not easily identified and measured; or the overall quality cost achieved in a specific period.

IP5 admits that introducing quality has improved the level of their sales and has boosted their customers' confidence in the quality of their final products. For the employees IP5 specifically stated that "with quality, working people have managed to become more conscious of the way they have to do their work. They respect the company more".

f. Interview with IP6

The next interview was made with IP6, who is the quality manager of a private company specialized in vehicles technical control (ECU's). The company is categorized as a micro SME given that it employs seven individuals. The company is ISO certified based on the ISO-9001-2008 standards.

The company offers technical inspection to all types and kind of vehicles and as IP6 stated it offers specific kind of treatment according to the standards specified by law. What really worries management, is the difficulty it faces in identifying experts in the field capable of offering this type of service. It's also too difficult and costly for them to train new people in new methodologies and make them capable of introducing improved and innovative quality tools and techniques in their processes that will eventually offer their customers' better services.

The training offered to their employees is mainly concentrated on health and safety issues and on current legislation specifications. IP6 however has admitted the company's inability to measure the consequences of that training on the effectiveness and efficiency of employees' productivity.

IP6 supports that quality and the ISO model, if used as a promotional and not as an operational tool, adds extra value to an SME, especially if strong competition exists. IP6 specifically, stated that all the people working in this company "see our store from the inside and not from the outside", meaning that they primarily care for the quality of the products and services they deliver to the end customers.

Outsourcing is also utilized whenever current employees do not possess sufficient training to handle or solve a problem. The consequence of that is the increased cost of production. IP6 stated that the goals and objectives related to the "continuous improvement" quality element, are applied only to the marketing processes, in an attempt to serve their customers better.

"Total Quality is not a goal for us and is not a goal for our industry" IP6 declared. To obtain feedback, the company uses a questionnaire that the customers complete usually after they have received the final product, which is mostly perceived as the service received and not the product itself.

IP6 believes that quality's contribution and the company's financial performance are not related. IP6's perception is that revenues are determined mainly from the pricing policy the company follows and not from its costs. The only alternative is to better control their costs, to impose greater control over their suppliers and to request that they are certified, which for the time being is not easily feasible. It was also stated that the company "has achieved from its operations a break-even point that is not related to the services it performs". This is because the high fixed cost they are incurring due to their high payroll costs has substantially reduced their contribution margin and through that their overall financial performance.

g. Interview with IP7

The quality manager of a marble construction company is the next interviewee (IP7). This private company employees 189 people and is categorized as a medium sized SME. The company is certified with the ISO-9001:2008 certificate which it was granted on the 17th of July 2003.

The company has in its organizational chart, a quality (internal) audit department responsible for the quality manual and all the quality issues related to the production and the company's overall operations.

The company uses the "continuous training" in all the processes, tools & techniques applied to its operations.

IP7 clearly stated that "the company is a living organism, where each department influences all others. It is necessary that they communicate among one another, state their goals and objectives and together with the quality manager develop and implement new procedures, new rules and new directions". The quality manager's statement reveals the significance which management places on the procedures and activities performed. In addition IP7 stated, that there are opportunities where

responsible managers can propose new ways and methods that would improve the company's or a department's efficiency and effectiveness. That is the reason why the quality processes as well as the tools and the techniques adopted, continuously change. They are constantly updated in order to satisfy the technological and environmental changes and innovations.

The company develops and implements an annual plan and does not intend to develop a long term one. Thus new goals are set annually, and the evaluation of the existing goals is conducted only for the sake of satisfying the ISO standards.

The company measures its quality cost through measuring its maintenance and its production cost. It has also produced a set of ratios in order to evaluate its sales returns and its customer's satisfaction.

IP7 acknowledged that since introducing quality the company has managed to improve and further smooth out the company's operations, the production and the administrative operations. IP7 is a strong believer that in the future, quality and TQM in particular will manage to contribute even more to an SME's overall improvement.

h. Interview with IP8

The next interview was with the quality manager (IP8) of a private company that produces and bottles mineral water. The company employs thirty six people and is categorized as a small sized SME. The company has been granted the ISO-9001:2008, the HACCP, the IFR and the FSSE certificates.

From the discussion conducted with the IP8, it was found that the SME has developed an office responsible for employee training. Experts in Chemistry and other specialties regularly visit and give lectures to the employees. With regards to quality issues the only seminars conducted are related to the ISO-9001 standards.

IP8 specifically stated that "Employees are slowly but steadily working towards making quality part of their –own- life". For implementing quality and quality processes in particular, both formal and informal teams are formed. Management supports teamwork and tries to demonstrate to all company employees that "being indifferent" will not help anyone.

With the aim of improving the functioning of the company's operations through the introduction of quality characteristics, employees have proposed to management a series of innovative ideas following formal and sometimes informal paths.

Management strongly believes that those innovative ideas together with the quality elements of ISO and its procedures are what majorly contribute to this objective.

The SME basically operates based on a short term plan. No long term plan has been developed and as IP8 stated "there is a *silent observation* regarding the goals set for productivity and if and when these have been met or not and why".

The IP8 also admitted that the quality ratios used are mainly related to the operational performance of the company and focus on the quality control procedures. Though no ratios are developed in measuring the company's quality cost.

Finally the quality manager has admitted that introducing quality in the company's operations has improved its financial performance. That is one of the reasons why the company, continues to invest in advanced technology in particular. What supports the role of quality in the company's improved financial performance is the IP8's statements that states "the reason we are surviving under crisis conditions is that we are a quality company".

i. Interview with IP9

The next interview conducted was with the quality manager (IP9) of a chemical company that prepares the base for the production of perfumes. The company is a private corporation and employs 100 people, so it is categorized as a medium sized SME. The company, during the last seven years has been awarded the following quality certificates: ISO-9001:2008, HACCP and the FSSE 22000 from TUV HELLAS.

IP9 specifically stated that no quality tools or techniques are used in this company, due to their inability to collect and organize the required data. Additionally no support exists from any ERP system that could "feed" top management with the necessary information that would lead to conclusions and the application of possible corrective actions. IP9 characteristically stated that "…given that the only criterion for measuring the products quality is its 'smell', it is not so easy to impose control over that".

Whilst examining the company's cultural characteristics, the element of teamwork was found to be absent. IP9 stated that the cost of not adopting and motivating teamwork is undertaken by the company itself. Top management prefers to assign projects to individuals, but considers the level of communication among its employees and the departments as efficient and important.

Even though the people working in that company have the knowledge and the experience to propose new and innovative ideas, IP9 stated that top management is

not willing to accept and use them at all. Top management's believes that the only expert in the field is the company's owner and nobody else has the right of proposing something different. The owner is the only source of innovation and creativity. IP9 concluded that "there are no funds available" for investing in research and development projects. In addition, only short term quality plans exist, suitable for covering the needs of the ISO quality model, needs that are not related to any strategic plan.

Top management considers quality as a marketing tool not as an investment. Thus, the quality system that is currently in use, despite being recorded in its manual, is not implementing any element related to the performance measurement and performance evaluation. Notably IP9's stated "this is something that we all know but nobody will do anything to change".

IP9s' personal opinion, is that quality and the ISO certification in particular hasn't managed to improve the company's overall financial performance. The only thing that has been achieved from its implementation, is that the company has managed to "come closer" to the customer, satisfying their needs better, without however impacting the company's overall sales level.

j. Interview with IP10

The last interview was conducted with the production and quality manager (IP10) of a pastry production company. The company employs 100 people and is categorized as a medium sized SME. The company is certified with the ISO-9001:2008 certificate since 2000.

The quality tools and techniques implemented, merely satisfy the needs of the ISO-9001:2008 certification. Effort is placed on implementing all the tools and techniques that the quality manager or the external auditor proposes, but that effort never goes beyond that.

A training program/seminar on quality exists, which mainly covers the quality manual and the procedures it involves. The seminar is repeated every six months and is compulsory for all the company's employees.

Regarding the company's cultural environment, it was found that employees work to the most part on an individual basis, but teamwork emerges on occasion depending on whether the kind and type of processes being implemented require the cooperation of the people and the departments involved, in order to be fully and accurately implemented.

IP10 stated that the SME's top management is willing to motivate its employees to be creative and encourages them to propose new and innovative ideas. Though, because they are very cautious of anything new, the company thoroughly examines proposals before introducing them to all the departments involved in implementation. The evaluation of any new idea takes place on a monthly basis and from a regular quality review process. IP10 supports the belief that employees care for their job and for making all operations run smoothly. When they realize that something is not working correctly, they feel personally responsible and they try to find the way to improve it. To that respect, IP10 admitted that the inspections imposed from the ISO manual were of great help. In addition, a formal and informal communication network exists among the people and the departments. That network is used as a means of achieving what quality has as a goal that is to establish the 'continuous improvement' element.

IP10 also stated that the company uses a quality plan that has been developed just for the satisfaction of the ISO's requirements. No long term quality plan is developed.

Referring to the SME's appraisal methods, IP10 stated that the ones used, mainly measure customers complaints and the default products produced, but the company is not in a position to value (determine the cost) those default products.

The comments made from IP10 regarding the role of quality in the SME's financial performance, indicated that quality has improved the company's image in the market and has improved its sales level, especially during the economic crisis. That improved sales level stems not only from the product's improved quality, but also from the company's ability to better control prices and maintain them at a low level, due to cost decreases. However the company is unable to measure the cost of quality and the financial benefits derived from that improved level of quality.

6.2.2. Qualitative surveys Coding and Results (All)

Using the phenomenological approach as described in Chapter 5, and assigning different themes, codes and scores to each code, the results derived are presented in Appendix C.

Specifically in Table 24, the results derived from the ten interviews conducted showed that on average the interviewees' perception is that quality is among their preferences (1.55/3.00) with emphasis being placed on the organizational culture (1.6) and performance appraisal (1.6). The quality tools (1.5) and the quality processes (1.5)

elements showed lower scores, but are close to the scores of the first two quality elements.

Table 24: Cumulative Interview Results (All Data)

Variable	Score
Quality Tools	1.50
Organizational Culture	1.60
Processes	1.50
Organizational Performance (appraisal)	1.60
TQM	**1.55**
Financial Performance	**2.57**

The categorization and analysis of the data per group, as shown in Table 25 revealed that the small SME presented the highest score in TQM implementation (1.75). Emphasis is placed on the quality culture element (2.00) followed equally from the quality processes element (2.00). The performance appraisal element followed with a score of 1.67 and less significantly, the quality tools and techniques with a score equal to 1.33.

Table 25: Cumulative TQM Results Per Group

	QT	OC	PR	PA	TQM
GROUP A (Micro)	**1.67**	**1.33**	**1.00**	**1.00**	**1.25**
GROUP B (Small)	**1.33**	**2.00**	**2.00**	**1.67**	**1.75**
GROUP C (Medium)	**1.50**	**1.50**	**1.50**	**2.00**	**1.63**

The medium SME with a score equal to 1.63/3.00 showed the next highest score of TQM implementation. Emphasis was placed on the performance appraisal element (2.00/3.00) with all other quality elements receiving the same score (1.50/3.00).

The micro SME, the last group examined, showed the lowest score in the level of TQM implemented (1.25/3.00). Emphasis was placed on the quality tools element (1.67/3.00) followed by the quality culture element (1.33/3.00) and for the other two quality elements, the quality processes and the performance appraisal the scores equalled 1.00/3.00.

From the responses of the quality managers interviewed, regarding their expectation of quality's contribution to the improvement of their SME financial performance, the

small SME showed the highest score (3.00/3.00). The micro SME received the score of 2.44/3.00 and the medium SME the score of 2.42, indicating doubts as to whether quality actually contributed to their company's financial performance.

6.3 Quantitative Survey Analysis – Results

This section, provides a detailed description of the findings of the quantitative data analysis. The results derived show the perceptions and the beliefs of the 392 SME (sample selected from the i-Mentor Hellastat database) regarding the level of quality implemented in their companies. The results derived from their analysis were also compared with the results and conclusions derived from the statistical analysis conducted on their equivalent financial performance. For the analysis of their financial performance, selected financial ratios were used. The data analysed were submitted from all the 392 SME that participated in the survey, and represent the values recorded in the i-Mentor Hellastat database. The statistical analysis also revealed the implications and the consequences from further implementing the quality elements in SME. It shows if and at what score they influenced their financial performance, the evaluation of which was based on four pillars, namely profitability, efficiency, liquidity and the solvency level. The later also includes the probability of going bankrupt.

Table 26: Frequency Results

Variable	***Score***
Quality Tools	3.15
Organizational Culture	3.10
Processes	3.18
Performance Appraisal	3.00
TQM	*3.11*

The scoring approach was the methodology used for the analysis of the data collected. This approach has been used extensively in a number of surveys that have tried to categorize companies using different criterion and different dimensions (Tabladillo, 1996).

With the use of the scoring approach and the use of the MS-Excel spreadsheet software, the collected data were processed statistically and results were derived. Those have specifically revealed the level of quality implemented from the Greek, ISO certified SME. The frequency of the scores for TQM is above the average (3.11/ 5.00), which indicated that the SME's continue or at least intend to continue their journey towards quality. This score also indicated that the Greek SME have introduced the TQM practices into their strategic plan, through the implementation of Quality tools (3.15), Quality Culture (3.10), Quality Processes (3.18) and changes in the quality assessment of their organizational performance (3.00). (Appendix D – Section A)

From the results derived, it was found that the element “Quality Processes” shows the highest score in relation to all other quality elements (3.18). This is an indication of the participants’ perceptions regarding the quality processes and explains the significant role of a quality system in the design and implementation of its quality processes included in its quality manual. Moreover, the quality processes used as the basic units on which an internal auditor will measure an SME’s quality level additionally supports the need for recording their improvements. It enables them to realize that the quality processes are what will lead them to the achievement of the TQM goals and the development of the “continuous improvement” process (Sashkin and Kiser, 1993).

But to achieve a “continuous improvement” process, the need to also adopt and implement advanced quality tools and techniques is needed. The simple use of the quality processes without the use of advanced quality tools and techniques, will not lead the company to a higher quality level (Schroeder et al., 2005). This explains the importance and the quality processes element’s high score (3.15/5.00).

Considering that TQM implementation is determined from an organization’s cultural dimensions, the perception of the survey’s participants for the organizational culture element showed an above average score equal to 3.10/5.00, which is considered high. This explains why the participants believe that quality will be introduced to an SME only when all the quality elements are adopted. This can only happen however, when the required quality improvements related to a company’s customs, tradition, attitudes, values, norms, ideas and symbols, become part of a company’s cultural characteristics. These however shouldn’t be utilized simply as a means of imposing more control over its people (Pujari, 2016).

The quality element “performance appraisal”, which was found to have a score of 3.00/5.00, shows the perception of the survey’s participants regarding their willingness to succeed with continuing their quality journey. This quality element is highly dependent on imposing higher control over the procedures implemented in the SME operations. It indicates the participants’ strong belief on the use of authority and responsibility as tools for the development of an appropriate and of high quality rewarding system. That system is what will support and further reinforce the implementation of the quality elements. From those elements implemented the employees will sense the security and the fairness within the organization.

Juran & Godfrey, Hakes, Divorski & Scheirer (Sousa et al., 2005) were among those who concluded that the establishment and validation of a set of performance

measures, imposed on the quality processes and quality tools and techniques of a company, can develop and further support its strategic decisions (Sashkin and Kiser, 1993).

Figure 21 where bins were used as a class interval of sorting the frequencies of the quality elements in a histogram, illustrates that among the four quality elements, the "Quality tools and techniques", the "Quality processes" and the "Performance appraisal", are closer to the normality assumption, with a low kurtosis rate. The "Quality culture" however follows the linear assumptions, but at a higher rate than all other variables.

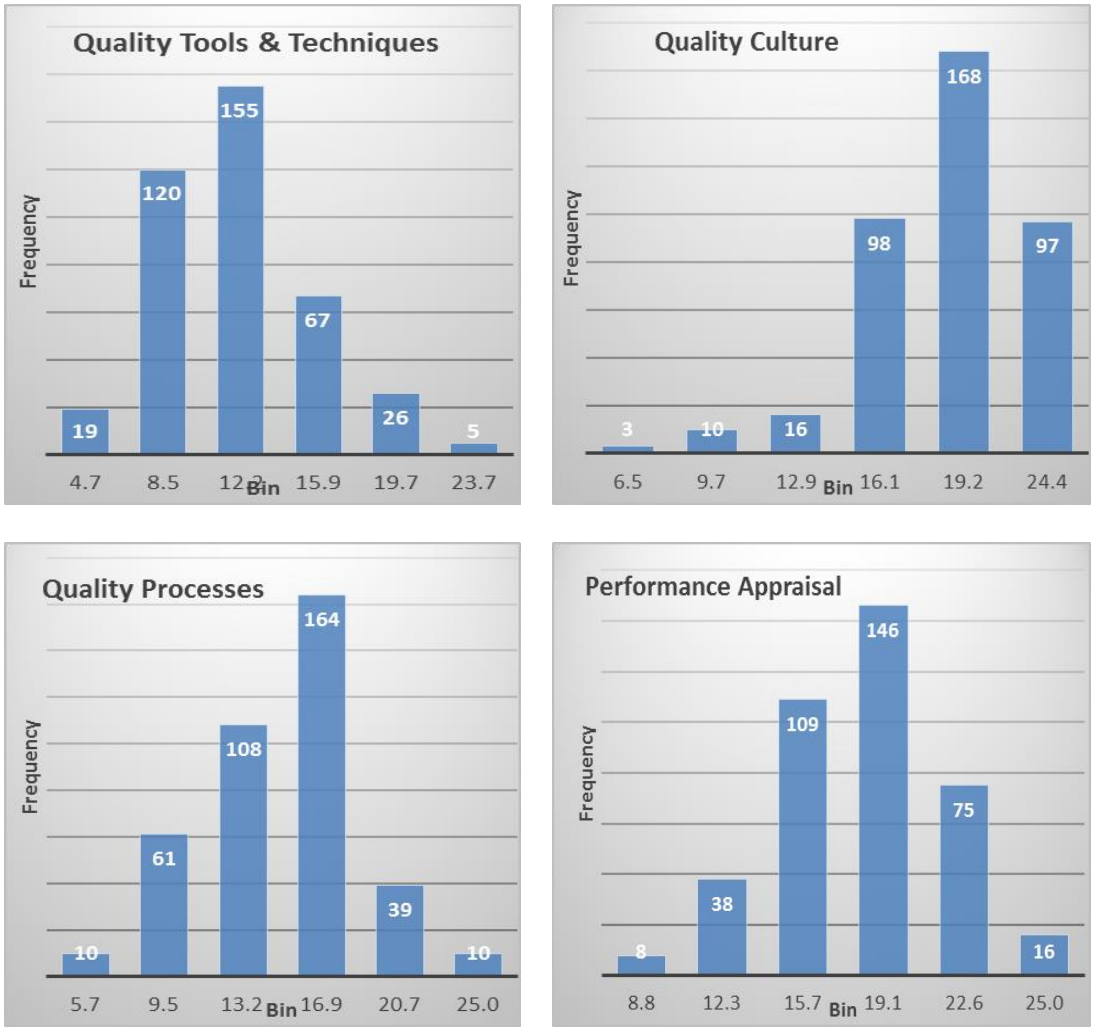


Figure 21: Quality elements -Frequencies

To that end, the SME that have already established a quality control system (ISO certified) and are capable of identifying and preventing the non-conformities within their operations, are the ones that can and will manage to develop a system, a TQM system, capable of maintaining and further improving their quality level (Padma et al., 2008)

Table 27*: *Quality Elements - Correlations

	TQM	QUALITY CULTURE	PERFORMANCE APPRAISAL	QUALITY PROCESSES	QUALITY TOOLS
TQM	1.00				
QUALITY CULTURE	0.72	1.00			
PERFORMANCE APPRAISAL	0.77	0.36	1.00		
QUALITY PROCESSES	0.77	0.40	0.54	1.00	
QUALITY TOOLS	0.76	0.47	0.44	0.35	1.00

From the correlations examined among the elements that contribute to TQM implementation in an SME, which are shown in Table 27, it is clear that all except the Performance Appraisal element, are closely related to the TQM implementation. Positive are the correlations of TQM with the Quality Tools (0.76) and the Quality Processes (0.77), as well as with the Performance Appraisal (0.77) and the Organizational Culture (0.72).

Supportive to the above conclusions, is the determination of the equivalent p-values that indicate the significance of these positive correlations. More specifically:

There is a significant positive relationship between “Quality tools” and “Organizational culture” $r(392)=0.24$, $p<0.01$

There is a significant positive relationship between “Quality tools” and “Processes” $r(392)=0.30$, $p<0.01$

There is a significant positive relationship between “Organizational culture” and “Processes” $r(392)=0.47$, $p<0.01$

The p-value examination, clarifies the results derived from the descriptive analysis conducted. It reveals the strong and positive relationship (0.47) between the SME “Organizational culture” and the “Processes” adopted. The “Quality tools” are also positively related (0.30) with the “Quality processes” adopted. The lower score recorded is attributed to the inability of the tools and techniques to be used under the terms and conditions of the SME processes. In addition, the “Organizational culture” was found to be positively related (0.24) with the “Quality tools” used from the Greek SME, but to a smaller degree, considering that Greek SME’s live and experience quality mainly through their processes and not through their organizational culture.

The analysis continues in the next section (Section 6.4.), where the Greek ISO certified SME are grouped based on their size which is determined from the number of individuals they employ.

6.4 SME - Group Analysis & Results

Possible characteristics that determine the size of an SME, are the number of employees, the asset value and the liability and equity value. Considering that the Greek SME are not capital intensive but labour intensive, the number of employees was the criterion used in order to categorize this survey's sample. This criterion is also used by the European Union in order to categorize and group European SME (SBA, 2014a).

Table 28: TQM Scoring per Group

Quality Elements	Micro		Small		Medium	
	Score	Rank	Score	Rank	Score	Rank
Quality Tools	3.09	2	3.21	4	2.90	4
Organizational Culture	2.93	3	3.21	3	3.27	1
Processes	3.44	1	3.38	1	3.03	3
Performance Appraisal	2.83	4	3.37	2	3.10	2
Total TQM	3.07		3.29		3.07	

The results derived from their analysis are shown in Table 28. They indicate that the medium sized SME are the ones that managed to continue their quality journey, by implementing the quality elements better. It specifically shows that for small sized SME the "Quality processes", the "Performance appraisal" and the "Quality tools", are the main elements which they pay more attention to regarding their accurate implementation. The Micro SME have interests closer to those of the small SME, and place greater emphasis on the "Quality tools and techniques" and on the "Quality processes". Literature also supports that when a company's goal is the implementation of TQM, the emphasis should initially be placed on adopting the quality tools and techniques and the quality processes in its operations (Hafeez et al., 2006) The medium sized SME though, seem to place more importance on reaching a higher quality culture level, and then on implementing an improved set of performance appraisal techniques.

To increase the importance and the value of each response assigned to each question in the questionnaire, a weight was assigned to each of them. For every type 1 response, an equivalent weight of 1 was assigned. For every type 2 response, an equivalent weight of 2 was assigned, returning a total score of 4. For every type 3

response, an equivalent weight of 3 was assigned, returning a total score of 9. For every type 4 response, an equivalent weight of 4 was assigned, returning a total score of 16 and finally for every response of 5, an equivalent weight of 5 was assigned returning a total score of 25. So the scale developed had a lowest score of one, and a highest score of 25. The average of all scores was then calculated.

The descriptive statistics derived for each different group of SME (Appendix-D, Section B), revealed that the medium sized SME (71), had the highest mean recorded in the organizational culture element and the lowest in the quality tools and techniques element. For the small SME (136), the highest mean was recorded in the organizational culture element and the minimum in the quality tools and techniques element. For the micro SME (185), the highest mean was recorded in the organizational culture element and the lowest in the quality tools and techniques element.

To examine the relationship existing among the quality elements, the use of covariance and correlation coefficient statistics were used. The examination and the analysis of the covariance among the quality elements which are shown in appendix D' section C, indicated the existence of a positive relationship among all elements. This may be an indicator of why an improvement of a quality element, leads to the improvement of the overall TQM level implemented in an SME.

As is shown in appendix D', the covariance of TQM, of all the quality elements in each group, showed that the micro and the medium sized SME, presented the highest rates. Instead, the small sized SME presented positive but slightly lower rates compared to the other two groups of SME.

Similar results were derived from the analysis of the correlation of the variable shown in Appendix D'-Section C. Once again all the correlations among all variables were positively related and the groups with the highest rates were the Micro and the Medium SME. The Small SME' correlations were still positively correlated but at a lower level. The small and the medium sized SME showed the highest correlation among TQM and the performance appraisal element, which if compared with the medium (the largest) sized SME, the highest correlation is between the "Quality tools & techniques" and the "Quality processes".

From the examination of the correlation among the quality elements, it is evident that there was high correlation (higher than 0.5) among the "Quality tools and techniques" and "Organizational culture" elements for the medium sized SME. High correlation was

also realized among the “Quality processes” and the “Performance appraisal” elements for the micro and the medium sized SME.

For the medium sized SME, it was encouraging to find a positive correlation among the “Organizational culture” and the “Quality tools and techniques and quality processes” elements. This was also found to be true for the micro SME, the smaller in size SME. This finding, shows the intention of the medium and the micro SME to introduce the “Quality culture” elements which together with the “Quality tools and techniques and the quality processes” elements, will further support the implementation of TQM.

For the small sized SME, the highest correlation was found among the “Quality processes” and the “Performance appraisal”, followed by the correlation between the “Quality tools and techniques” and the “Quality culture” elements. High correlation was found between the “Performance appraisal “and the “Quality culture” element.

For the micro SME, high correlation existed between the “Performance appraisal” and the “Quality processes” element, followed by the “Quality tools and techniques” with the “Organizational culture” element. The important characteristic of those small in number of employees companies is their management willingness to incorporate the “Quality culture” element in their operations and the way of thinking and behaving. This would further validate their belief, supported from literature that quality should always begin from the acceptance and support of the top management. For micro SME this belief is easier to be realized and accomplished.

From the equivalent p-values that are shown in appendix D-Section C, it is found that the medium sized SME, exhibit the highest significance in the relationship among the “Quality tools and techniques” and the “Quality processes”. The relationship among the Quality tools and techniques” and the “Organizational culture” elements was also significant. High significant rates were found among the remaining quality elements in all groups. The only exception was the low significance characterising the relationship between the “Performance appraisal” and the “Organizational culture” for the medium sized SME.

6.5 SME – The Financial Ratio Analysis

Financial ratio analysis is considered an approach based on which the financial performance of a company and of an SME in particular, can be evaluated (Kampouridis et al., 2015).

Different sets of financial ratios are capable of examining different performance characteristics of a company, like its liquidity, profitability, solvency and efficiency. An analyst with the use of those ratios, is able to identify the strengths and the weaknesses of a company that are related directly or indirectly to those characteristics.

In the literature review, it was admitted that is difficult and occasionally impossible for a company in particular an SME to collect all the necessary information required in order to proceed to the evaluation of their financial performance.

In order to reduce the possibility of bias, a preliminary ratio analysis was conducted to the financial statements on all the ISO certified SME registered in the i-Mentor Hellastat database (1,245). This database was also used for selecting the SME email addresses where the questionnaire was delivered and from where the quantitative data (Quality and Financial) was collected.

The ratios used in this survey were presented in the methodology chapter and include the quick ratio, the asset; inventory and receivable turnover ratios; the return on assets and equity ratios; the debt to equity ratio and the z-score ratio (Altman's Function). The values of all those ratios, for all the SME registered in the i-Mentor Hellastat database were found and downloaded from it. The zip files downloaded, were converted into an xls format (MS-Excel), and the data were stored in a file with the name "SME financial Ratios". The data were then imported to the SPSS (v.20) software[9] in order to be processed further.

The period for which the Greek SME financial performance is analysed starts in 2008, the year in which the Greek financial crisis begun, and reaches the year 2014. Within these eight years, the selected financial ratios of all types and sizes of SME were identified. Those were also grouped based on the number of employees employed (Check the special field in the i-Mentor Hellastat database).

6.5.1. Financial Ratio Analysis – Descriptive Statistics

To proceed in the analysis of the financial ratios for each group of SME (Micro, Small and Medium) formed, it was vital to verify the equality of mean among each group. This equality was verified for each ratio and each year. For the equality of means analysis the EViews_V9 was used and the results derived are presented below and in Appendix F'.

[9] An authorized version is available in the premises of the American College of Greece (Deree College).

Acid test ratio analysis:

Starting with the acid test ratio, a ratio that examines a company's liquidity level, it was found that the behaviour of the means and the standard deviations of all three groups was similar over the years examined. The Anova F-test probability, was found to equal zero for the same time frame. This enables the rejection of the null hypothesis and the acceptance of the fact that the means among all groups throughout this time frame differ.

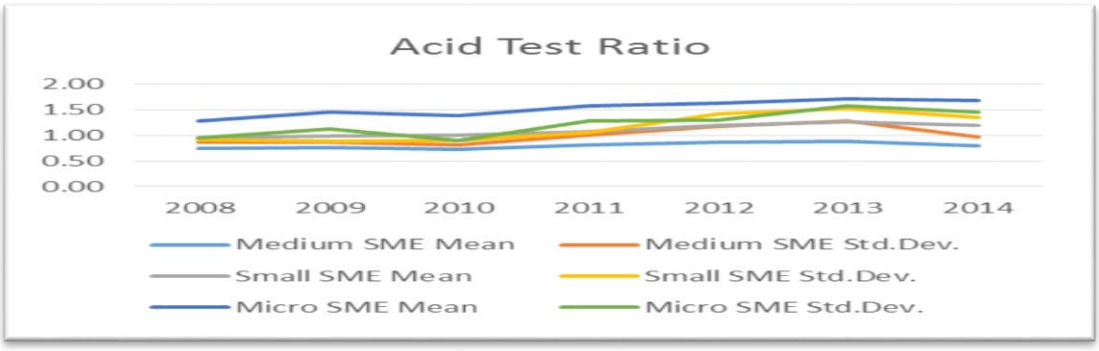


Figure 22: Acid Test Ratio Mean & St. Deviation

Asset turnover ratio analysis:

From the Asset Turnover ratio, a ratio which examines a company's efficiency level, it was found that among all three groups the means' behaviour and the standard deviations are similar and decline over the years examined. As seen in Appendix F' the Anova F-test probability for all the years examined was found to equal zero. The null hypothesis can therefore be rejected and the fact that the means among all groups throughout the time frame examined are different, can be accepted.

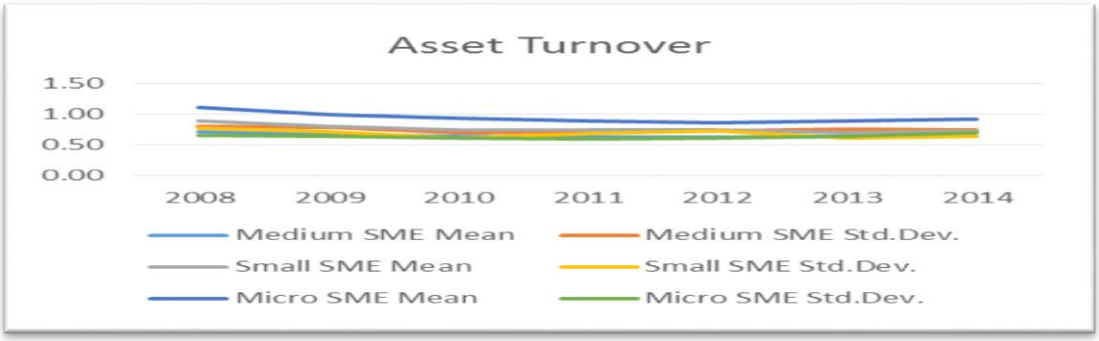


Figure 23: Asset Turnover-Mean & St. Deviation

Inventory turnover ratio analysis:

The results of the inventory turnover ratio, which examines a company's efficiency level, seemed to indicate that among all three groups the behaviour of their means and their standard deviations were similar. The behaviour however, of the St. Deviation of

the Micro SME presented a significantly higher flexibility in their means. From the results presented in Appendix F', it appears that for all the years examined the Anova F-test probability, is equal to zero. This enables the acceptance of the fact that the means among all groups, for all the years are different and the rejection of the null hypothesis.

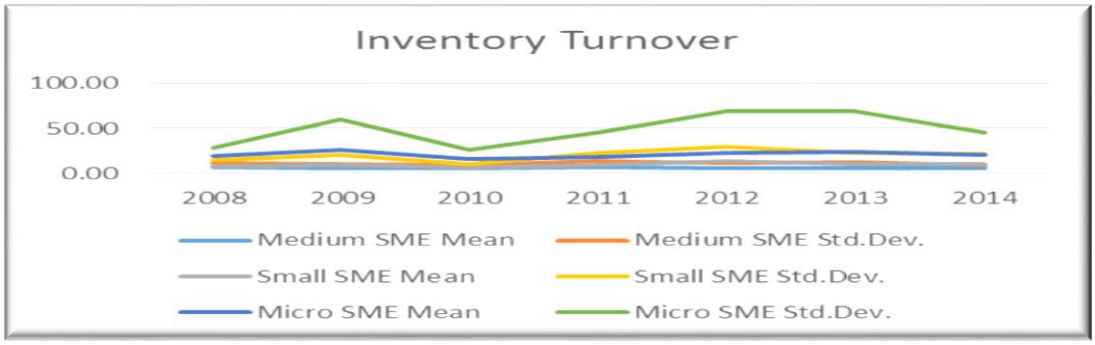


Figure 24: Inventory Turnover-Mean & St. Deviation

Receivable Turnover ratio analysis:

The receivable turnover ratio, which examines a company's efficiency level, showcased that the behaviour of the means and the standard deviations for all the groups for the period examined, look similar. The Anova F-test probability, shown in Appendix F' for all the years examined is equal to zero. This proves that the null hypothesis can be rejected and enables the acceptance of the fact that the means among the groups, for the period examined are different.

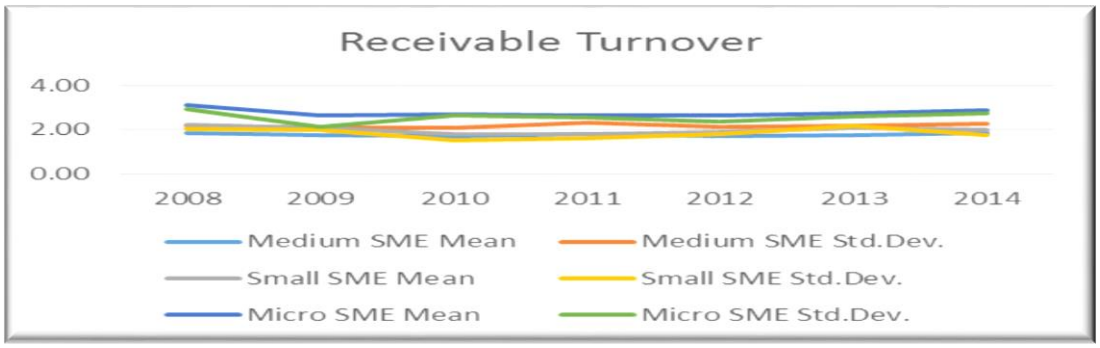


Figure 25: Receivable Turnover-Mean & St. Deviation

Return on Assets (ROA) ratio analysis:

The results of the Return on Assets ratio, which examines a company's profitability level, indicated that among all three groups, the mean and standard deviation behaviour look similar. For the micro SME however, the ratio's mean has a slightly

increased variation in the years 2012-2013. In Appendix F' and for all years examined the Anova F-test probability is either equal to zero or close to zero. That acts as an indication for the rejection of the null hypothesis and the acceptance of the fact that the means among all groups for all the years examined are different.

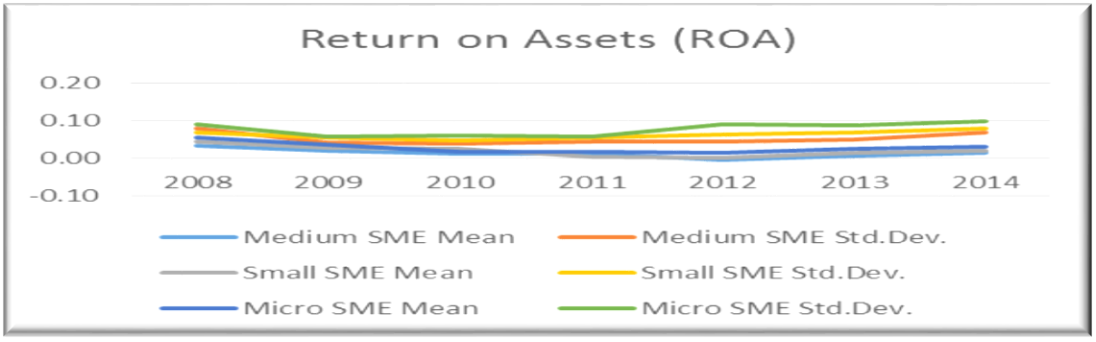


Figure 26: Return on Assets (ROA)-Mean & St. Deviation

Return on Equity (ROE) ratio analysis:

The results from the Return on Equity ratio, which examines a company's profitability level, seemed to indicate that among all three groups, the behaviour of their means and their standard deviations are different. Even though the means of all groups seemed to be down sloping, their standard deviations are up-sloping and with a great variability, especially for the medium sized SME. As it is shown in Appendix F', for the whole period examined, the Anova F-test probability, is either equal to zero or close to zero. This enables the rejection of the null hypothesis and acceptance of the fact that the means among groups for all years, are different.

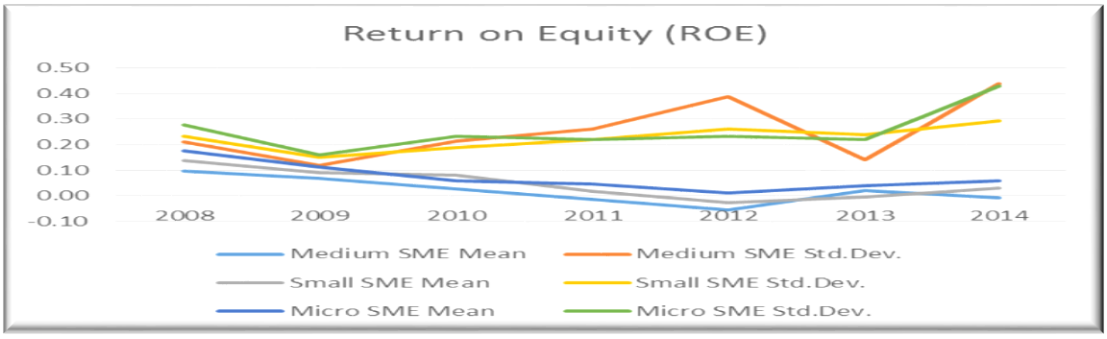


Figure 27: Return on Equity (ROE)-Mean & St. Deviation

Debt to Equity Ratio analysis:

From the analysis of the Debt to Equity ratio, which examines a company's solvency level, it was found that among all three groups, the behaviour of their means and their

standard deviations appeared to be similar. The exception was the St. Deviation of the Micro SME which for the year 2013 showed an up-sloping trend followed by a decline. In Appendix E', the Anova F-test probability is shown to be equal to zero or close to zero which allows the rejection of the null hypothesis and acceptance of the fact that the means among the groups, for all the years examined, are different.

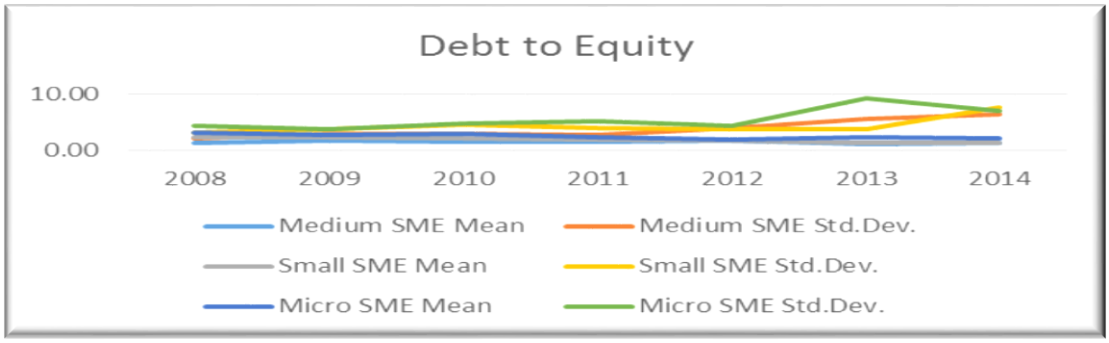


Figure 28: Debt to Equity-Mean & St. Deviation

Altman's Z-Score analysis:

Finally the most valuable ratio for determining a company's solvency and possibility of bankruptcy, the Altman's Z-Score, showed that among all three groups, the behaviour of their means and their standard deviations is similar. Evident in Appendix F' the Anova F-test probability, is equal to zero or close to zero for the whole period examined. This is an indication for rejecting the null hypothesis and accepting that the means among all groups for the whole period examined are different.

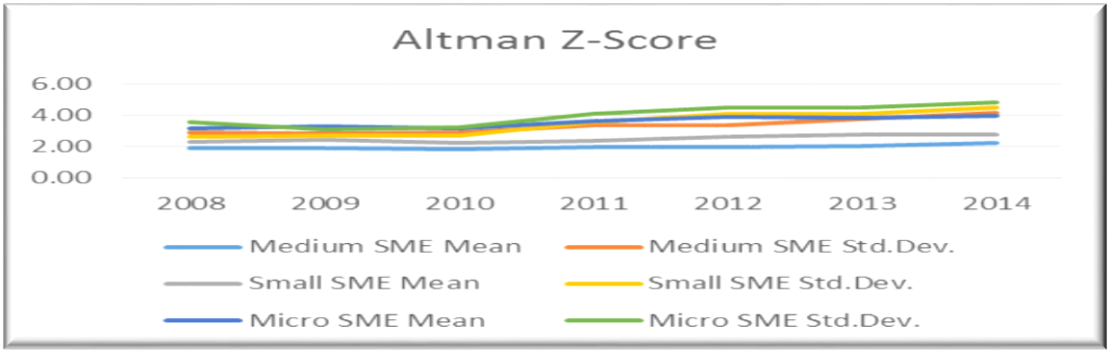


Figure 29: Altman's Z' Score-Mean & St. Deviation

6.5.2. Ratio Analysis (Trend analysis- Sample's population SME)

The values of the selected financial ratios for all the SME registered in the i-Mentor Hellastat database, were entered into the E-Views statistical package. This special

statistical software would contribute to the development of a trend analysis for each of the financial ratios for all the years of the period examined.

The first ratio examined was the Quick Ratio (Acid Test Ratio). This ratio is an extension of the current ratio (current assets over current liabilities) which tries to show a company's liquidity level. It is considered an "extension", because it aims at revealing the most liquid condition of a company, by simply excluding the less liquid conditions (such as the inventories, the prepaid expenses or any other), from the current assets (Hirt et al., 2013).

From the graphical representation of the acid test ratio, it is clear that the micro SME show a much higher liquidity than the small or the medium sized SME, especially after 2010. Trend analysis showed that the micro SME managed to cope better under the crisis conditions, in terms of their liquidity, compared with the other two groups of SME.

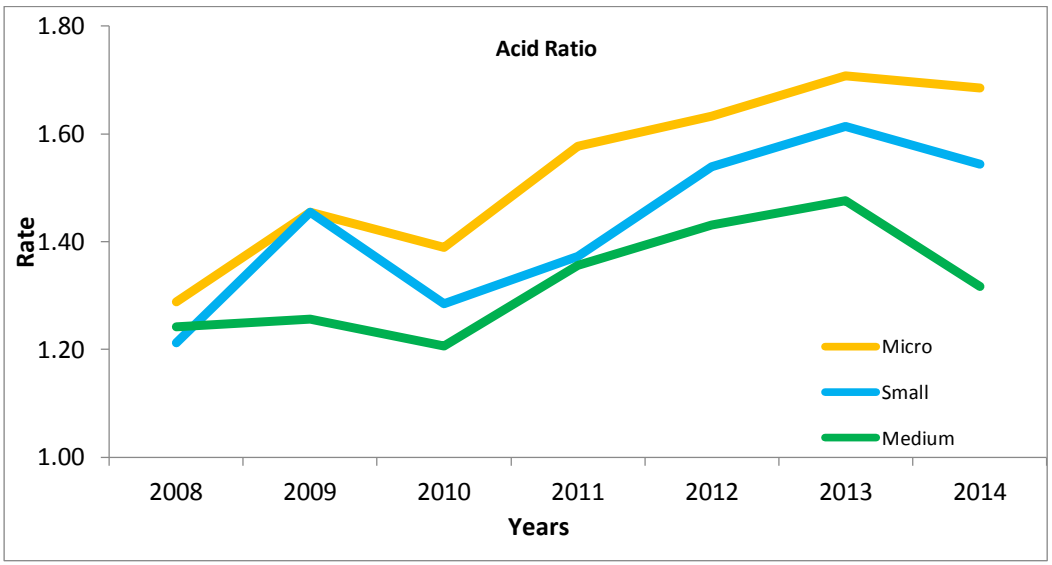


Figure 30: Acid Test Ratio-All SME Trend

The asset turnover, a ratio that pictures a company's efficient use of its Assets was examined next. From its trend analysis, the relationship between the turnover ratio behaviour over the eight years period is illustrated. The average value of the assets used during this period and the way they were used, brought an over increase in the SME level of sales. Only for the years 2010 and 2013 did the liquidity of all the SME groups decline.

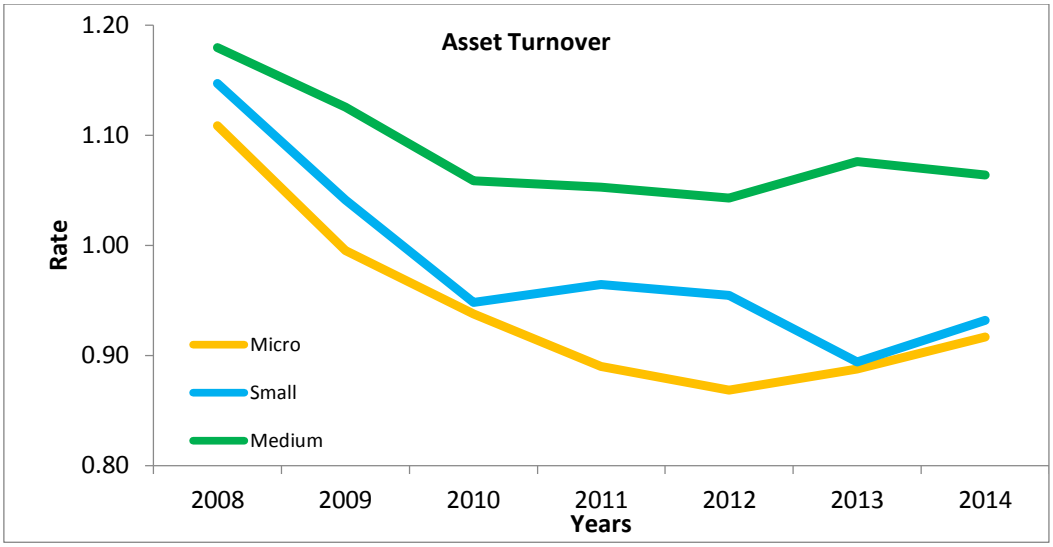


Figure 31: Asset Turnover-All SME trend

From the ratio's trend representation, it was clear that from 2008 to 2010, all the groups of SME experienced a decline in their efficiency. The most severe decline was realized from the micro SME, compared to the small and the medium SME, which managed to cope better with crisis given the improved utilization of their assets. The increase in the efficient use of the small SME assets from 2010 to 2012 should also be noted. Another important issue, is the decline of the medium SME efficiency compared to the increase in the other two groups, the micro and the small ones, in a period where financial crisis was the most severe.

Another ratio used in measuring a company's efficiency, is the inventory turnover ratio. It shows the relationship between a company's sales and its average inventory level. For management it is an indicator of how to control their inventories, in order to effectively and efficiently support their sales.

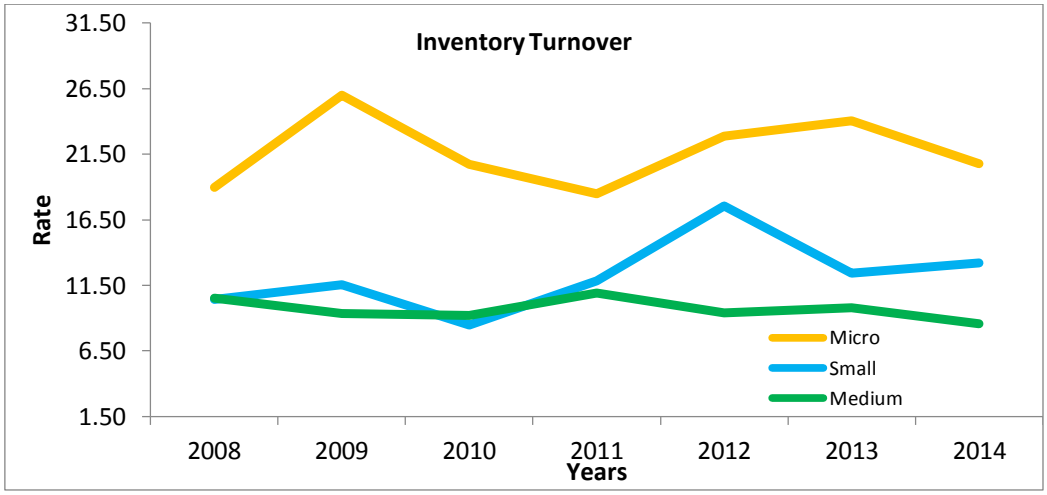


Figure 32: Inventory Turnover-All SME Trend

From the graphical representation of the inventory turnover's behaviour, it was realized that the micro SME showed a significantly higher level of efficiency in controlling their inventories. It was also revealed that they managed to cope better with the crisis conditions. This is because throughout the eight years, they managed to keep their inventory turnover ratio at better levels compared to all the other groups. The low but stable level of inventory turnover, realized from the medium SME should be noted. This can be compared to the unstable behaviour found in the small SME' ratio. From their trend, the inverse behaviour of the small SME to the behaviour of the other two groups' turnover rates becomes obvious. In 2013, the decline realized in the ratio from the micro and medium sized SME, is in contrast to the increase realized from the small sized SME.

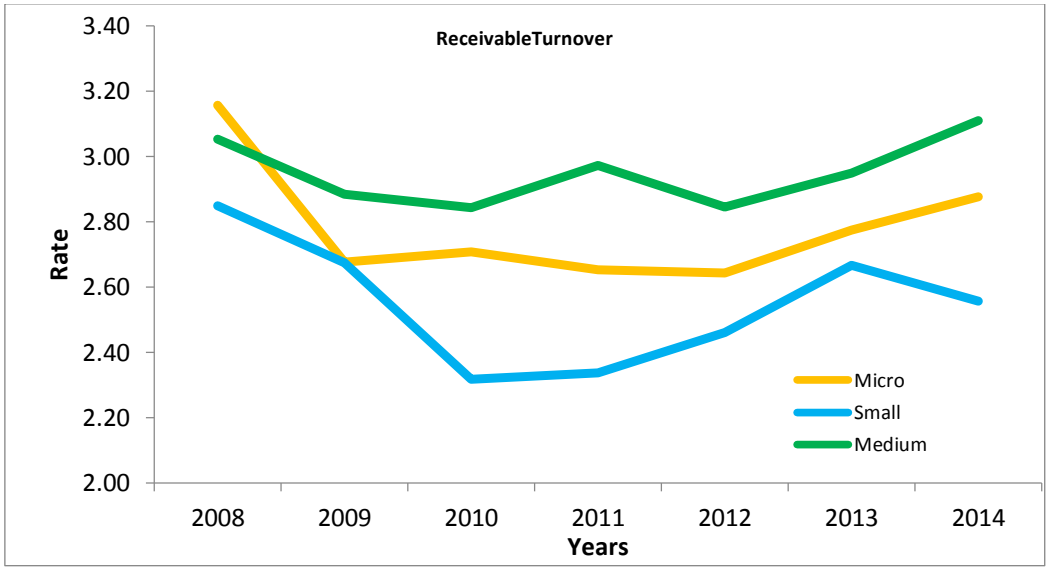


Figure 33: Receivable Turnover-All SME Trend

The accounts receivable turnover ratio reveals the relationship between sales and the average level of accounts receivable. The examination of its trend, reveals the way a company controls its credit policy. The importance of this ratio when economic and financial crisis conditions are realized is vital. When the opportunities for borrowing money are reduced, the option to use credit terms as a way of financing the activities of an enterprise is the only available option.

From the graphical representation of the trend of Receivable turnover ratio, it is evident that the micro and the medium SME managed to cope and better control their accounts receivable. The small SME showed the highest variability in the ratio's behaviour and is the only group that in the year 2013, experienced a sharp decline in that ratio. This decline can be interpreted in two ways: The first is that sales were declining substantially. The second is that there was a reduction in the companies offered credit

terms as a means of improving their liquidity. Worth mentioning is the behaviour of the micro SME A/R turnover ratio, that with the exception of a tremendous decline in 2009, managed to keep the A/R turnover ratio constant until 2012 during which growth was achieved again. That growth could be the result of either an increase in the company's overall sales or a simultaneous decrease in its offered credit terms.

The return on equity ratio is a ratio that examines a company's profitability and specifically the relationship between a company's earnings and its owner's investment.

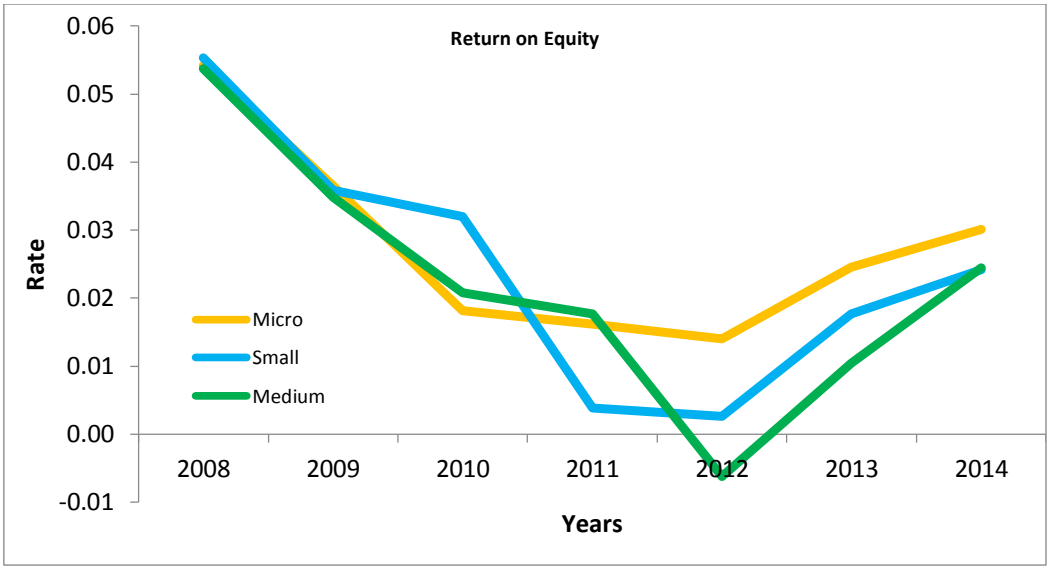


Figure 34: Return on Equity-All SME Trend

The company's earnings characterise the shareholder's (owner's) return on investment.

From that ratio's trend representation, it was found that after the year 2010, all groups experienced a tremendous increase in their return on equity and their profitability. Specifically, all groups managed to improve their earnings management procedures or even reduce their equity investments. It is clear however, that the micro SME controlled them better than all others; which acts as an indication that the micro SME are mostly composed of sole-proprietorships and are more focused on owners' returns. The above thoughts are also supported from the decline in the medium (the largest) SME ratio. The negative sign in 2012, could explain the attitude and the approach that the medium SME have for the improved financial performance of a company not necessarily resulting in higher owner's returns.

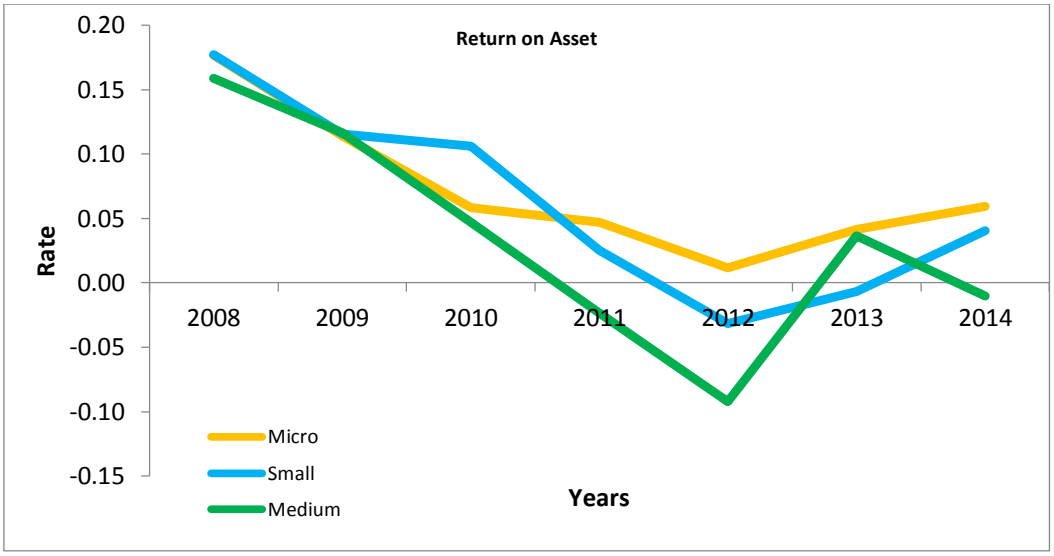


Figure 35: Return on Assets-All SME Trend

Another ratio is the return on Assets ratio. The return on assets ratio examines a company's profitability and more specifically the relationship existing between a company's earnings level in relation to the investments made in its assets. It can be thought of as the return on investment ratio on a company's total assets. Total assets are composed of the total fixed assets, the long term assets, the company's current assets and if available any intangible assets.

From the graphical representation of the ratio's trend, it is apparent that the micro SME managed to better control their earnings and their asset investments. The other two groups, were found to have negative values in that ratio, in the period from 2011 to 2013, which may indicate that their earnings dropped dramatically with a simultaneous, yet smaller level decrease in their asset's investments. Increasing their asset investments utilizing their existing and available funds, purchasing fixed assets or any other kind of asset is how they responded to that ratio's decline. Following that strategy, they have tried to avoid any deposit account "haircuts" or lose the value of their funds due to a possible and unexpected Government decision to change the National currency (Return to Drachma).

The solvency ratios are the ones mostly used in identifying a company's level of riskiness. The debt to equity ratio, is the solvency ratio that examines the relationship among the size of a company's debt financing with the size of its equity financing. In other words, the ratio offers information for a company's capital structure; the higher the ratio is, the higher the level of debt financing for a company and the higher its riskiness.

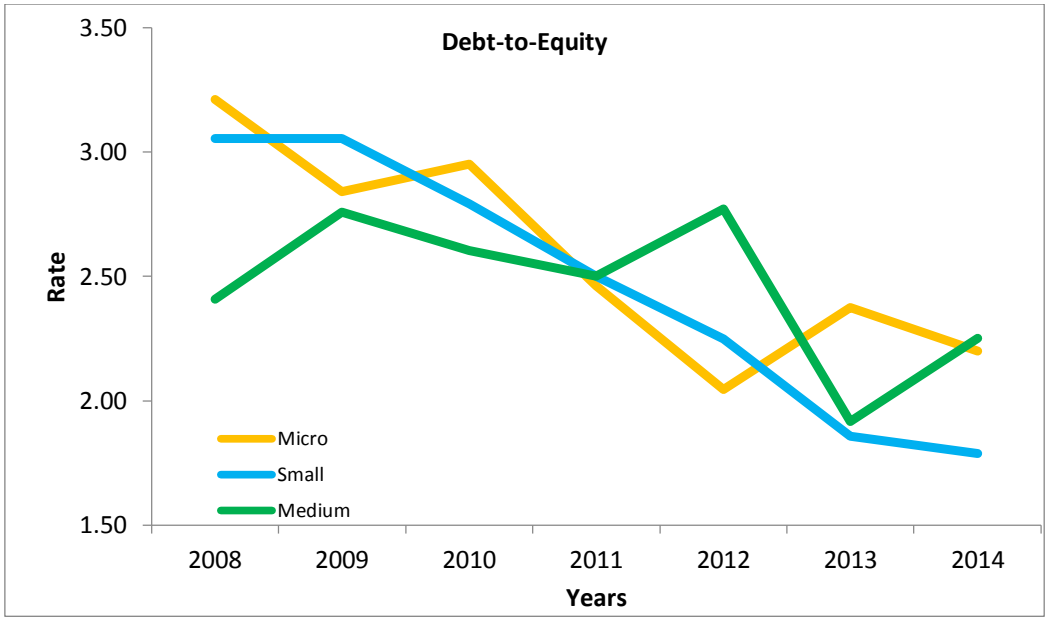


Figure 36: Debt to Equity-All SME Trend

From its trend's graphical representation, it is discernible that the small SME faced the greatest decline in their debt to equity ratio during the period examined. A possible increase in their equity financing and/ or a possible decline in their debt financing could cause this behaviour, reducing this way their overall exposure to risk. The graph also illustrates the good capital structure defined from the micro and the medium SME. Both have managed to reduce their debt to equity ratio in the years 2013 and 2012 respectively. Though after 2013, only the medium sized SME showed an increase in their ratio, indicative of the fact that the financial crisis imposed a higher level of riskiness on them. This behaviour can also be explained from the ability and reliability of only this size of companies to raise new funds through debt financing. The other two groups, the micro and the small SME, continue from 2013 onwards, to show a decline in that ratio accompanied by a reduced level in their riskiness.

The last and equally important ratio to the debt to equity ratio, is the z-score (Altman's score). As it has already been described in Chapter 3, the Altman's z-score is a combination of ratios aimed at identifying the possibility of a company going bankrupt.

Figure 37: Z-Score-All SME Trend

A company going bankrupt means that it is unable to pay its short and long term obligations, due to low earnings over its total assets, its low working capital (current assets less current liabilities) over its total assets, and low retained earnings over its total assets. In addition, the company's asset turnover and its debt over equity ratio do not adequately support its financial strategy.

The trend graphical representation, illustrates that the group with the highest Z-score, meaning the lowest possibility of going bankrupt, was the micro SME. The period from 2011 to 2013 was the worst period for the medium sized SME, given the ratios substantial decline. On the contrary, during the same period the small SME experienced an increase in their Z-score, indicating that they managed to continuously improve their financial strategy, resulting in a reduced probability of bankruptcy.

It is also important to note, that the worst period for all SME was 2009-2010, during which almost all groups were found to have a decline in their Z-score. Once again, the companies that managed to respond faster and continued to improve their financial position against bankruptcy were the micro SME. It is also important to note the almost constant trend of the medium sized SME. Their size and their ability to borrow at a lower cost and with better terms, gave them the chance to cope in a more efficient and effective way with the crisis conditions.

6.5.3. Ratio Analysis (Trend analysis- Sample SME)

The values of the selected financial ratios of the SME responded in the survey's questionnaire were entered into the E-Views statistical package. This special statistical

software contributed to the development of a trend analysis for each of the financial ratios and for all the years examined.

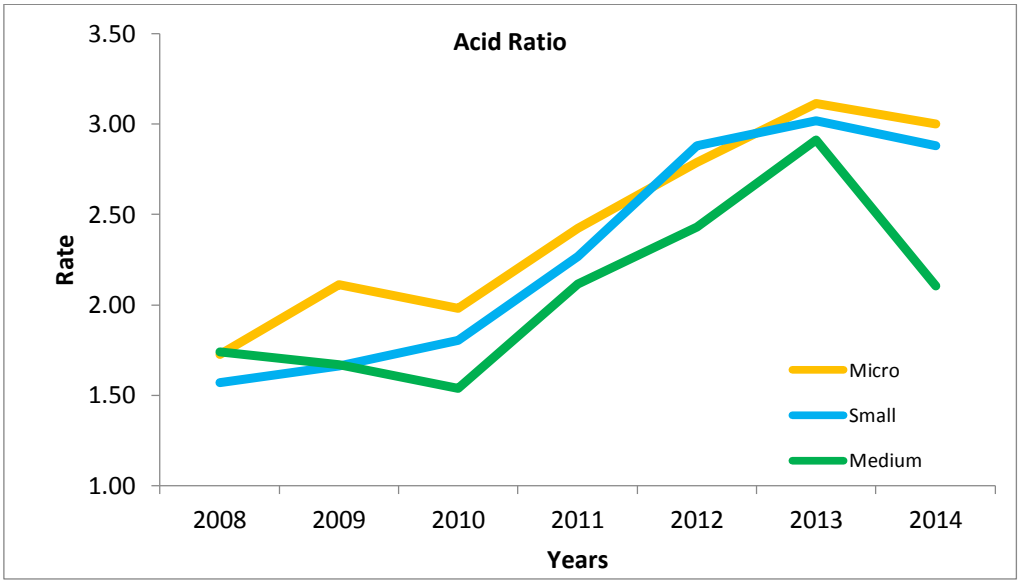


Figure 38: Acid Test Ratio-SME Sample Trend

Starting with the acid test ratio and from its trend's graphical representation, it is clear that the behaviour of the micro and the small SME was not that different, especially after 2010. For that period, the small SME showed a tremendous increase in their liquidity level that was substantially reduced in 2013 onwards. Though, this was a behaviour that almost all groups of the sample experienced.

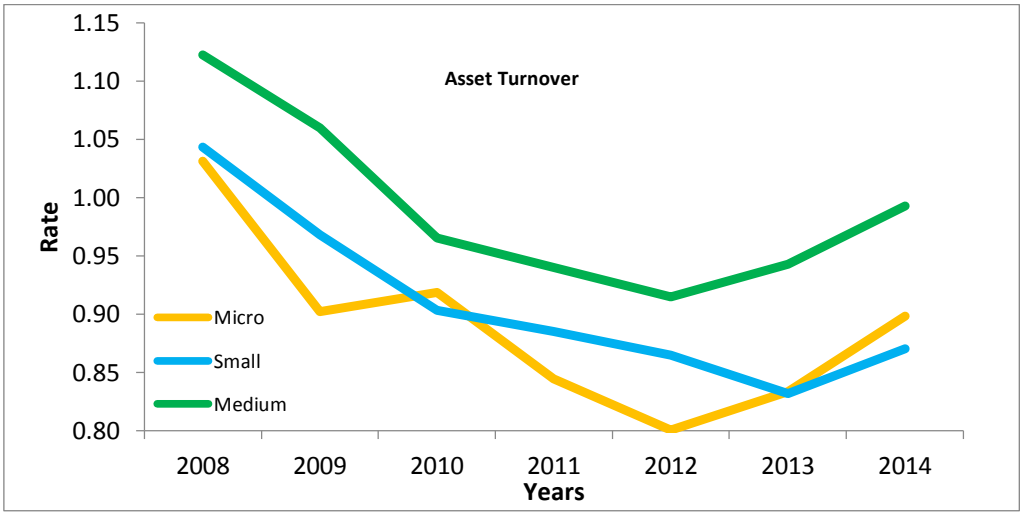


Figure 39: Asset Turnover-SME Sample Trend

The Asset turnover ratio, the ratio that examines the level of utilization and the level of efficiency of a company's total assets, for all groups examined showed a tremendous decrease in their value from 2008 to 2012. The exception is the micro SME which in 2009 managed to stop the decline and instead experience growth in that ratio. The

other two groups of SME, managed to simply reduce the rate of its decline. From 2012 onwards, growth is recorded in both the micro and the medium SME, but for the small SME growth begun one year later, in 2013. This was an indication that all groups of SME, managed to impose better control over their assets, in order to have the necessary funds needed for their maintenance.

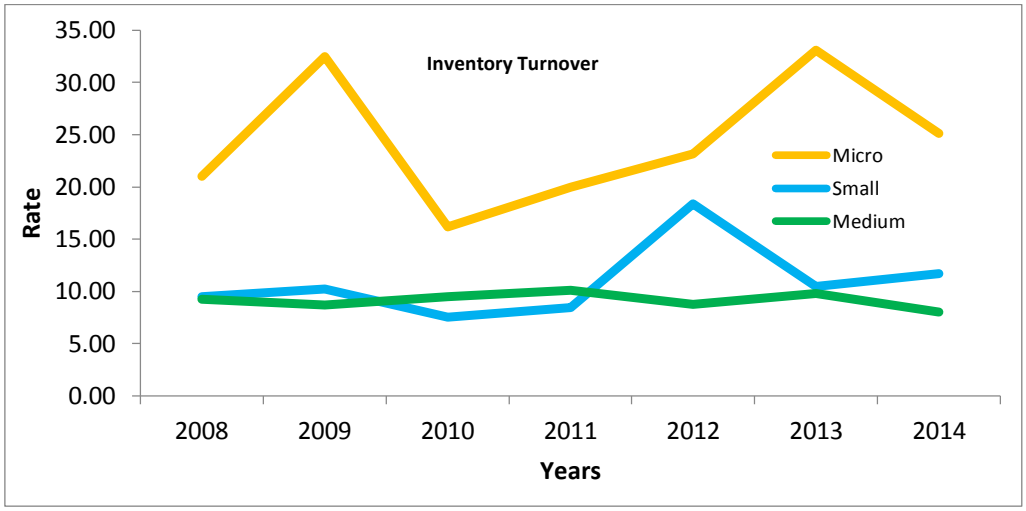


Figure 40: Inventory Turnover-SME Sample Trend

For the inventory turnover ratio, the only group that managed to show stability was the medium (large) SME group. Similar behaviour though also appears from the total number of SME examined. It is important to note the great instability that both micro and small SME showed on that ratio during the period 2012-2013. This instability is characterised from an increase in its growth rate in 2012 and an immediate decrease in the following year. Similar decrease in the ratios growth rate, was realized from the medium sized SME. Instead, the small SME managed to achieve positive growth rates in 2014.

The procedures used in controlling their inventory level, in comparison with the anticipated level in sales, brought all groups, excluding the medium SME, to incur instability in their inventory turnover ratio. Minor differences were realized among our sample and the population of the SME.

The receivable turnover, is a ratio that shows the relationship between sales and the average level of the SME account receivable account. For that ratio, no differences have been realized among the two sets of data (Population and sample) examined.

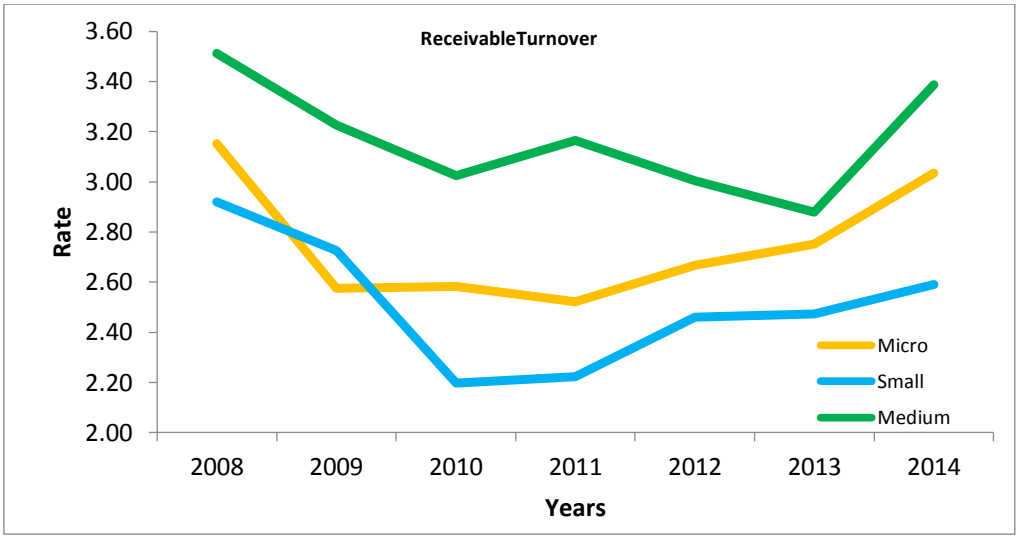


Figure 41: Receivable Turnover-SME Sample Trend

Focus on the behaviour of the sample, indicated that the medium SME presented a much higher utilization of their accounts receivable account. That is, they managed to correctly implement the procedures that supported the increase in their sales level, offering achievable and more attractive credit terms to their customers. That was a behaviour realized in both samples of SME. Among the three groups of SME examined, the small SME are those that show the lowest rates in the receivable turnover ratio. However it is an achievement to have not attained negative growth rates in the period 2010-2014 given the crisis conditions. The best performance of all is realized from the micro SME which managed, in the period examined, to achieve positive growth rates, especially during and after 2011. Their ability to maintain their credit policy at a level so as to support consumption, satisfying their customers under such difficult economic conditions can be considered a challenge that was successfully accomplished.

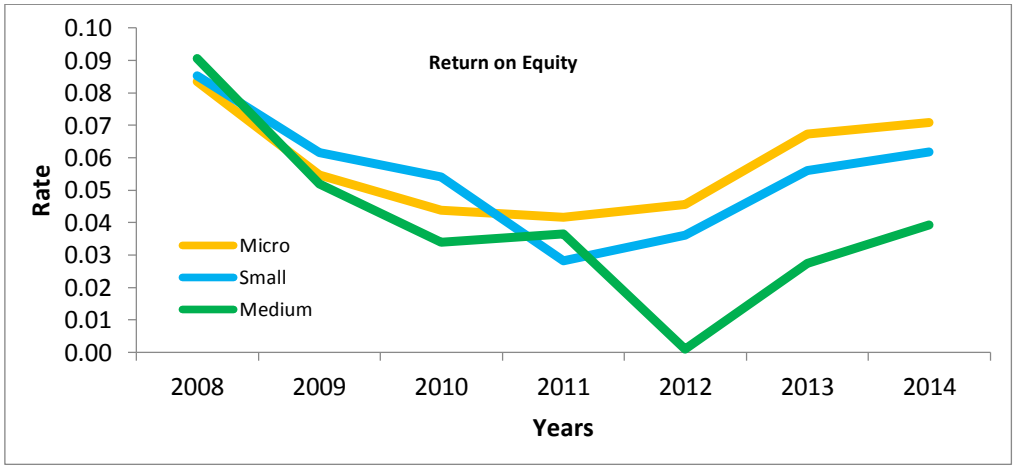


Figure 42: Return on Equity (ROE)-SME Sample Trend

Regarding the profitability group of ratios, with particular focus on the return on equity ratio, the period 2008-2012 was a disaster for all SME. Both samples incurred a steep and enduring decline (lasting almost four years) in their ROE ratio. However in the survey sample's trend analysis, it was found that in 2011, the small and micro SME experienced a degree of recovery, while for the medium SME the recovery in the form of positive growth began a year later in 2012 and continued in subsequent years. For all groups and for both samples, the increase in the ROE ratio was positive. This is either a result of the increase in their earnings or a result of the tremendous decrease in the shareholders investments. Given that for that period, the tax rates were increased, it is more likely that the second option explains this behaviour.

The return on assets ratio measures a company's profitability and from the trend analysis conducted both groups (population and sample) showed similar behaviour. Specifically, for our sampled SME, the ROA showed a decline up to the year 2011. Instead the micro and the small SME managed to reverse its behaviour leaving the medium SME's ROA to continue its decline until 2012. That was the year where all groups experienced an increase in their ROA.

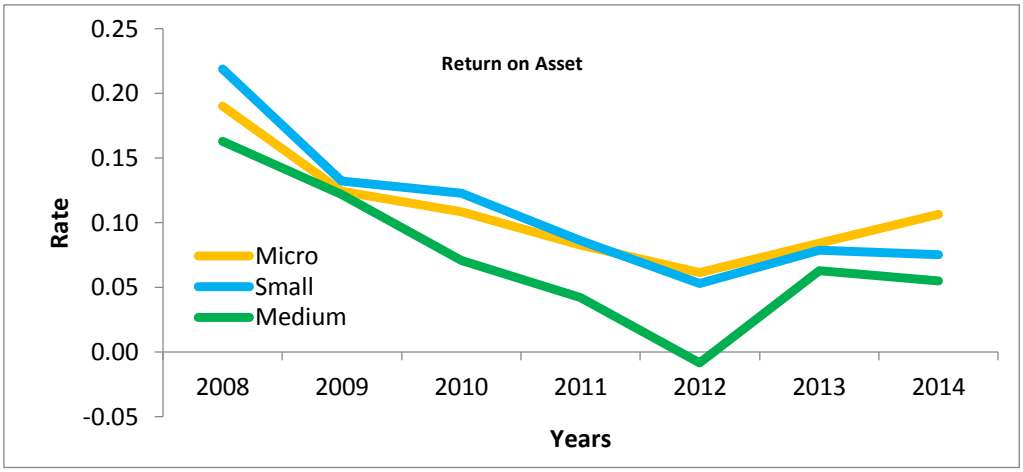


Figure 43: Return on Assets (ROA)-SME Sample Trend

The decline experienced from all groups in the period 2008-2012, could be explained from the new policies and legislations imposed from the European Union and the monetary fund committee to all European Union members. These new policies and legislations mostly referred to the asset valuation and asset taxation legislation that probably caused this tremendous decline in the ROA ratio.

From 2013 onwards however, the return on asset ratio for both the medium and the small SME starts to decline again. The only group that managed to retain its positive growth rate was the micro SME, due to the low level of investments they made and their reduced level of earnings. That combination is what probably brought the micro SME, a positive growth rate in their ROA ratio.

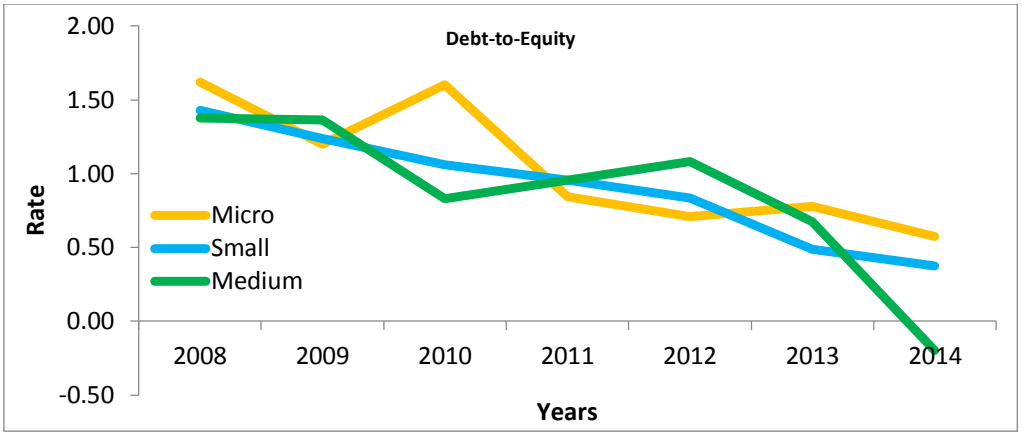


Figure 44: Debt to Equity-SME Sample Trend

Regarding the solvency ratios, the debt to equity ratio shows a decline which started in 2008 and continued until 2014 that almost matches the behaviour of the whole population of SME. The medium SME experienced the highest decline but during the period 2010-2012 an increase was recorded. Though the ratio's decline continued at a higher rate until 2014 at which time negative growth rates ensued. For the small and the micro SME that ratio decline was not as steep. The capital structure they decided and followed gave them the opportunity to reduce the negative growth rate. In particular, in 2012, the micro SME managed to turn that negative growth rate into a positive one, but in 2013 onwards, growth rates became negative again.

For the last group (solvency) of ratios examined, the behaviour of the z-score rate is encouraging for both the population and the survey's sample of SME. Specifically, for the medium and the small SME, the z-score showed an increase for all the years examined except for the period 2011-2012 during which the medium SME showed an almost zero growth rate.

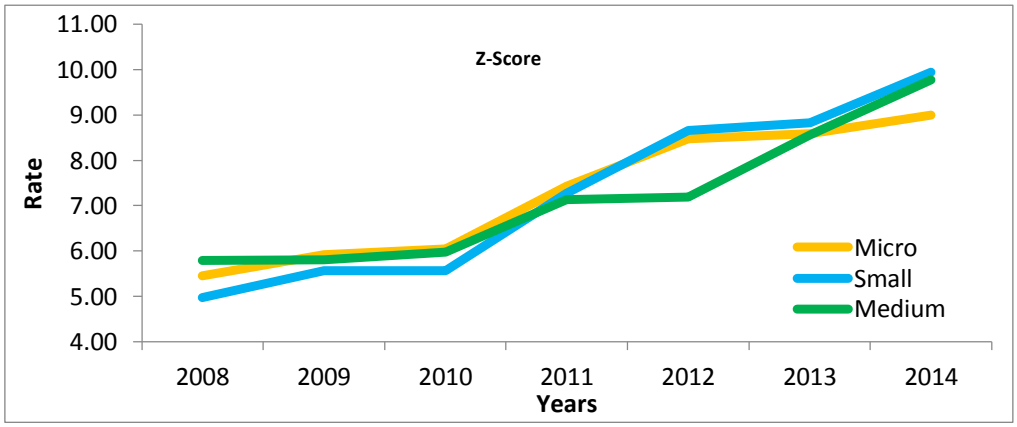


Figure 45: Altman's Z-Score-SME Sample Trend

Close to zero is the growth rate for both the small and the micro SME for the years 2012 and 2013. From 2013 onwards, the only group that showed a reduced growth rate is the micro SME. The heavy taxation imposed to sole proprietorships, during that period of time, is what may have caused this behaviour. Though, considering that the behaviour of the micro SME population (registered in the i-Mentor Hellastat database) z-score was improved, the belief that these are the companies that can survive better under crisis conditions is still verified.

6.6 TQM and Financial Performance

This section introduces the most important analysis of the results derived. It shows the results derived from all groups of SME financial performance in relation to the level of quality they implemented. The three different groups of SME based on their size were the micro, small and medium SME and the three different groups of SME based on the level of quality implemented were the ISO SME, the ISO+ SME and the TQM SME. The analysis approach as this is presented in Figure 46 will blend the characteristics of the first groups with the characteristics of the second groups of SME and identify their financial performance identified from their ratio analysis.

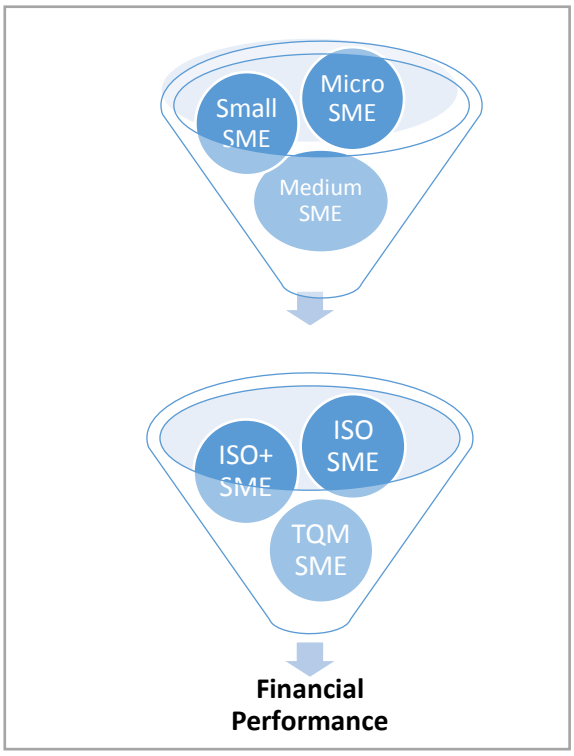


Figure 46: SME Categorization (Size & Quality Level)

6.6.1. TQM SME Results

The first group of SME examined was the one that implemented the elements of TQM more and showed willingness to continue their journey towards quality. Those companies were named “TQM SME”. In the 5-point likert scale the TQM SME where the ones that assigned all questions with a value of 5.

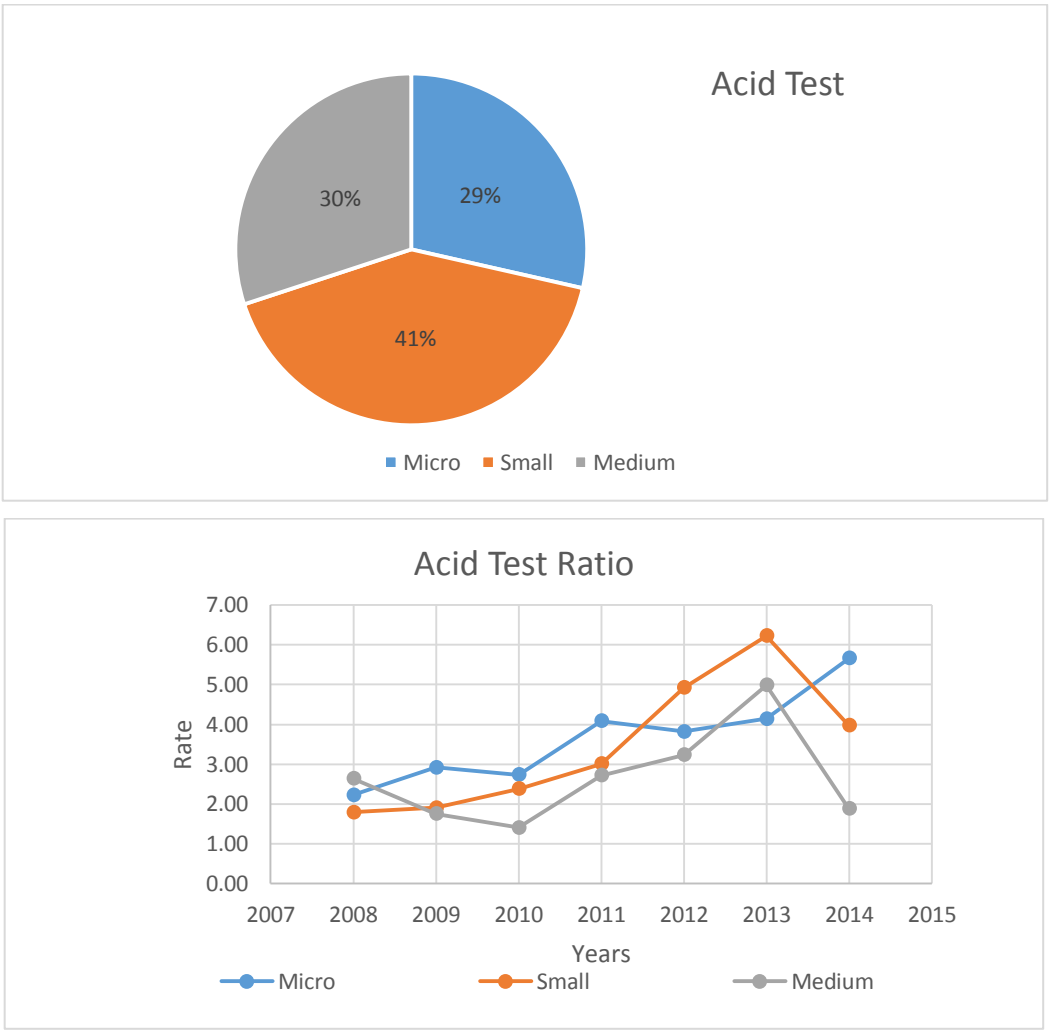


Figure 47: TQM SME - Acid Test Ratio

From the analysis of the acid test ratio, a ratio that shows an SME’s level of liquidity, it seems that the Micro SME were the ones that outperformed in the period 2012-2014 (Figure 47). The higher the ratio, the higher the level of liquidity a company has. The micro SME managed to keep their liquidity growth rate at a continuously growing rate. During the period 2008-2010 however, the ratio of that group and that of the medium SME group were declining. The small SME were the only ones whose acid test ratio displayed growth in the period 2008-2013. The acid test ratio of the medium SME, showed a remarkable increase from 2010 onwards together with the small SME, an

indication of the efficient and effective working capital management they applied. Though the same ratio and the same SME experienced a substantial rate reduction in the period 2013- 2014. From the average of the means for all the years examined and their standard deviation, the small SME were the ones that showed the highest variability in their acid test ratio and in their liquidity level overall followed by the micro and the medium SME respectively. (Appendix F').

From the analysis of the next group of ratios, the solvency ratios, the behaviour of the debt to equity ratio for the micro and small SME were identified as being similar. The medium SME presented a higher variation in their ratio behaviour, specifically for the period 2009-2010. From the pie diagram in Figure 48, it is evident that the medium SME are the ones that show the highest variability given the economic crisis conditions.. They were followed by the small and micro SME, which incurred a slight decline in their debt to equity ratio over the period examined.

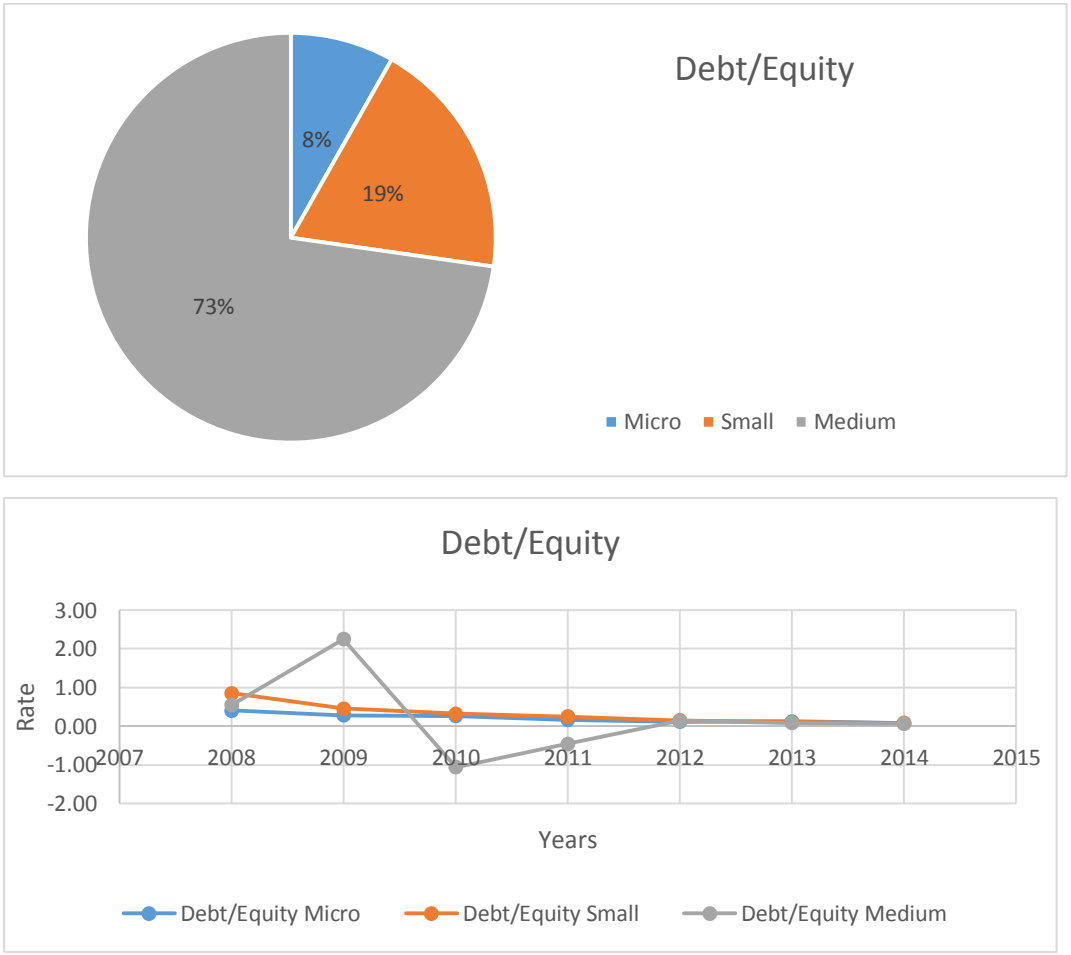


Figure 48: TQM SME - Debt to Equity

From the analysis of the Altman Z-Score, it was found that the variability of the small SME is not large. Instead for the period 2010-2012 the variability of the mean of the

medium SME Z-score rate was the largest. Overall, all SME groups experienced an increase in their ratios over the period examined, (Figure 49) except the small and the medium SME for which the ratio declined in the years 2010 and 2012 respectively. That behaviour was an indication that the SME were either withdrawing from the Greek market, or they were simply trying to restructure and adjust their operational and financial strategies, in order to survive against the severe economic and financial crisis conditions.

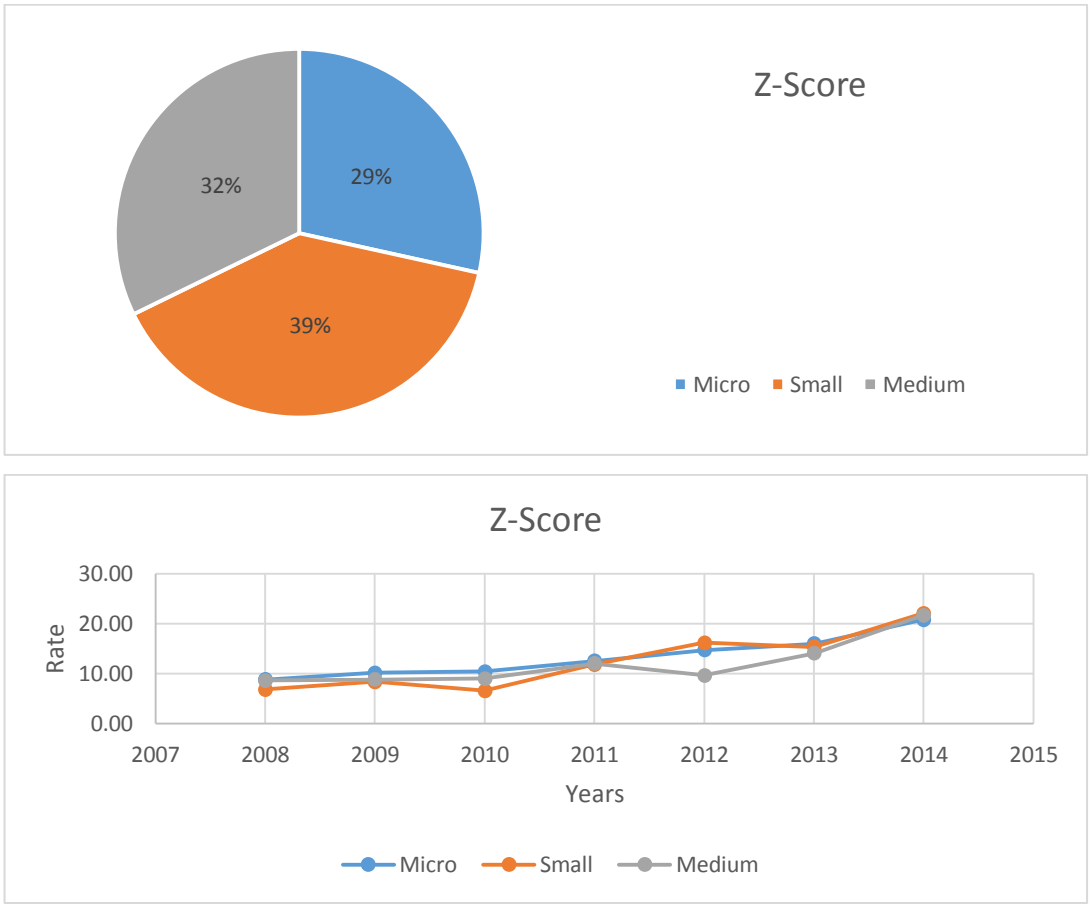


Figure 49: TQM SME-Altman's Z-Score

A valuable set of ratios are the ones that try to identify the efficiency level of a company. The first, is the asset turnover ratio which examines the efficiency of a company's assets in relationship to the company's level of sales. The productive and efficient use of a company's assets is what can lead a company to increase its level of sales. From the ratios behaviour, in all groups of SME it was evident that the medium SME managed to better control its behaviour (Figure 50). Substantial is the growth that occurred immediately after 2012. Whilst testing the ratios sensitivity for all groups of SME, it was clear that the small SME were the ones with the highest variability with

the other two groups (medium and small) displaying a similar rate of variability and sensitivity.

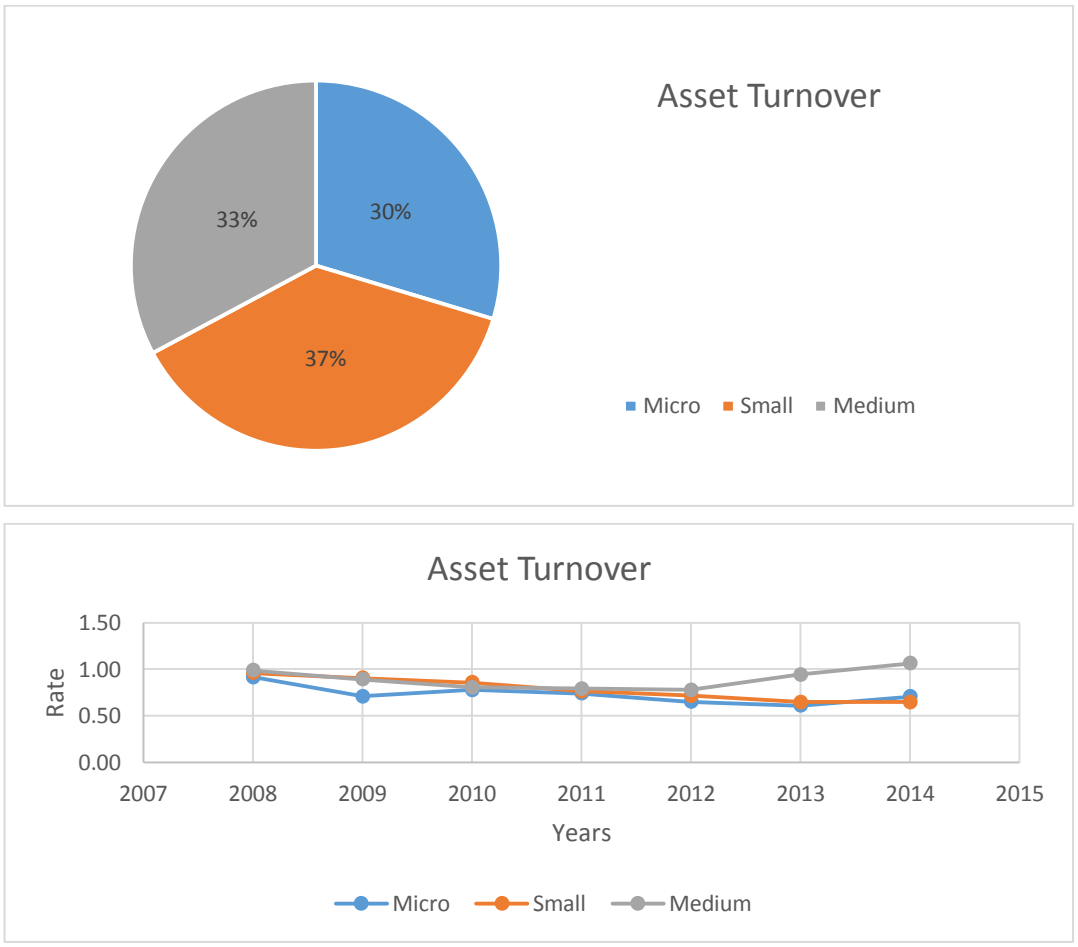


Figure 50: TQM SME-Asset Turnover

For the Inventory turnover, the micro SME showed the best but the most unstable performance. This unstableness is probably explained from the variability (St. Deviation) that the micro SME showed on average (84%) on the acid test ratio for the whole period as this is shown in the pie chart (Figure 51). The small and the medium SME managed to retain a more stable behaviour over the years of the economic crisis.

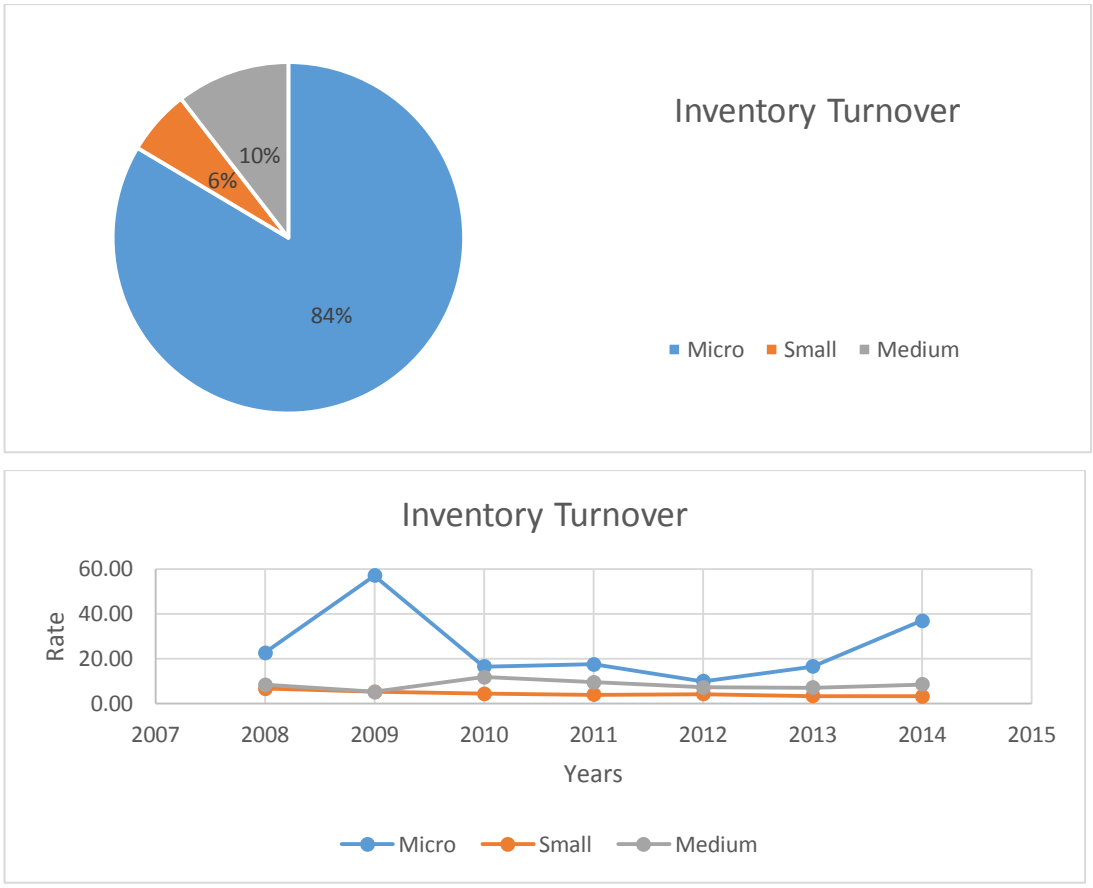
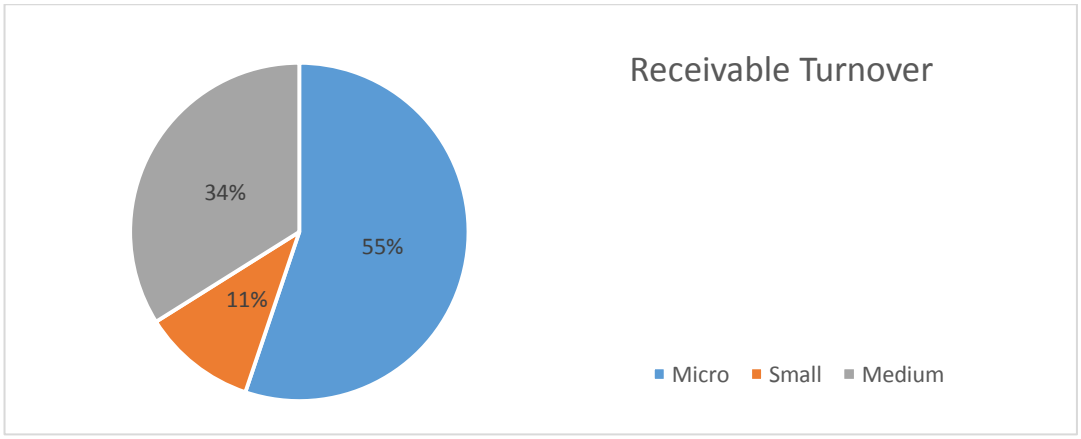


Figure 51: TQM SME - Inventory Turnover

The least variable behaviour comes from the small SME, which was closer to the behaviour of the medium sized SME.

Concerning the receivable turnover, once again the micro SME had the best performance. Excluding the period 2011-2013 when micro SME showed a no-growth variation to that ratio, in all other years its growth was positive. This behaviour compared to the behaviour of the other two types of SME (Small and Medium) that appear in Figure 52 is very promising.



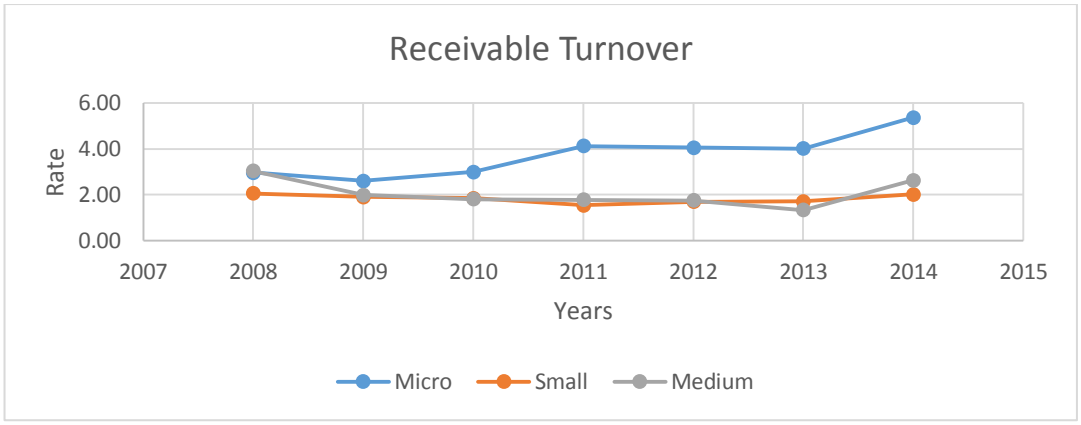
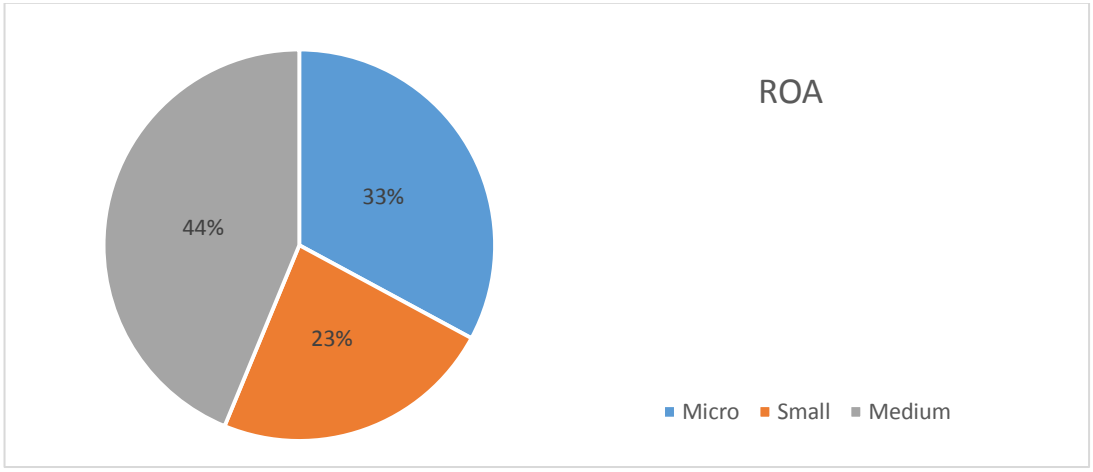
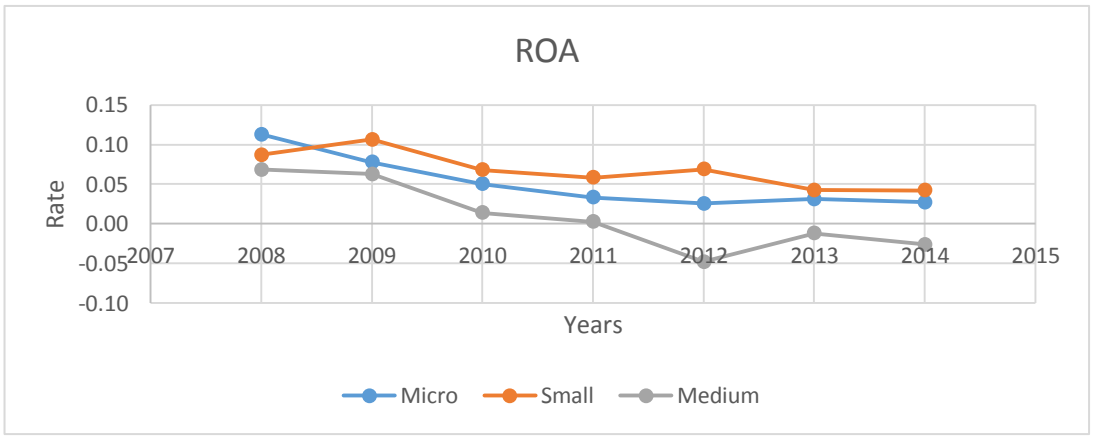


Figure 52: TQM SME - Receivable Turnover

The micro SME also present the highest variability (55%) in the receivable turnover ratio, followed by the medium SME, (34%) and the small SME (11%).

For the profitability ratios, both the ROA and ROE show similar behaviour. From 2008, the TQM SME experience a continuous decline in their profitability and their owners/Investors. It is evident that this decline is more severe for the medium SME than for the small or micro SME. In fact, the small SME managed to respond better to the crisis conditions in terms of their profitability (ROA and ROE).





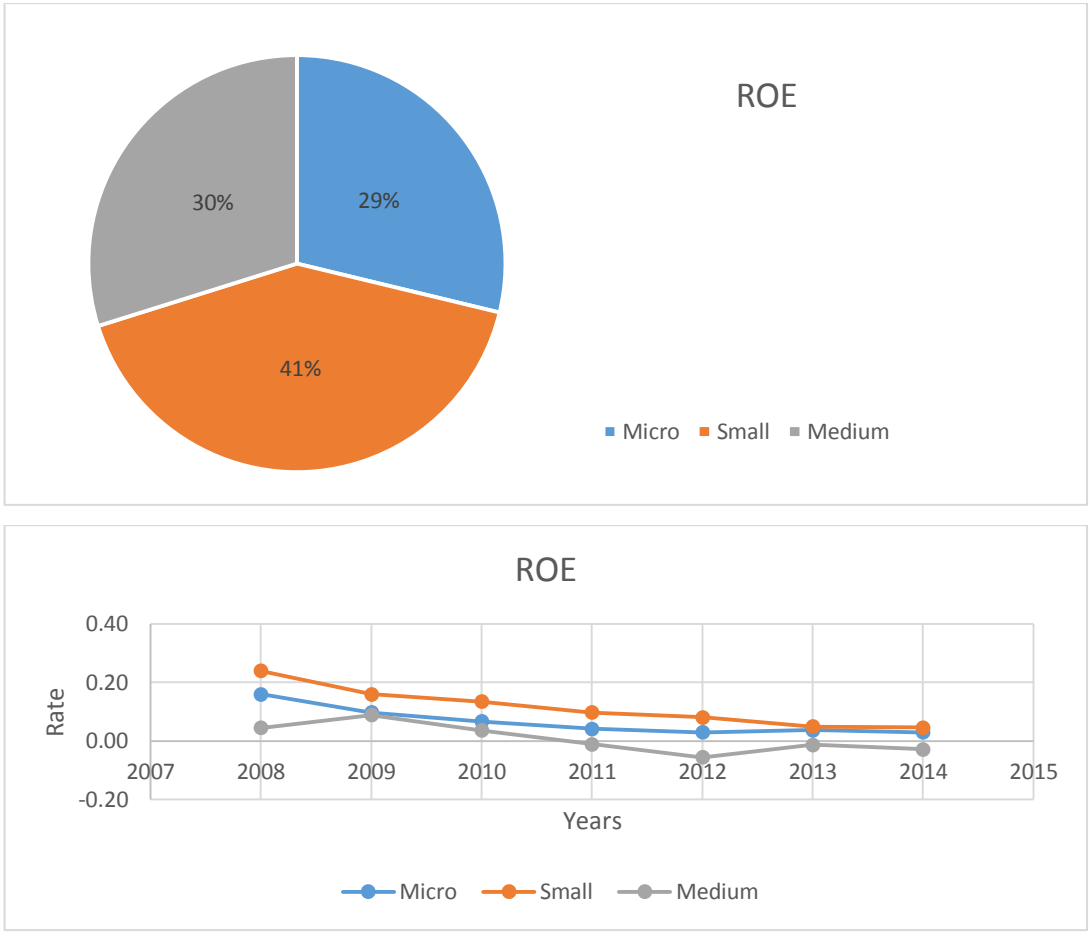


Figure 53: TQM SME - ROA & ROE

It is also important to note, that in 2011 the rates of the ROA and ROE of the medium SME dropped to negative values and remained negative until 2014.

It is also clear from the pie charts (Figure 53), that the medium TQM SME and the small TQM SME sustained the highest variability in the ROA rate and in the ROE rate respectively. For the ROA ratio, the next most volatile group of SME, was the micro SME and the least volatile the small SME group. The next most volatile ratio was the ROE of the medium TQM SME group and the least volatile was the micro TQM SME group.

6.6.2. ISO+ SME Results

The next group examined was the ISO+ SME, which are the SME that decided to continue their quality journey with further enriching the quality elements developed for receiving the ISO certification. The ISO+ SME are characterised from processes, tools and activities, cultural elements and appraisal techniques that exceed the ISO requirements, but not at a level which would elevate them to TQM SME. The rate that

characterised the responses of these SME as being ISO+ was between 3 and 4 in the scale of 5.

For testing their liquidity, the acid test ratio was used. The results showed that all groups realized an up-sloping growth rate until 2013, but only the small ISO+ SME continued to have ascending rates the following year (2014). The medium and the micro ISO+ SME incurred a decline in their growth rate (Figure 54).

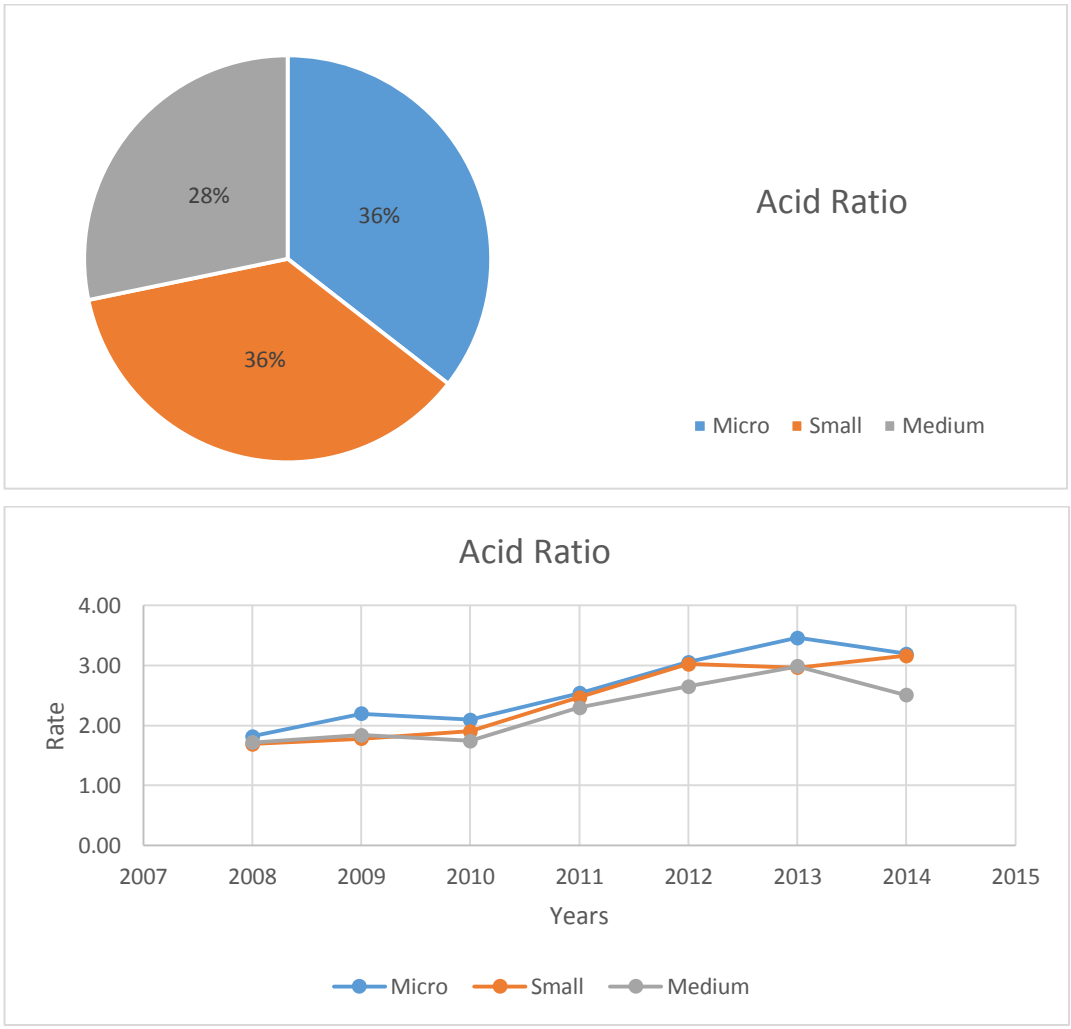


Figure 54: ISO+ SME - Acid Test

In terms of the ratios variability, it was found that the micro and the small ISO+ SME showed similar deviations in their liquidity, followed by the medium ISO+ SME that the ratios deviations were slightly lower. Exception was the year 2013 when the small SME had a decline in their liquidity level. This is an indication that all groups had approximately the same responsiveness to the economic, political and financial events that characterised the Greek crisis during that period.

The examination of the solvency ratios of the ISO+ SME, revealed that all groups exhibited a down sloping trend in their debt to equity ratio. The companies attempted to reduce their dependency on the banking system that was collapsing and this resulted in the ratios decline (Figure 55).

As the debt to equity ratio decreased however, the probability of the companies going bankrupt increased. The differences among the groups are minimal, with the exemption of the micro ISO+ SME which only showed an increase in the ratio for the years 2008 and 2010.

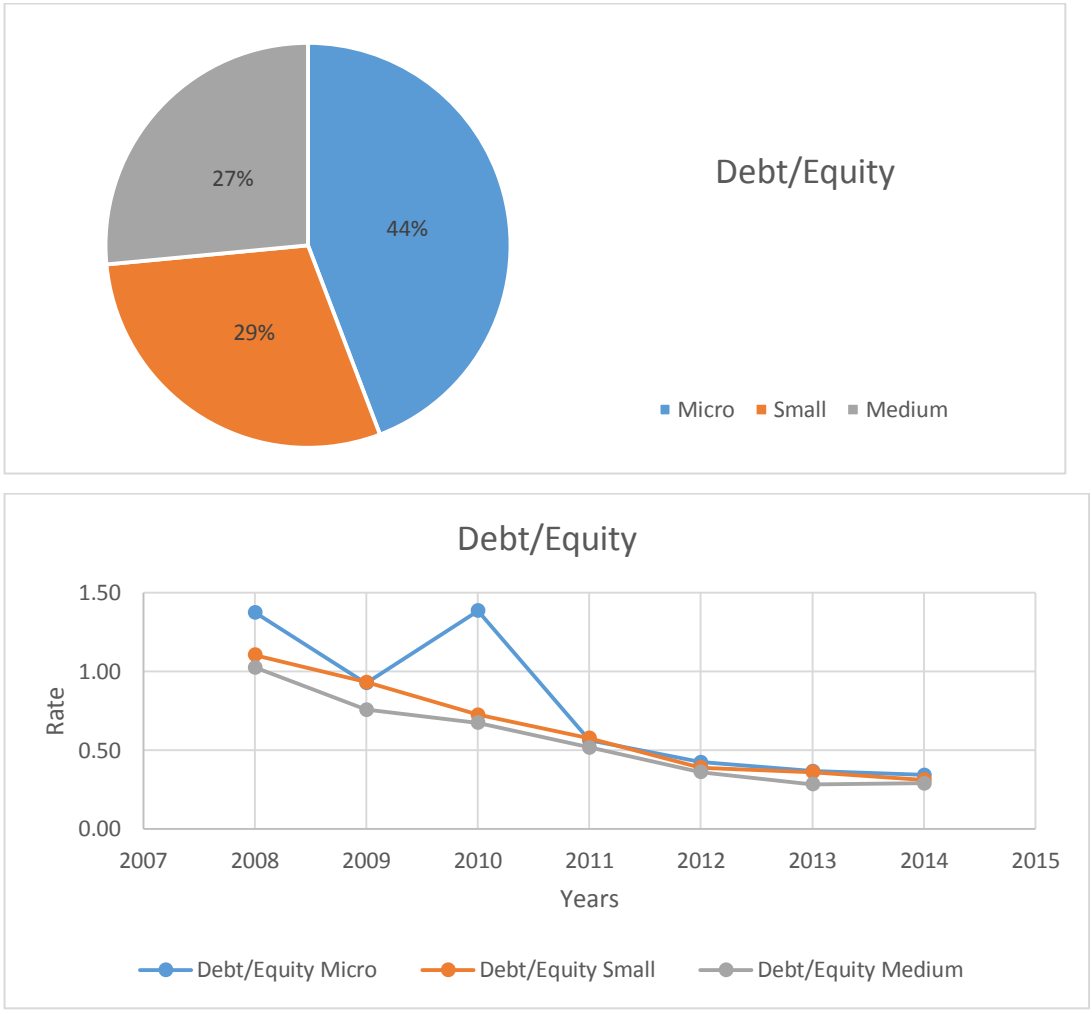


Figure 55: ISO+ SME - Debt to Equity

Regarding variability and sensitiveness, it was evident that the micro ISO+ SME were the more sensitive to the Debt to Equity ratio (44%), followed by the medium ISO+ SME (29%) and the small ISO+ SME (27%).

For the Z-score ratio, the small and the micro ISO+ SME showed the highest rates, followed by the medium ISO+ SME (Figure 56). This is an indication that the micro

mostly and the small SME that were more sensitive to the debt to equity ratio have managed to keep their probability for bankruptcy at a lower level compared to the medium ISO+ SME that their Z-score ratio has been declined. Once again the micro and the small SME's flexibility and ability to survive under different and difficult condition, has been verified.

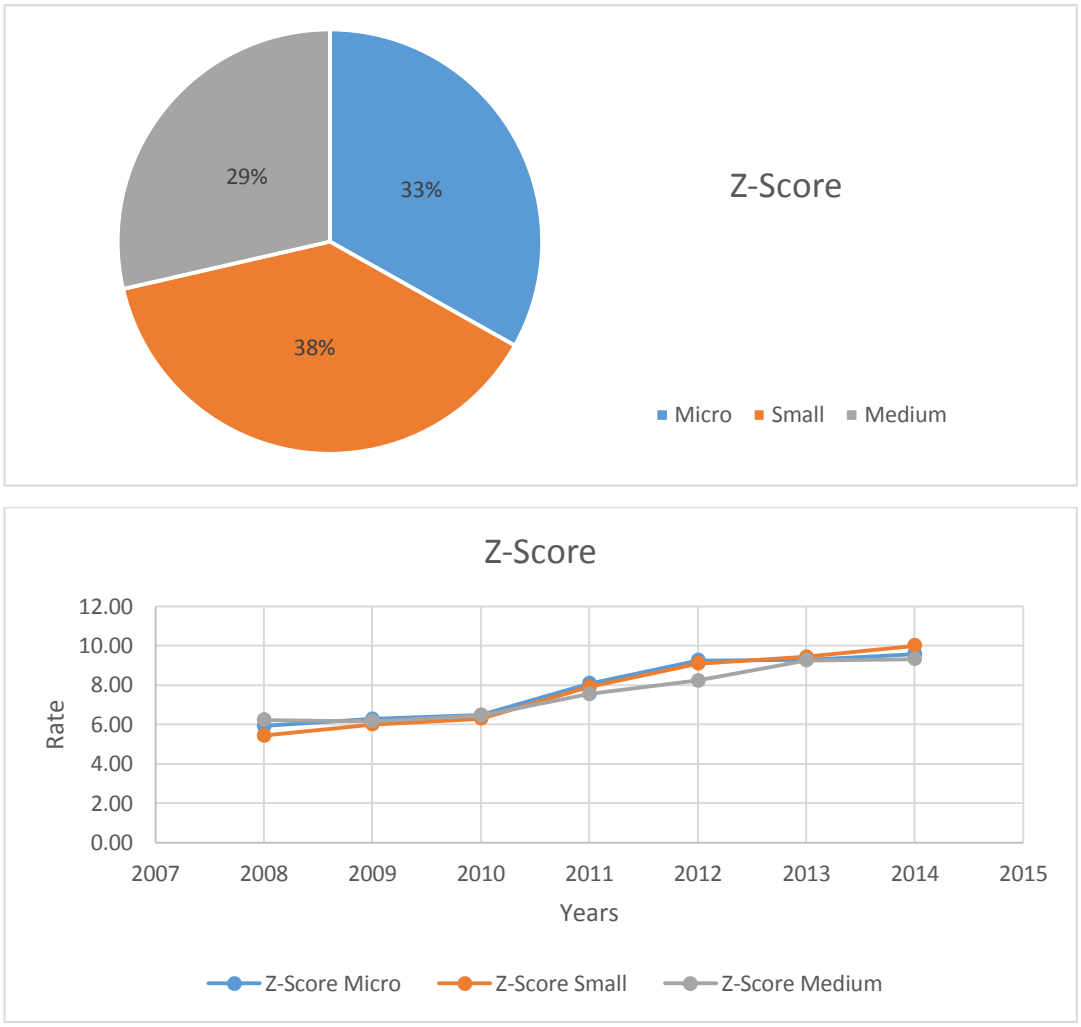


Figure 56: ISO+ SME - Altman's Z-Score

The examination of the asset turnover ratio (Figure 57), illustrated that all groups of ISO+ SME exhibited the same behaviour over the examined period. The medium ISO+ SME however did perform slightly better than all others, and their variability is recorded as high (41%). The subsequent less sensitive ratio and the one that showed the lowest performance is the micro ISO+ SME ratio and the least sensitive is the ratio of the small ISO+ SME.

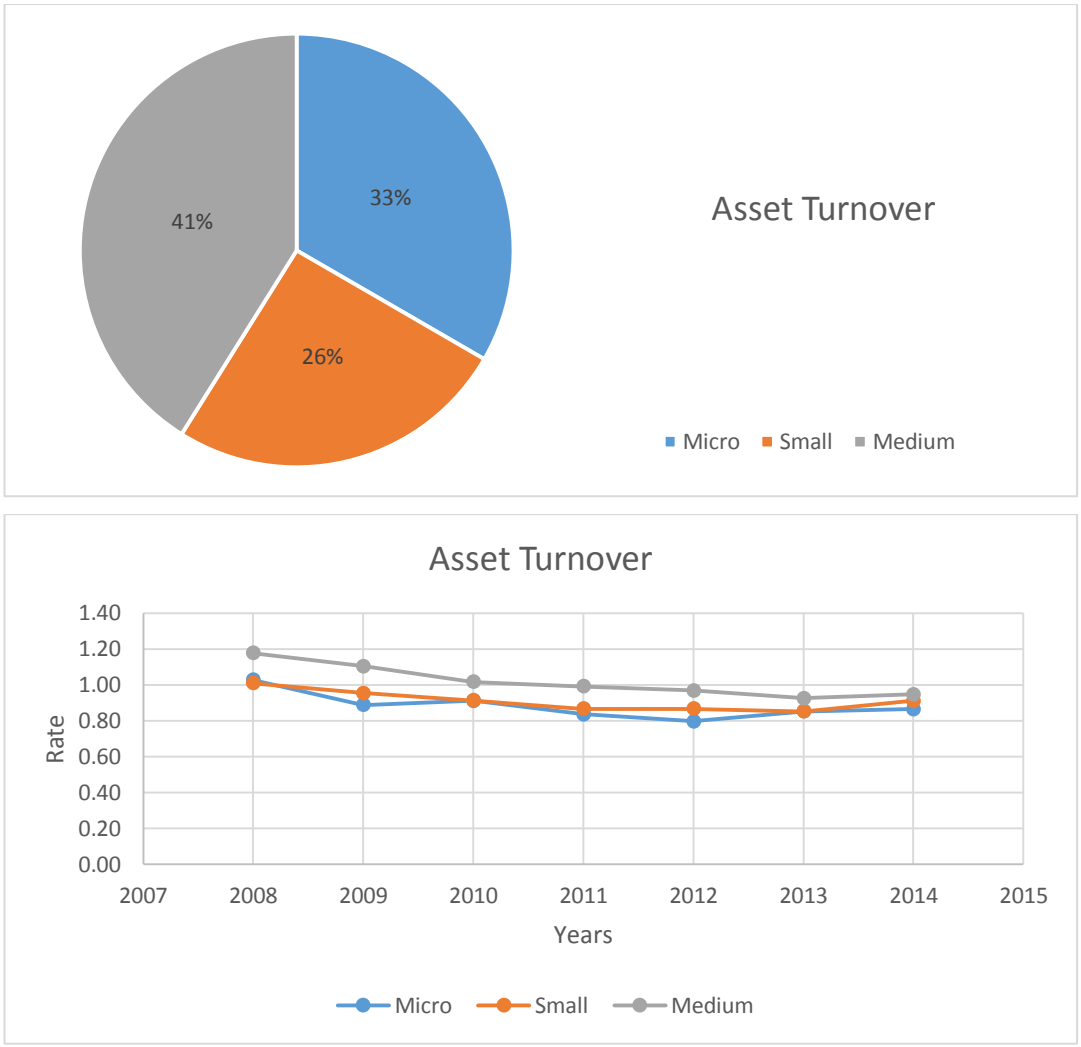


Figure 57: ISO+ SME – Asset Turnover

For the inventory turnover ratio, the micro ISO+ SME outperform all other groups (Figure 58). However the small SME during 2012-2013, experienced a sharp growth rate in their inventory turnover ratio and where the only group which from that time onwards exhibited some degree of growth in this ratio. Instead, decline was recorded in the behaviour of the other two groups. The micro and the small groups of ISO+ SME presented the highest variability in their inventory turnover ratio scoring 49% and 43% respectively. The medium ISO+ SME continued to follow a more stable but low rate, revealing their ability to better control their inventory account.

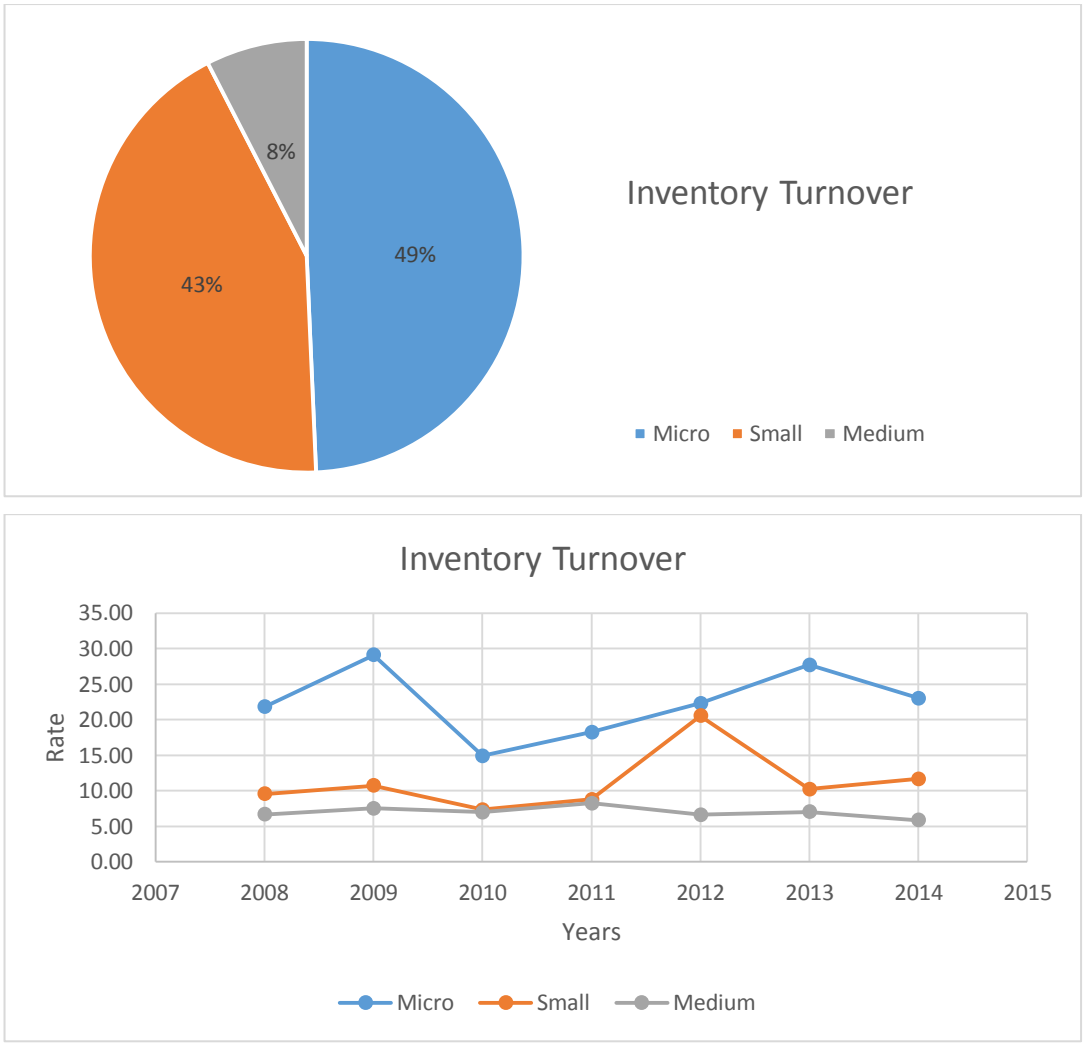


Figure 58: ISO+ SME - Inventory Turnover

The last and equally valued efficiency ratio, the receivable turnover ratio, was found to be controlled better from the medium ISO+ SME, which managed to better utilize their receivables as a means of increasing their sales level. The micro and the small SME presented a similar behaviour over that period, an indication that they both followed the same or almost the same strategy as their credit policy.

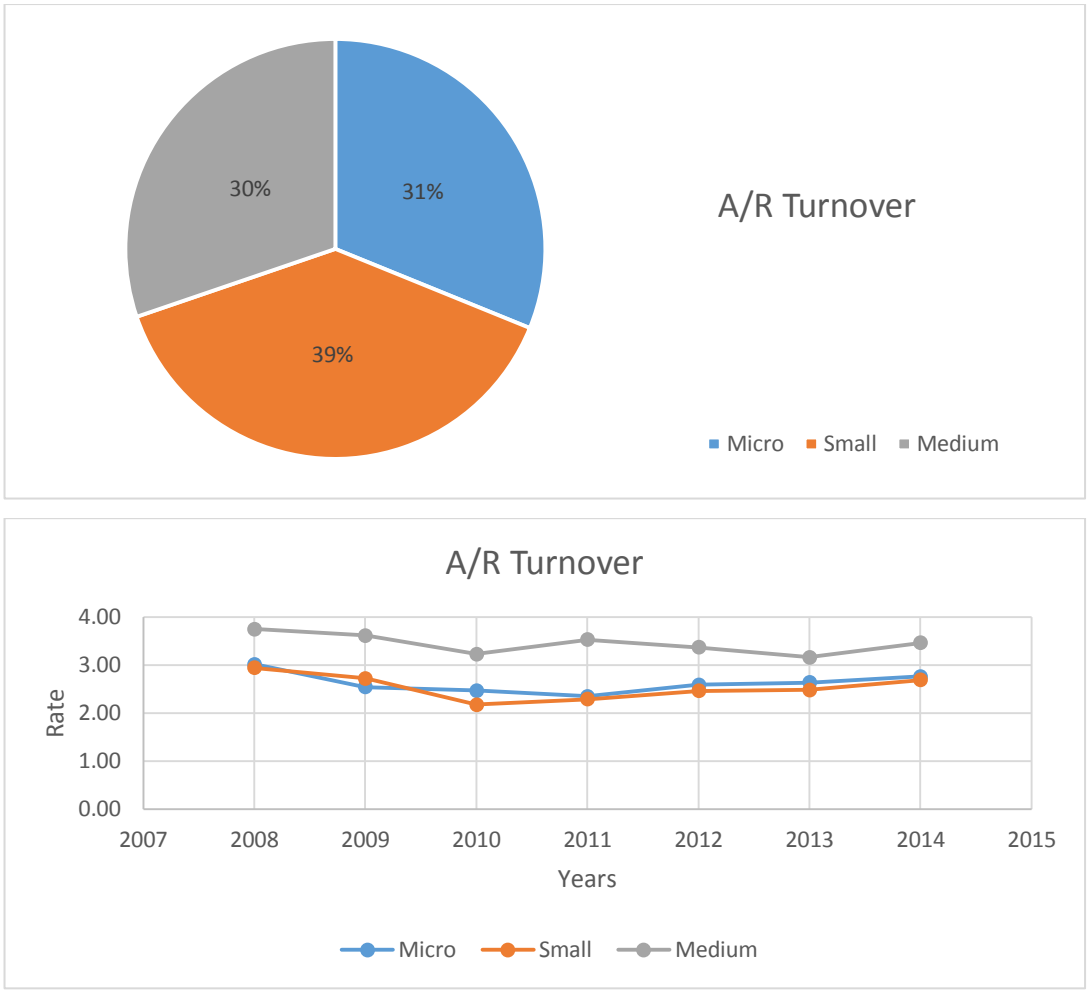
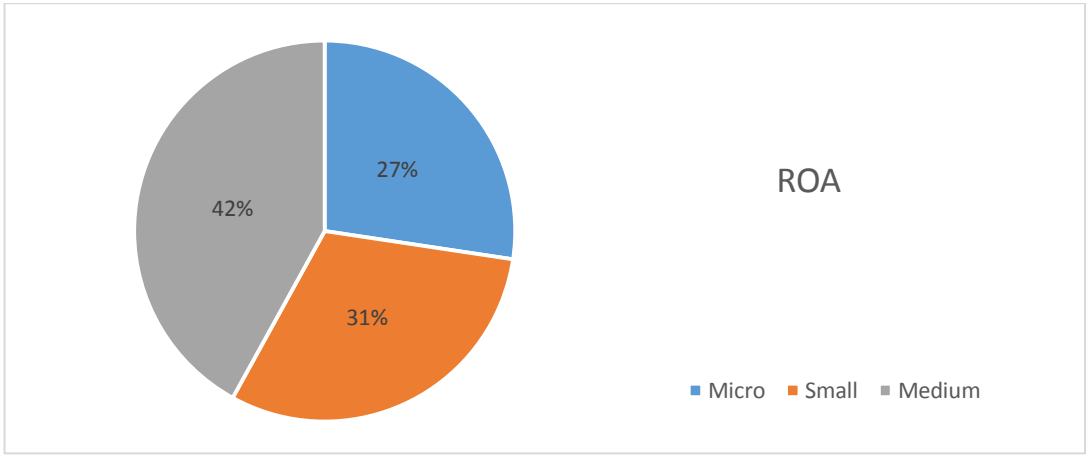
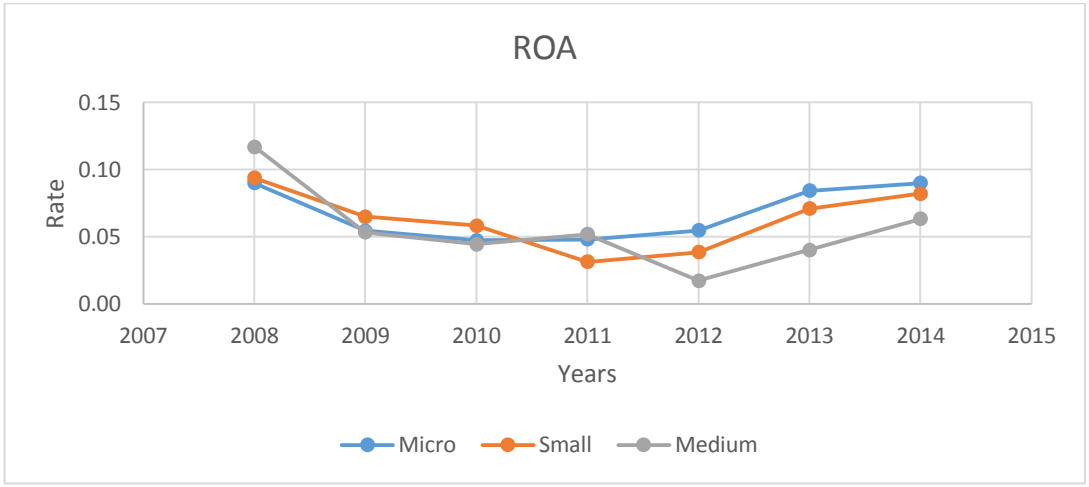


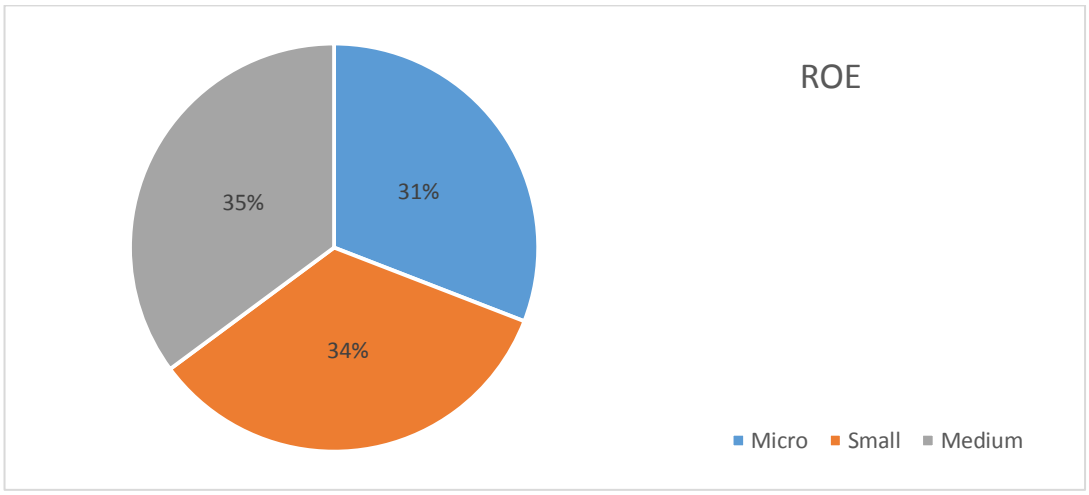
Figure 59: ISO+ SME - Acc. Receivable Turnover

What is noticeable is that all groups show approximately the same variability on this ratio, with the small ISO+ SME showing a slightly higher variability that the other two.

For the last two ratios, regarding the SME's profitability, both ratios, the ROA and ROE present a similar behaviour (Figure 60) But the ROA, appears to be more sensitive to changes. For the ISO+ SME, the ROA ratio, showed a decline up to the year 2012. From then on and until 2014, growth was attained. The most severe decline was experienced by the medium ISO+ SME. while the behaviour of the micro ISO+ SME can be considered remarkable, given that they managed to recover from a decline stage and enter a growth stage in the year 2012, achieving a better performance in subsequent years compared to all other groups . The ROE ratio was found to have a similar pattern.


ROA
27%
31%
42%
Micro
Small
Medium


ROA
Rate
0.15
0.10
0.05
0.00
2007
2008
2009
2010
2011
2012
2013
2014
2015
Years
Micro
Small
Medium


ROE
31%
34%
35%
Micro
Small
Medium

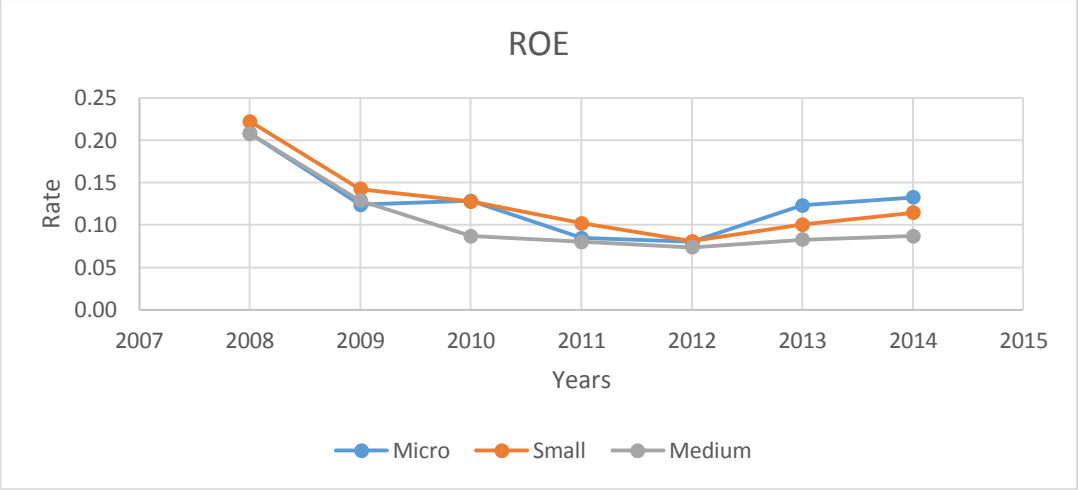


Figure 60: ISO+ SME - ROA & ROE

Regarding the ratios sensitiveness, both the ROA and ROE ratios were most sensitive for the Medium ISO+ SME (35%) and less sensitive for the micro ISO+ SME (31%). The low flexibility of the micro ISO+ SME is what gave them the opportunity to better control their level of profitability.

6.6.3. ISO SME - Results

The last group examined was the ISO SME, which includes the ISO certified companies. Their responses showed that no decisions or actions were implemented throughout the course of this study to indicate top management's willingness to continue the quality journey.

From the examination of their liquidity level using the acid test ratio, it appeared that the micro ISO SME are the ones that performed better in the period examined compared to all other groups. The other two groups (small and medium) presented similar behaviour but at a lower level. Noticeable is the exchange of positions among the small and medium ISO SME at different points in time. For example, the small performed better than the medium SME in 2010, and the medium performed better than the small SME in 2012. In the latest years, both groups of companies showed similar behaviour with the small ISO performing better than the medium SME (Figure 61). Regarding their behaviour sensitiveness the micro ISO SME (47%) were considered more sensitive, while the other two groups responded equivalently to the changes in the economic and financial environment which manifested throughout the years.

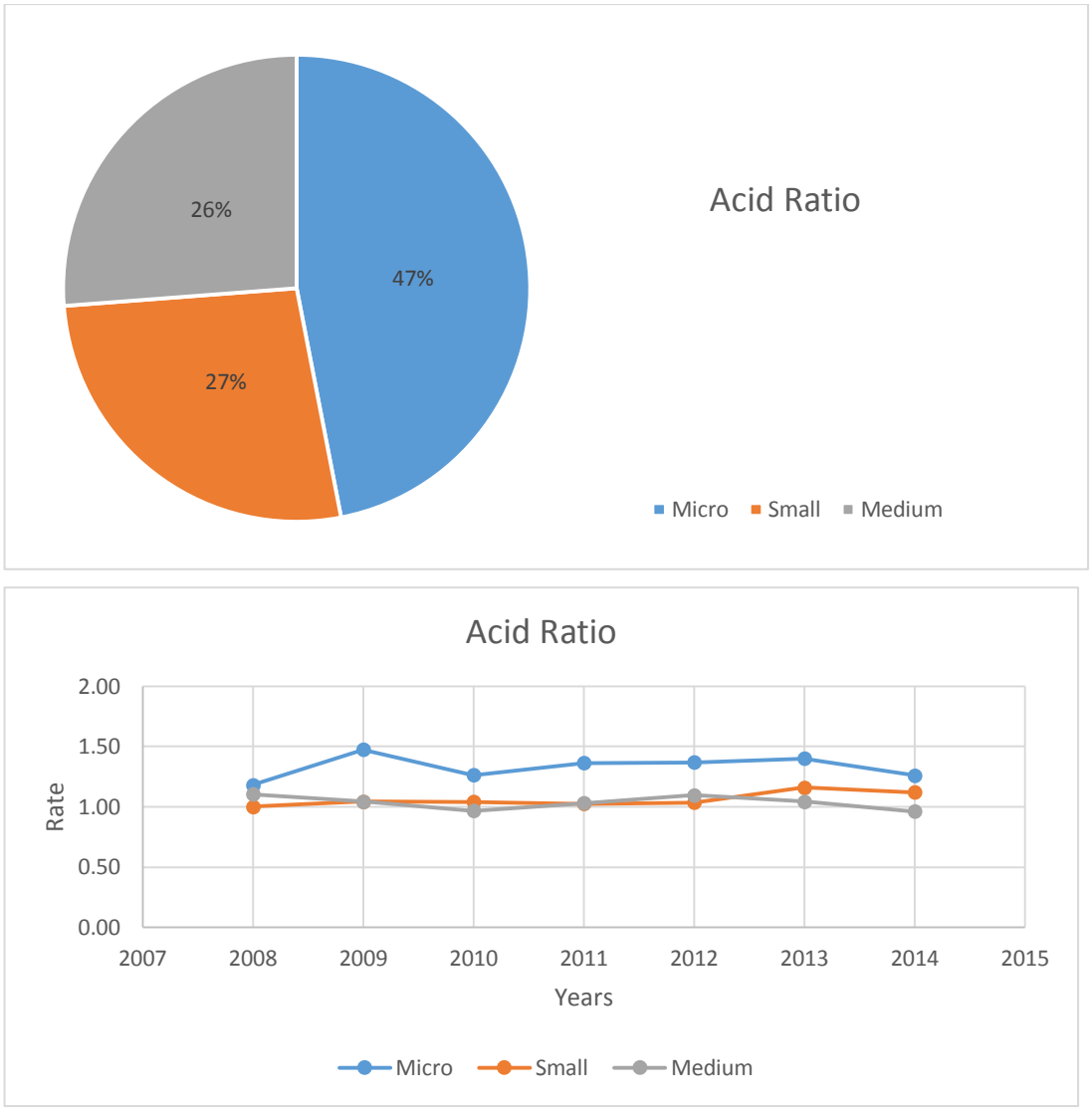
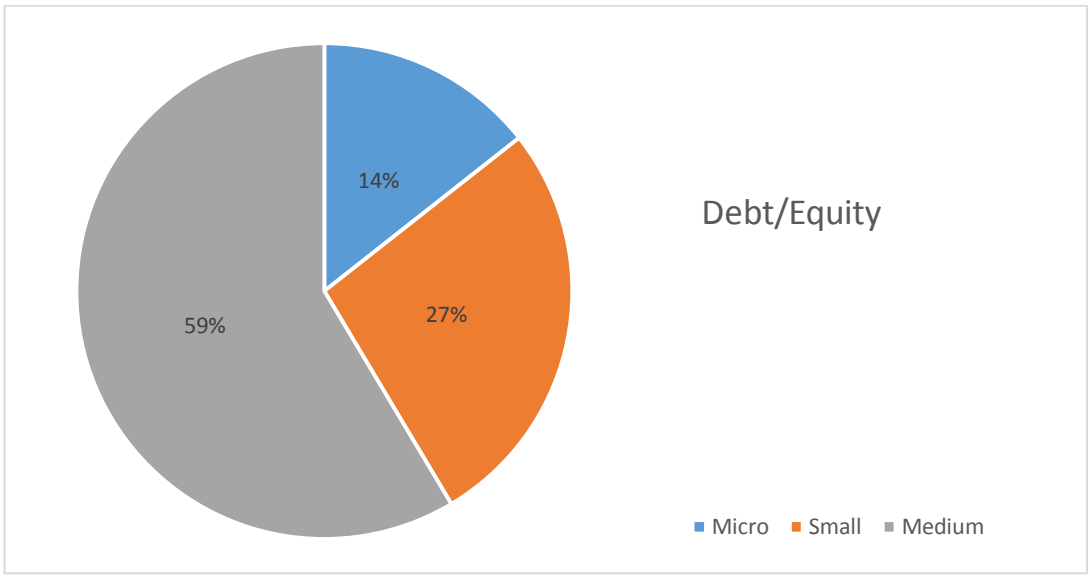


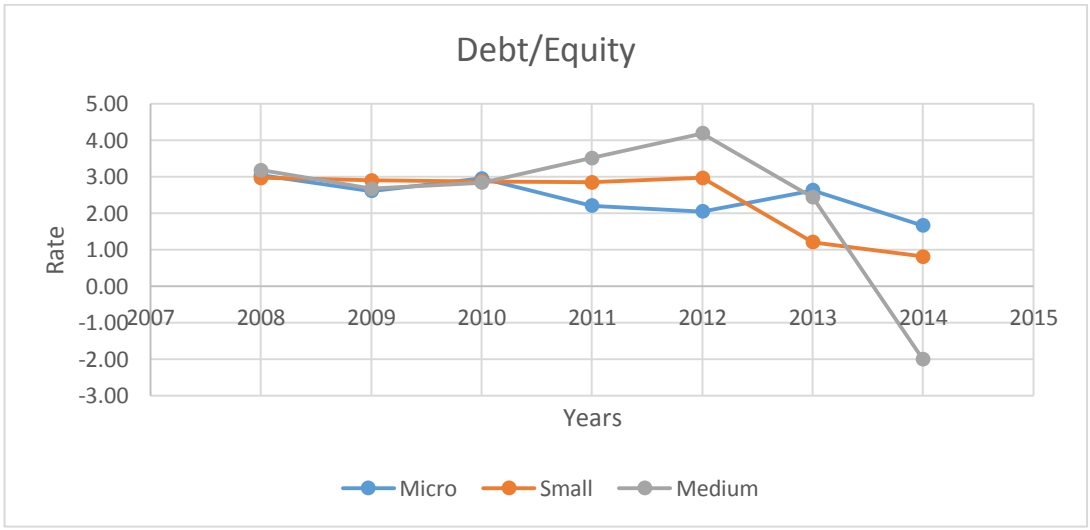
Figure 61: ISO SME - Acid Test

Regarding the groups' solvency level, it was found that the ISO SME faced a decline in their debt to equity ratio (Figure 62), which is an indication of the difficulties associated with controlling the funding sources. Consequently their z-score declined, especially after 2013. The medium ISO SME, despite the severity of the decline of their debt to equity ratio, managed to keep their z-score at a constant level. This revealed their ability to more adequately control their financial strategy compared to companies in any other group. Even though is not explicitly clear for the other two groups of ISO SME the reduction in their debt to equity ratio resulted in the decline of their Z-score rate, increasing their vulnerability to the crisis conditions.

The debt to equity ratio of the medium ISO SME and the z-score of the micro ISO SME were found to be more sensitive to changes. Considering that the size of Debt and

Equity funds are larger for the medium ISO SME, it makes them more vulnerable to possible interest rate changes and/ or to new legislation imposing additional taxes.





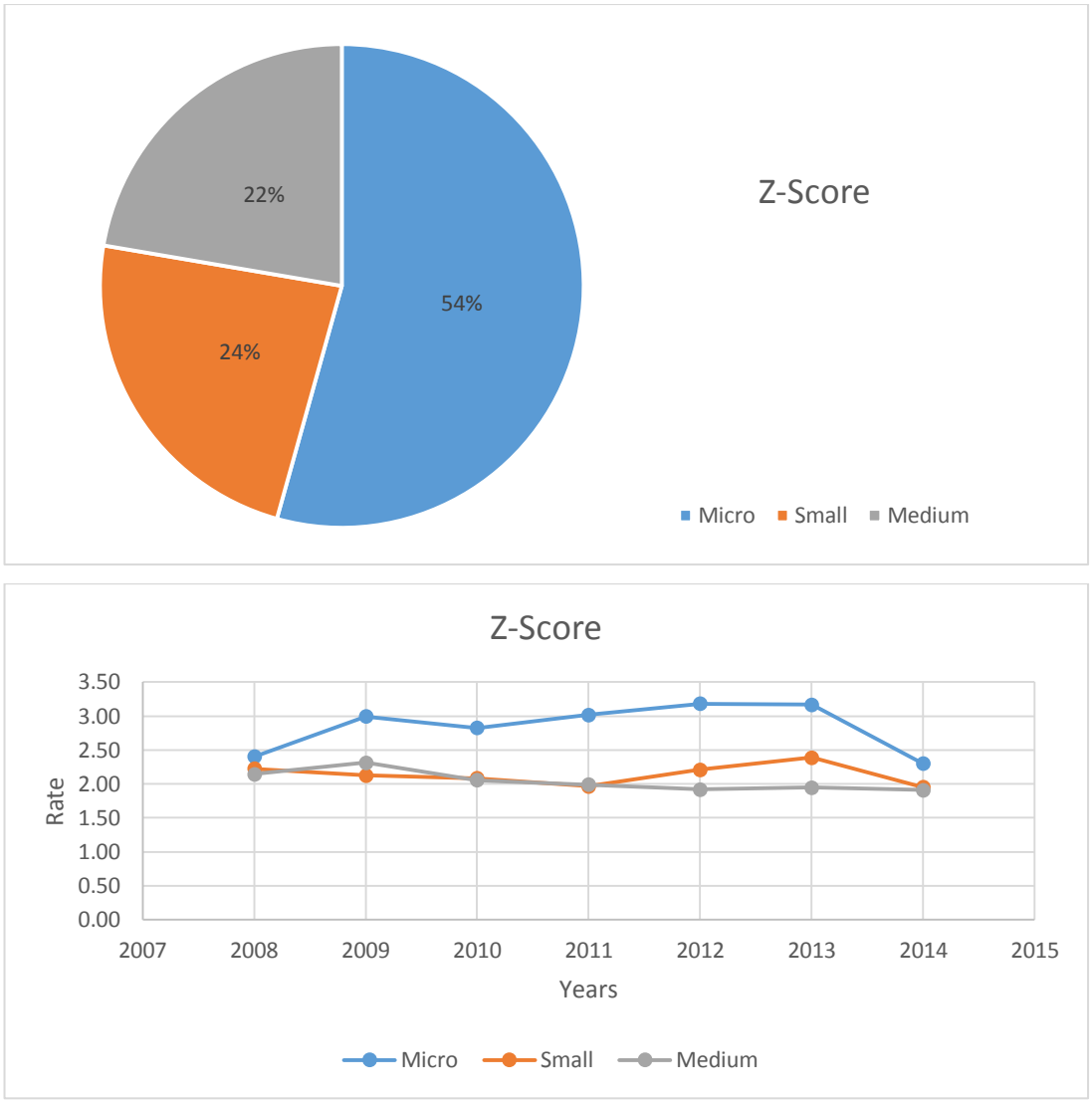


Figure 62: ISO SME - Debt to Equity & Altman's Z-Score

The sensitiveness of the other two groups (small and micro) of ISO SME seemed to be close in terms of their debt to equity ratio and in terms of their z-score.

The examination of the ISO SME's efficiency began with the asset turnover ratio. It was found that the small ISO SME outperformed in the period 2010-2011 (Figure 63). After that period the ratio decline begun and continued until 2014. In comparison with the other two groups of ISO SME, it seems that micro and medium SME have managed to recover from the 2008 decline and in the years 2012-13 managed to achieve continuous growth for their asset turnover ratio.

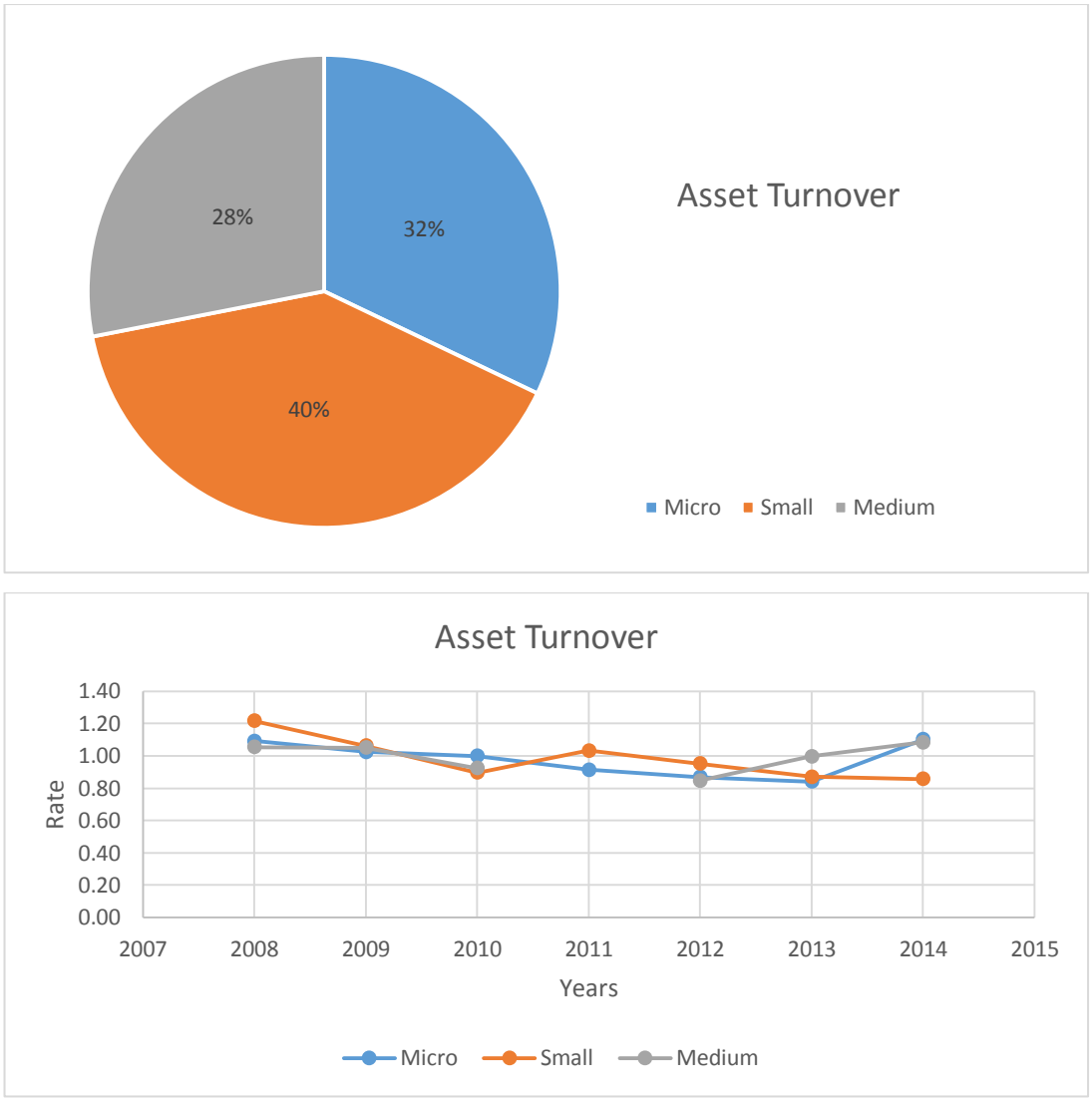


Figure 63: ISO SME - Asset Turnover

The examination of the sensitiveness of each group to the ratio, revealed that on average the small ISO SME showed the highest variability (40%), followed by the micro ISO SME (32%) and the medium ISO SME (28%). The numbers clearly suggest that the differences among the three groups of ISO SME are not very big.

Referring to the inventory turnover ratio, the micro SME were the ones that showed a remarkable growth and a remarkable decline in the period 2012- 2014.

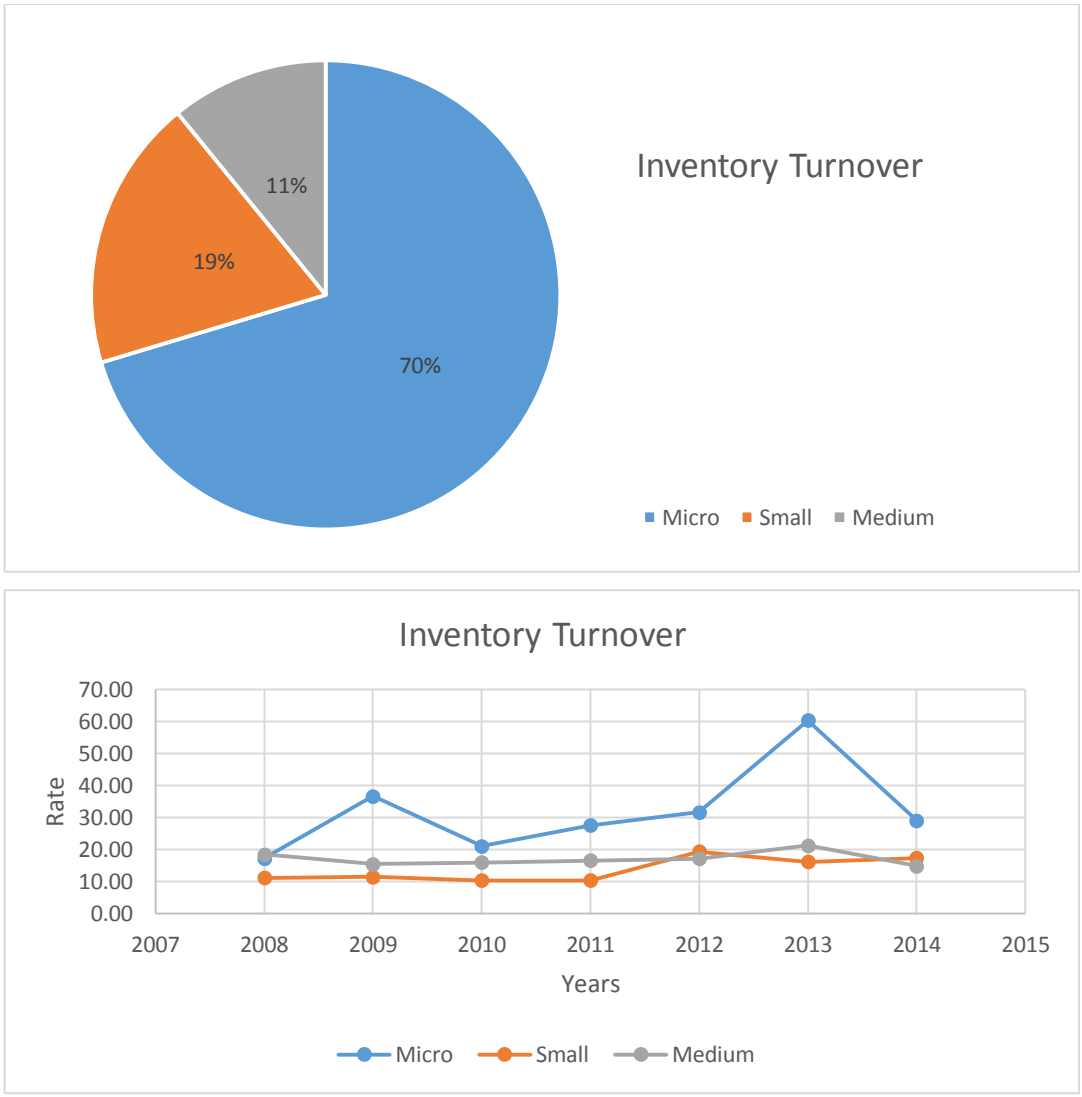


Figure 64: ISO SME - Inventory Turnover

This behaviour comes in contrast to the behaviour of the other two groups that exhibited a constant and stable behaviour until 2014. From 2011 onwards both groups were competing against each other in terms of their inventory efficiency, i.e. the medium SME were more efficient in the year 2011but the small SME were more efficient in the years 2012 and 2014.

Regarding the ratios variability in each group, it was found that the micro ISO SME were the most sensitive to changes in economic and financial conditions. The other two groups instead managed to maintain stable ratios. The Small ISO SME had a 19% average deviations and the Medium ISO SME a 11% average deviations over the period examined.

The examination of the behaviour of the receivable turnover ratio, established that the medium SME are the ones that performed better. Their ability to better control their

credit terms in proportion to their sales level, contributed to improving their A/R ratio over the period examined. The year 2010 was a good year for the small ISO SME, but a bad year for the micro and the medium ISO SME. Contrastingly, regarding their A/R turnover, 2012 was a good year for both micro and medium ISO SME, but a bad year for the small ISO SME.

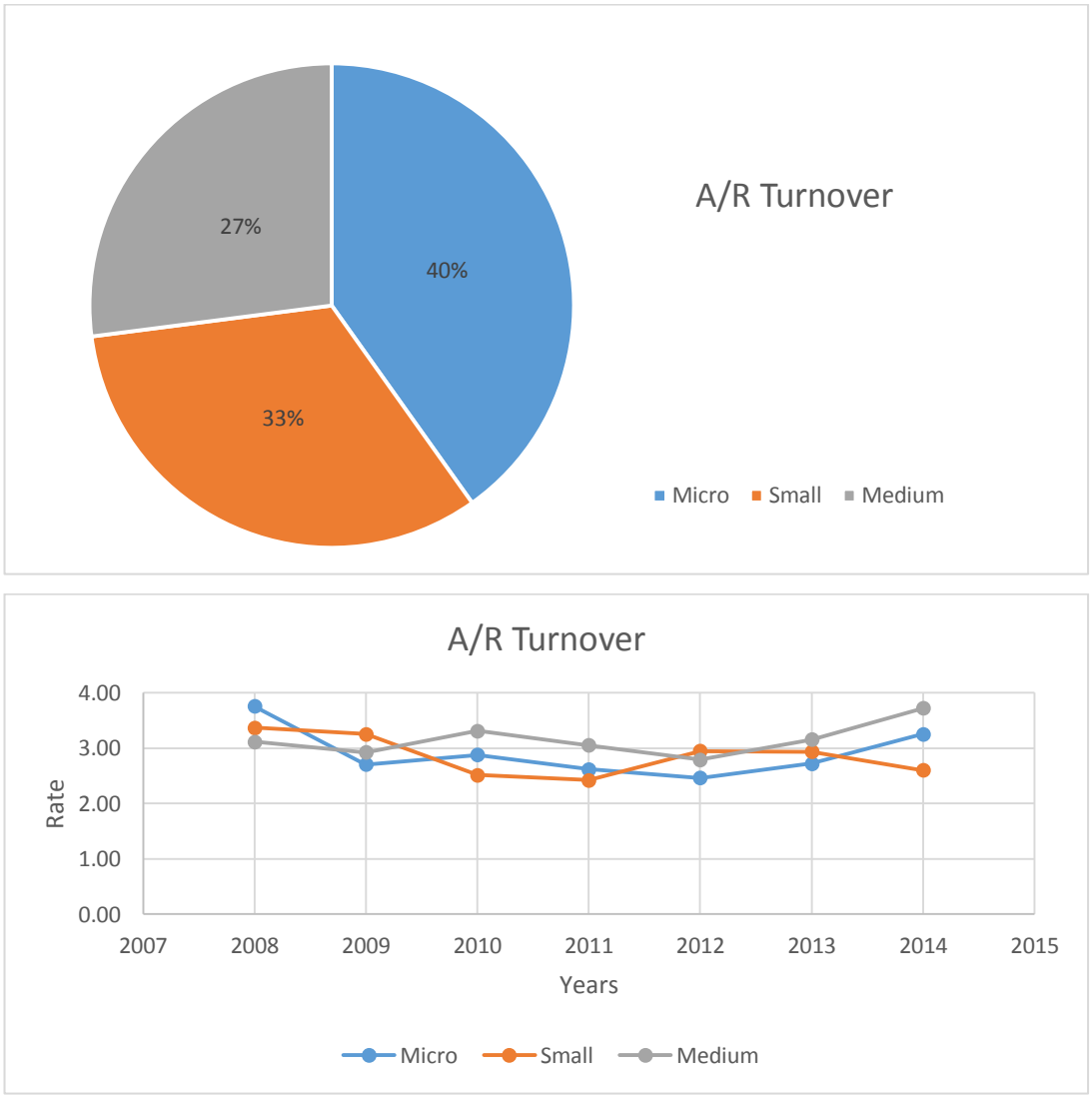
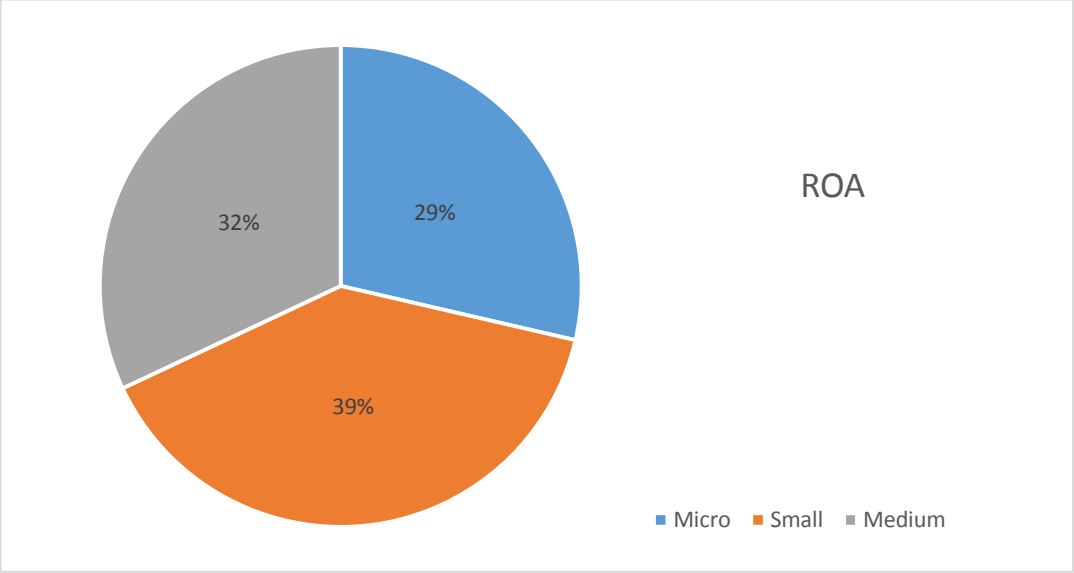
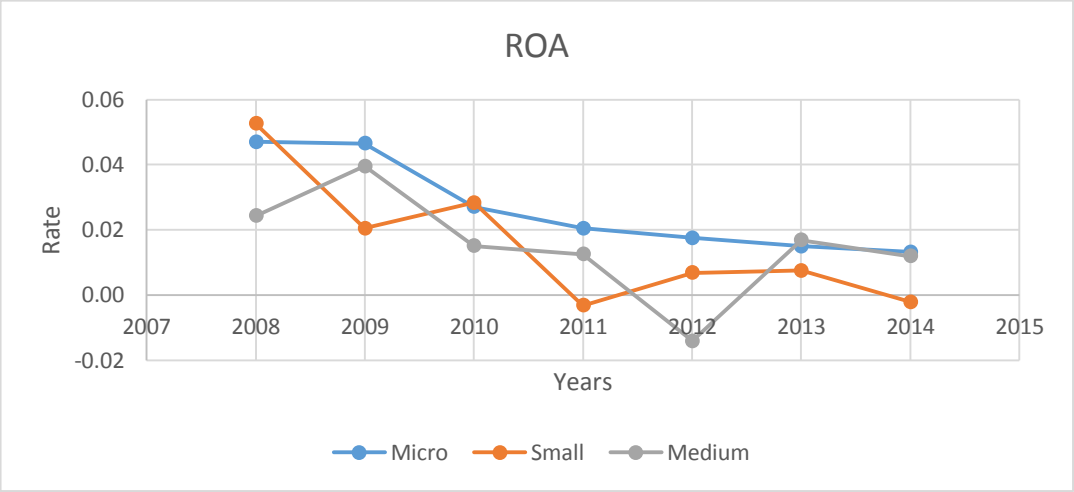


Figure 65: ISO SME - Acc. Receivable Turnover

It was found that in 2014, the only group that showed a decline in its ratio was the small ISO SME as the other two groups showed a positive trend. The analysis of each group's variability, showed that the micro ISO SME were the ones with the highest (40%) variability, followed by the small ISO SME (33%) and then by the medium ISO SME (27%). This is an indication that the medium ISO SME managed to better control their credit terms offered to their customers as a mean of supporting their sales.

Lastly, the results from the profitability ratios, showed that the ROA behaved similarly to the ROE (Figure 66). Thus as the return on assets for all groups declined so did the return on equity ratio. In 2011 and 2012 the medium and the small ISO SME managed to control the ROA decline and achieved growth that lasted for almost a year as they managed to improve their income in proportion to the assets they invested.





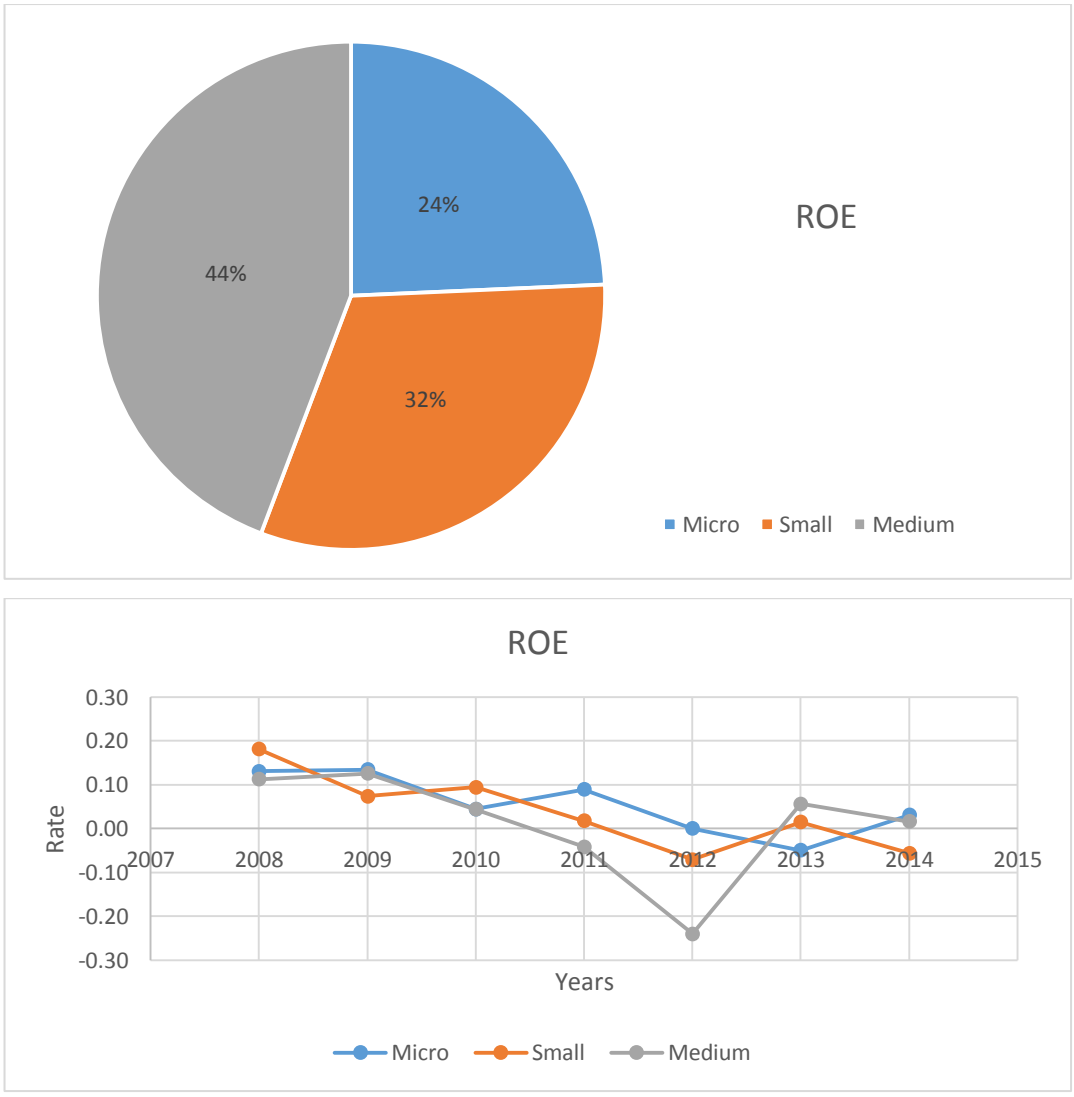


Figure 66: ISO SME - ROA & ROE

For the ROE it was evident that the decline was more severe. Negative values were realized for both medium and small ISO SME. Notable was the positive growth that the small ISO SME experienced in their ROE for the period 2011-2013, when all other groups of ISO SME had declining ROE. In addition to that increase, an increase in the ROE ratio of the micro SME was attained. This increase started in 2014 and may signal the beginning of their recovery from the economic depression. This growth comes in contrast with the decline that the other two groups of ISO SME faced in the same period. Another issue that needs to be referred to, is that even though the micro SME's ROE was increasing their ROA continued to decline. This is an indication that the ISO SME shareholders decided to use any available income generated from their companies' operations, differently.

In terms of the ROE sensitiveness, the medium ISO SME, were found to have higher volatility (44%) in relation to all other groups. In terms of the ROA sensitiveness the small ISO SME showed the highest volatility (39%) compared to the other two groups. Micro SME presented the lowest variability in both ratios, an indication that their increased flexibility, gave them the ability to achieve an acceptable profitability level despite the economic and financial crisis conditions.

6.7 MANOVA: Differences in Financial ratios between years

Manova (Multivariate analysis of variance) is a statistical analysis tool used in comparing different sample means derived from different groups of data (Asteriou and Hall, 2007). The data collected and used in the current survey, refer firstly to the level of quality implemented by the Greek ISO certified SME and secondly to the financial ratios that indicate an SME's financial performance, during a financial crisis.

The research questions that were investigated refer to:

- the different sized SME (based on the number of their employees) and questions if they achieved an improved financial performance over the period of eight years, during which Greece experienced severe financial crisis conditions and
- the degree to which SME implemented quality, and if this impacted their financial performance.

How the SME were grouped is presented in the previous section of this chapter. The use of the multivariate analysis of variance (MANOVA) was selected for conducting the financial data analysis. MANOVA is a model that protects an analyst from committing the type I statistical error in the event of a statistically significant Manova F-value (Asteriou and Hall, 2007). The LSD (Least significance difference) method was selected as being the most powerful way of finding the statistically significant effects given that a significant MANOVA F is found. Having chosen the LSD method the t-test was used across the comparison of the group of means.

For the analysis of the financial data a similar design to the design used in the ratio analysis was adopted. That is, a preliminary statistical analysis in all the data collected from the i-Mentor Hellastat database SME (1.245) and a main statistical analysis in the data collected from the distributed questionnaire to the sampled SME (392). Following that design, the results could be compared as a means of minimizing the possibility of bias in the results derived.

6.7.1. Variance Analysis – Population Sample of SME

The Pillai's trace test was selected for testing the normality of all the combined dependent variables. Pillai's test is considered as the best test to use in most situations returning results similar to the Wilks' and Lawley-Hotelling's tests. It tested the assumption regarding a perfect covariance matrix for all the groups examined. Pillai's test is considered the most powerful and robust test and the one that is least sensitive to the violation of the assumption regarding the covariance matrix (Asteriou and Hall, 2007). From the SPSS output generated, presented in Appendix H, Section A', the significance level of 0.00 for all years revealed that the assumption regarding the financial ratios having the same mean in all years, is rejected.

To examine the homogeneity variance assumption the levene's test was used. The levene's test examines the equality of the means that exist in two or more groups of data (scores, rates). The null hypothesis for Levene's test is that the mean of variances is equal. So, if the p-value or the level of significance is less than 0.05, it means that this assumption is rejected. In the tables presented in Appendix H, section A', the Levene's F rates and their equivalent level of significance, for each ratio and year are shown. From the analysis, it was found that the majority of the ratios in all years showed a non-significance level, confirming the assumption of the homogeneity of the variances (Field, 2000).

Given that there was a statistically significant MANOVA effect, the next step was to develop a Post Hoc test in the analysis of variance, using the Tukey's HSD test. This test reveals the influence that each ratio has on each other ratio and among themselves and was used to reveal the influence of each ratio on the financial performance of each group of SME. In other words, for all the ratios used to reveal the level of liquidity, efficiency, profitability and solvency for an SME, the test would show the degree to which they influenced (or didn't influenced) its overall financial performance. The test would also show how each group of SME was influenced, over the period examined. The SPSS output derived from that analysis is shown in Appendix G and depicts which ratios were influenced significantly in which group of SME.

The means for which SPSS placed an asterisk on, show the significance of the ratios to the SME financial performance. Specifically for the acid test ratio and for 2009, the relationship between the micro and the medium SME with the small SME seemed substantial. This significance appeared in almost all the years until the end of the

period examined (2014) for both the micro and the medium SME. The only exception were the small SME for which the significance exists only for 2011. Significance also existed in the relationship between the small and the medium SME but only for 2014.

For the asset turnover ratio, the relationship between the micro and the medium SME appeared to be significant from 2009 to 2014. The relationship between the medium and the small SME for the years 2010, 2013 and 2014 was also found to be significant.

For the inventory turnover ratio, the significant relationship among the micro and the medium SME continued throughout the period 2008-2014. Similar significance was also identified between the micro and the small SME, for the same period. A significant relationship was found among the small and the medium SME but only for the year 2012.

For the receivable turnover ratio, the relationship between the micro and the small SME was recorded as significant for the years 2010, 2011 and 2014. The micro SME were found to have a relationship with the medium SME in the year 2012 but just for that year. For the specific ratio, significant was the relationship between the small with the medium sized SME for the years 2010, 2011, 2012 and 2014.

For the profitability ratio ROA (Return on Assets), significant was the relationship between the micro and the small SME for the years 2010, 2011 and 2012. The micro and the medium SME were found to be significantly related for the years 2012 and 2013. It is also important to note that a significant relationship existed between the small and the medium SME for the years 2010 and 2011.

For the second profitability ratio ROE (Return on Equity), a significant relationship between the micro and the medium SME was found for the years 2011, 2012 and 2014. Significant was the relationship also found between the micro and the small SME, but for the years 2010 and 2013. Between the small and the medium sized SME the significant relationship was found to be longer, starting in 2010 and lasting until 2013.

Referring to the solvency ratios and specifically to the debt to equity ratio, no relationship was found to exist among any of the groups examined. The only relationship that was found was in 2008 and in 2012, among the micro and the medium SME. In 2008, there was also a relationship among the small and the medium SME for the specific ratio.

For the Z-Score no substantial relationship was recorded among any of the groups examined. The only exception was the relationship between the micro and the small SME in 2011 and the micro and the medium SME in 2012.

Having established a clear picture from my research of the significant relationship existing between the financial ratios of all groups of SME throughout the period examined, the next step was to take full advantage of the MANOVA method. MANOVA is capable of creating a linear regression equation upon which it can calculate a variable. That variable will maximally discriminate among all eight groups of variables which determine the SME financial performance

Running the multiple regression equation in Manova, enabled the extraction of the output of the un-standardized regression weights assigned to all the canonical variants used (ratios) that are presented in Appendix H, Section A.

The coefficients were negative, but this was arbitrarily derived from MANOVA. Flipping the negative values to positive and the positive to negative would simply adjust the coefficients for the purpose of the survey's interpretation.

These coefficients were given the weights that the SPSS assigned to each variable. Those represented the carrying weight assigned to each variable in the discriminant function called "the canonical variant". For example, in 2008, the asset turnover represented 59.95% of the FP behaviour, which is the SME financial performance (FP) behaviour.

So, it is clear that the differences between the means of the independent variable, the FP variable developed by MANOVA, were mostly a combination of the asset turnover and the ROE ratio for 2008. These were the variables with the highest significance. For 2009, the Acid test ratio, the asset turnover ratio, the ROA and the ROE were the most significant variables for that years' FP. Only the ROA was the significant dependent variable for 2010 and the Asset turnover ratio and the ROA for 2011. For 2012, the ROA and ROE were significant and for 2013 the ROA, ROE and the Asset turnover ratio were significant. Finally, for 2014, the Acid test, the Asset turnover and ROE were found to be the most significant coefficients.

Using those financial performance (FP) functions, the financial performance score of the canonical variate or the Financial Performance variable was found. The canonical variate is the combined set of the financial performance dependent variables, which have been assigned unequal weights to all different ratios for all the different years examined.

At the end, each ratio's contribution was derived from the multiplication of each ratio's score with the discriminant function coefficient. Correct results can only be derived if the raw discriminant function coefficients not the standardized ones are used. Their addition makes the value of the Financial Performance (FP) that its syntax is presented below.

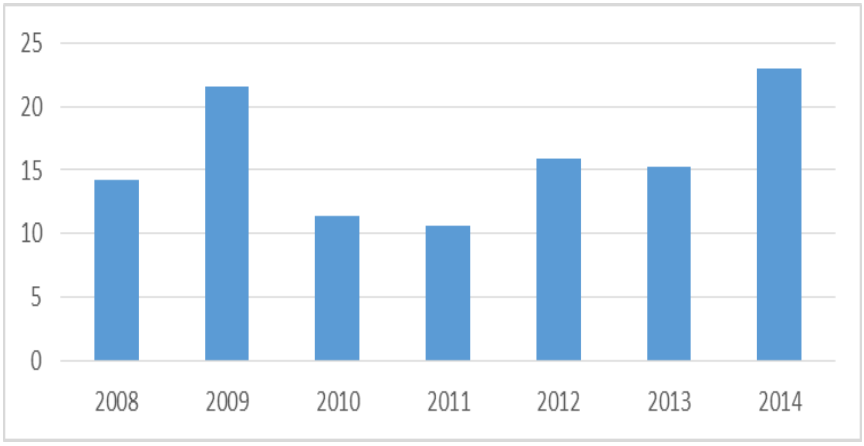
$$Extra\ Variable\ (FP) = (Coefficient * ACID) + (Coefficient * ASS\_Turn\ ) + (Coefficient * D\_E) + (Coefficient * INV\_TURN) + (Coefficient * REC\_TURN) + (Coefficient * ROA) + (Coefficient * ROE) + (Coefficient * Z\_Score)$$

In *Table 29* the outcome of all the Financial Performance (FP) functions, for each year is shown.

Table 29: Extra Variable - Results (Population)

	2008	2009	2010	2011	2012	2013	2014
Type III Sum of Squares	65.9995	55.9501	16.0654	74.0029	61.345	53.9168	65.2274
F	32.9962	27.9781	8.1248	37.0011	30.6736	26.9537	32.6079
Sig.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

In Figure 67 the statistical significance of the canonical variate or FP is shown. It is where all the F-tests and their significance are shown. It is also clear that the behaviour of the FP that showed an overall decline in the financial performance of all SME in 2012, begun to grow.



6.7.2. Variance Analysis –Survey's sample of SME

Regarding the analysis of the survey's sample, the Pillai's trace test was used to test the normality and the perfect covariance matrices assumption for all SME groups. The results derived are shown in Appendix H, section B, where the statistical significance of all the coefficients appear for all the years examined. For the homogeneity variance assumption, the Levene's test was also used and its results are also shown in the same appendix. From the levene's test results, it was found that for 2008 significant

were the inventory turnover ratio, the ROA and the Z-score coefficients. For 2009, the Acid ratio and the inventory turnover ratio were considered significant. For 2010, significant were the Debt to Equity ratio, the inventory turnover ratio and the receivable turnover ratio coefficients. For 2011, significant were the Inventory turnover and the receivable turnover ratios. For 2012, the debt to equity ratio, the inventory turnover, the receivable turnover and the ROA ratio were the significant coefficients. For 2013, the acid ratio, the Asset turnover, the inventory turnover, the ROA and the ROE and lastly for 2014, the ratios, acid test, asset turnover, inventory and receivable turnover and the ROA, were considered significant.

The Post-Hoc test of Tukey (Appendix G, Section B'), was used to examine the survey's sample of SME, and the results revealed that the acid test ratio showed a significant relationship between the micro and the medium SME in 2009, 2010 and 2014. The relationship between the micro and the small SME was also found significant but only for 2014.

The Asset turnover ratio shows significance between the micro and the medium SME only in the year 2009. For the inventory turnover ratio significance is shown in between the same group of SME (micro and medium) for all the years (2008-2014) and between the small and the medium SME but only from the years 2011 till 2013.

The profitability ratio, ROA, showed significance between the micro and the small SME from 2010 to 2013 and with the medium SME in 2012 and 2013. Instead the ROE showed significance only between the micro and the medium SME and only in 2012.

From all solvency ratios, the debt to equity ratio, showed no significant relationship among any of the group of SME for the period examined. The Z-score function however showed significance in the relationship of the micro with the small SME but only for 2012.

The last stage of the analysis was the development of the FP (Financial Performance) canonical variate, the variate that combines all ratios and returns the financial performance of all the survey's sample SME. In Table 30 the syntax and the outcome of all the Financial Performance (FP) functions, for each year is shown. The output derived from SPSS is shown is Appendix H, section B'.

Table 30: Extra Variable - Results (Survey's Sample)

	2008	2009	2010	2011	2012	2013	2014
Type III Sum of Squares	28.48402	43.15136	1338.749	21.29805	31.69991	36.33442	45.96243
F	14.23936	21.57522	11.36683	10.64889	15.85249	15.29022	22.98188
Sig.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

For 2008 it was found that the ROA and ROE were the two ratios that contributed the most in the value of the FP, having the most discriminant function coefficients in the regression equation.

For 2009, the ROA and the acid test ratios were considered as the more discriminant coefficients for this year's FP, followed by the asset turnover.

For 2010, the most discriminant variables were the Acid test, the asset turnover, the ROA and with equal weights the ROE and the debt to equity ratio.

For 2011, the ROA and ROE were considered the most valuable variables for the determination of the FP.

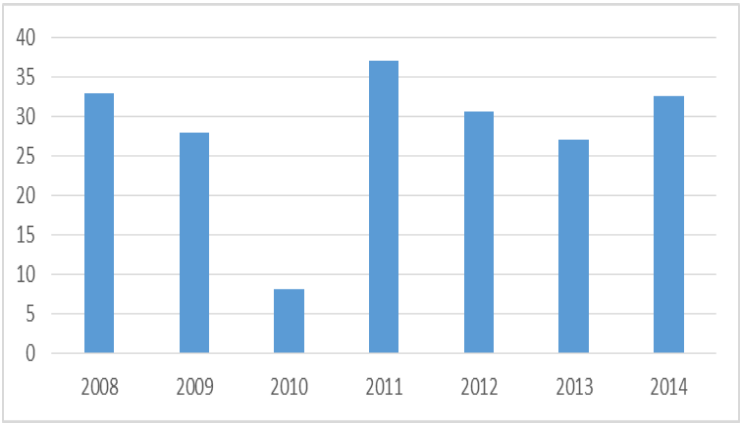
For 2012, again the ROA and ROE together with the asset turnover ratio, were considered the most discriminant coefficients. For 2013, the ROA, ROE and the asset turnover were found once more to contribute the most to the FP function.

Finally, for 2014, once more the ROA and ROE together with the asset turnover, constituted the most valuable coefficients for the determination of the FP value which is the SME financial performance.

The next phase of the study, was the development and computation of the FP, the developed functions and the results which are depicted in Appendix H, section B'.

Specifically, for each ratio and for every year the coefficients were identified and the function for every year was formulated.

From the SPSS output, referring to the survey's sample, the results showed that all variables, for all years were significant in the determination of the FP.

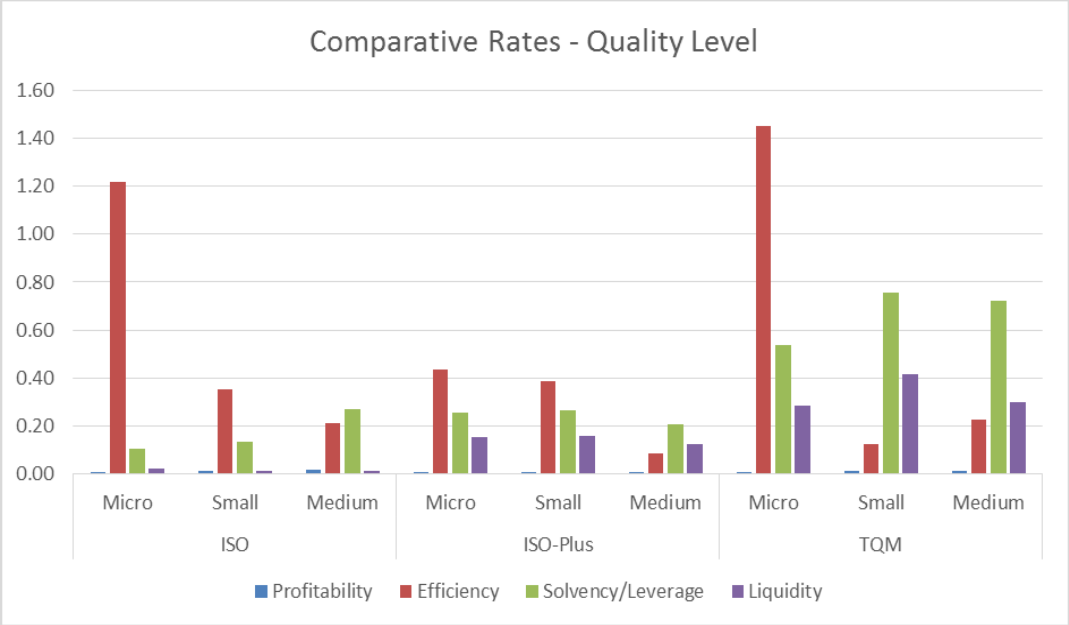


From that sample it was revealed that the behaviour of the Financial Performance (FP) experienced a decline which if ignoring the slight increase in 2011, continued until 2014 after which time it increased.

Figure 68: Financial Performance (FP) - Results (SME Sample)

6.8 TQM and Financial Performance-Comparative Results

In this section an attempt is made to relate and comparatively examine the results derived from



the quantitative survey and the ratio analysis conducted on the SME which participated in the survey. The results of this analysis will contribute in the ranking of the SME based on the level of quality they implemented and the level of their equivalent financial performance. The approach used for this ranking was the scoring approach. This process constitutes, scoring financial performance using the results derived from the ratio analysis conducted and applying those to the scores denoting the level of quality they implemented (Quantitative survey). The scoring approach was applied to all different groups of SME formed based on their size. Equal weight was assigned to all the financial areas used in determining the SME overall financial performance. The first ranking scale was the level of quality implemented from all size groups

of SME and have shown an improved financial performance. In , the micro SME that were characterised as ISO certified (ISO SME) received an average score equal to 1.36. This group of SME placed emphasis on their efficiency, followed by their solvency, their liquidity and their profitability. The small ISO SME received an average score of 0.52 emphasising the same financial areas as the micro ISO SME.

Table 31: SME Quality Groups and their Financial Performance (Ranking A)

	ISO			ISO+			TQM		
	Micro	Small	Medium	Micro	Small	Medium	Micro	Small	Medium
Profitability	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Efficiency	1.22	0.35	0.21	0.44	0.39	0.09	1.45	0.12	0.23
Solvency /Leverage	0.11	0.14	0.27	0.26	0.27	0.21	0.54	0.76	0.72
Liquidity	0.02	0.01	0.01	0.16	0.16	0.12	0.29	0.42	0.30
Score	**1.36**	**0.52**	**0.52**	**0.86**	**0.82**	**0.43**	**2.29**	**1.31**	**1.26**
Final Score	**0.80**			**0.70**			**1.62**		
Rank	**2**			**3**			**1**		

Finally, the medium SME received the score of 0.52 on average and placed emphasis on their solvency at first followed by their efficiency, profitability and their liquidity. It was concluded that the best financial performance among all groups of companies, for the period examined was attained by the micro ISO SME. The average score assigned to all ISO certified SME was equal to 0.8 placing them in the second position among all other groups, in terms of their financial performance at the specified level of quality they implemented.

In the second group of SME, the ISO+ SME meaning the ISO certified companies with the intention and willingness to continue their quality journey, were ranked. The micro ISO+ SME received an average score of 0.86, and placed emphasis on their efficiency, solvency, liquidity and profitability. The small ISO+ SME received a score of 0.82 and gave priority to efficiency, solvency, liquidity and profitability. Finally, the medium ISO+ SME received a score of 0.43 emphasizing their solvency, liquidity, efficiency and profitability. The average score assigned to all ISO+ SME was equal to 0.70 placing them in the third position among all other groups, in terms of their financial performance at the specific level of quality implemented.

Finally, the TQM SME, the group of ISO certified SME which decided to continue their quality journey with the full adoption of all the quality elements that characterise their

quality system was ranked. It was found that the micro TQM SME received an average score of 2.29, and gave priority to efficiency, solvency, liquidity and profitability. The small TQM SME received a score of 1.31 and placed importance on their solvency, liquidity, efficiency and profitability in relation to their overall financial performance. Finally, the medium TQM SME received a score of 1.26 and preferred to focus on the solvency, liquidity, efficiency and profitability of their financial performance. The average score assigned to all TQM SME was equal to 1.62 placing them at the first position in terms of their financial performance.

The first ranking scale was the level of quality implemented from all size groups of SME and have shown an improved financial performance

was restructured to feature a new table, named that is ranking the different size group of SME that have implemented quality at different levels, based on which has shown an improved financial performance.

Table 32: SME Quality Groups and their Financial Performance (Ranking B)

	Micro			**Small**			**Medium**		
	ISO	ISO+	TQM	ISO	ISO+	TQM	ISO	ISO+	TQM
Profitability	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01
Efficiency	1.22	0.44	1.45	0.35	0.39	0.12	0.21	0.09	0.23
Solvency /Leverage	0.11	0.26	0.54	0.14	0.27	0.76	0.27	0.21	0.72
Liquidity	0.02	0.16	0.29	0.01	0.16	0.42	0.01	0.12	0.30
Score	1.36	0.86	2.29	0.52	0.82	1.31	0.52	0.43	1.26
Final Score	**1.50**			**0.88**			**0.74**		
Rank	**1**			**2**			**3**		

The results derived showed that the Micro, ISO SME, received a score of 1.36 and placed priority on their efficiency, solvency, liquidity and profitability. The micro ISO+ SME received a score of 0.86 and emphasized efficiency, solvency, liquidity and profitability. Finally, the micro TQM SME received a score of 2.29 and focused on the efficiency, solvency, liquidity and profitability.

The overall average score assigned to all micro SME was equal to 1.50 placing them in the first position in terms of their financial performance. For the small ISO SME - the score assigned was equal to 0.52 and emphasis was placed on efficiency, solvency, liquidity and profitability. The next group, the small ISO+ SME received a score of 0.82 and focused on efficiency, solvency, liquidity and profitability. Finally the small TQM SME's score was equal to 1.31 and their attention was on solvency, liquidity, efficiency and profitability. The overall average score assigned to all small SME was equal to 0.88 placing them in the second position among all groups. For the largest group of SME the medium SME, the medium ISO SME received the score of 0.52, with emphasis having been placed on solvency, efficiency, profitability and liquidity. The medium ISO+ SME's score was equal to 0.43 with their focus being on solvency, liquidity, efficiency and profitability. Finally, the medium TQM SME received a score equal to 1.26 and were focused on their solvency, liquidity, efficiency and profitability. Overall, the medium SME managed to receive an average score of 0.74 placing them in the third position among all other groups of SME.

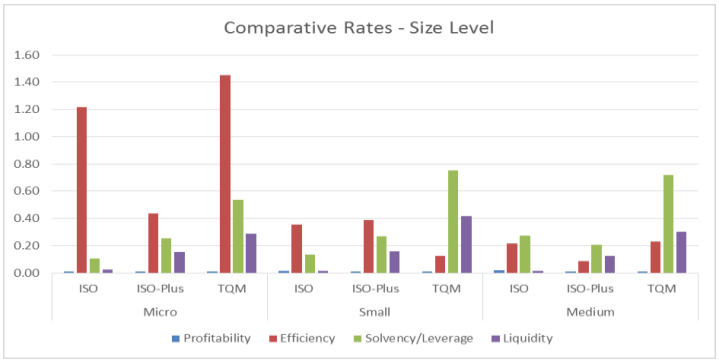


Figure 69: Comparative Rates based on Size level

Focusing on the cumulative number of SME (392) financial performance, the score attained supports the belief that the level of their financial performance comes close to the scores derived from the ISO+ SME (0.70) and the medium size SME (0.74).

Table 33: Financial Performance Scoring

	Score/ Fin. Performance
Profitability	0.01
Efficiency	0.31
Solvency/Leverage	0.25
Liquidity	0.14
Total Score	**0.71**

Emphasis was placed on their efficiency and solvency level and less importance was given on their liquidity and profitability level. By producing better and more reliable products and services and minimizing their exposure to any operational and financial risk, the Greek ISO certified SME tried to cope with the crisis conditions.

6.9 SME Quality Group Transfers

In order to identify the contribution that implementing quality and the TQM elements in particular to the SME operations has on their financial performance, a twostep process was followed. The first step was to identify and analyse the transitions that SME made between different quality levels in different periods (i.e. an ISO level company becoming an ISO+ level company or the opposite). In order to identity the changes in the SME quality level, the changes in their Z-Score was chosen. This selection was supported from the previous section's analysis where it was found that SME which improved their quality level, also reduced the probability of going bankrupt and this fact was supported from their high Z-Score ratio. So, as transitions among different quality levels, we consider the improvements and the downturns of their Z-score. The second step was to identify the SME equivalent financial performance for each transition recorded, so as to identify the role of quality in their improved (or deteriorated) financial performance. More specifically, this would reveal the number of companies that improved their quality level and simultaneously reduced the possibility of going bankrupt.

In Appendix I, the transitions between different quality levels that all group of SME implemented is presented. Beginning with the micro SME, in 2009, seventeen (17) SME moved from the ISO level to the ISO+ level of quality and two (2) moved from ISO level to TQM level. In 2010 nine (9) companies moved from the ISO level to the ISO+ level and three (3) returned back to the ISO+ level from the TQM level. In 2011 four (4) ISO+ companies became TQM SME and four (4) ISO+ SME returned back to ISO companies. In 2012 only six (6) moved from ISO+ to ISO and in 2013, sixteen (16) moved from ISO to ISO+ and four (4) from TQM to ISO+. Finally in 2014, six (6) companies moved back from ISO+ to ISO and one (1) from ISO+ to TQM.

From the analysis of the small SME, in 2009, seven (7) ISO SME became ISO+ and three (3) attained TQM level. In 2010 only one (1) moved from the ISO to the ISO+ level and eight (8) changed from TQM to ISO+ level. In 2011 four (4) SME descended from ISO+ to ISO and seven (7) moved from ISO to TQM level. In 2012, four (4) descended from ISO+ to ISO and only one (1) from ISO+ to TQM. Finally, in 2013, six (6) companies changed from ISO+ to ISO and three (3) from TQM to ISO.

The examination of the medium sized SME, revealed that in 2009, five (5) SME moved from ISO to ISO+ and two (2) changed from TQM to ISO+. In 2010, two (2) companied moved from ISO to ISO+ and one (1) from ISO to TQM directly. In 2011, seven (7)

companies dropped from TQM to ISO and seven (7) from ISO+ to just ISO. In 2012, eleven (11) companies moved from ISO to ISO+ and one (1) to TQM. In 2013, one (1) company dropped from ISO+ to ISO and two (2) moved from ISO+ to TQM. Finally in 2014 eight (8) companies descended from ISO+ to ISO and three (3) from TQM to ISO.

With the exclusion of the companies presented above, the remaining SME retained the same quality level.

It is also important to note, that the SME with the lowest transition movements in their quality level, were the medium SME (Figure 70). Instead the more volatile companies were the micro SME. The medium sized SME were recorded to have the highest number of transitions in 2012 and 2014 and the micro SME were found to have the most changes in 2009 and 2013. .

Figure 70: SME Transitions per Size

Similarly, Figure 71 depicts that the TQM SME were the ones that realized the least number of transition movements. On the contrary, the ISO+ SME were the ones that showed the highest number of transitions among different levels of quality.

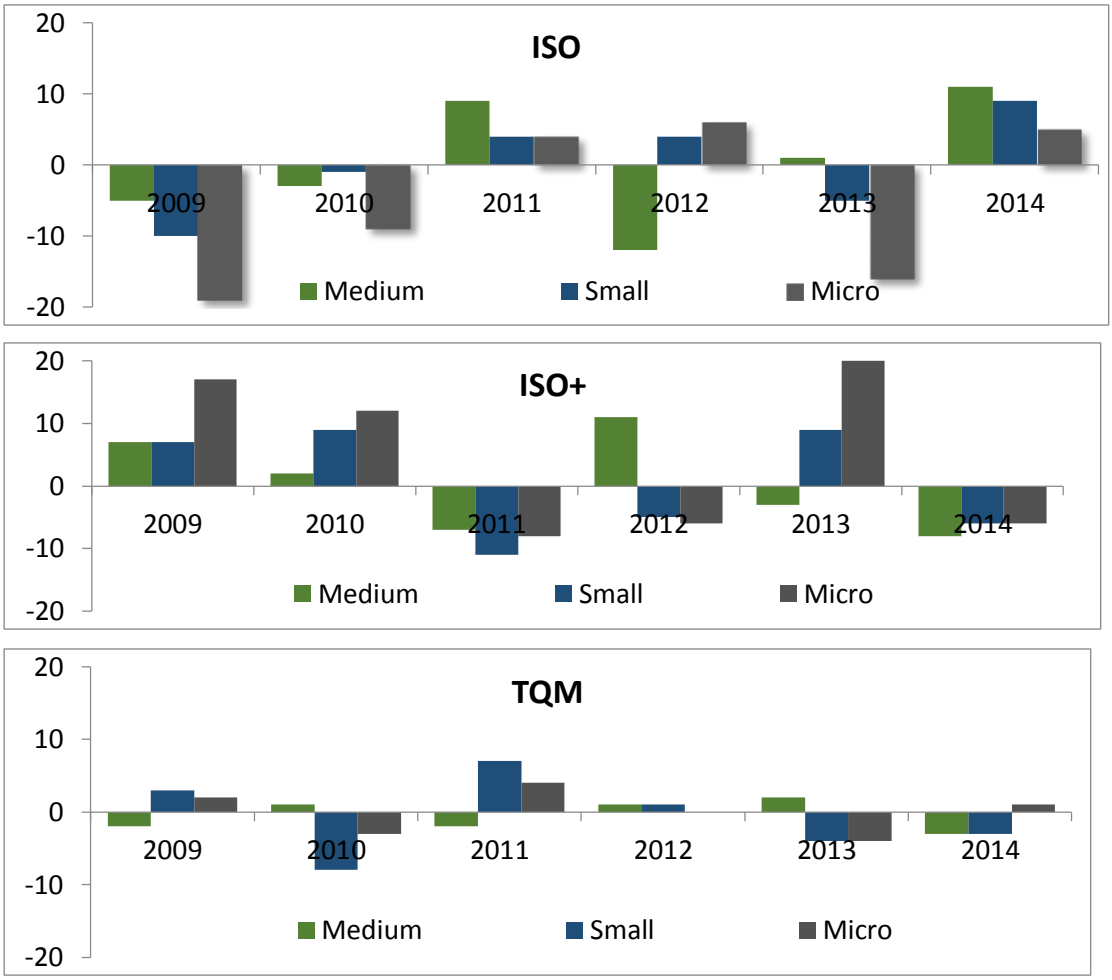


Figure 71: SME Transitions per Quality Level

6.10 Concluding Remarks

This chapter includes all the statistical tests conducted as well as the results derived, relating to the research questions that were examined and analysed.

Initially, it was confirmed that SME' improved level of quality leads to improved financial performance. This improved financial performance was achieved mainly by the medium sized SME and at a lesser extent by the small and the micro sized SME. Both the qualitative and the quantitative surveys conducted,, returned on average similar results in both, the whole population of SME (i-Mentor Hellastat) and the survey's sample of SME (qualitative and quantitative survey).

The SME financial performance was analysed for the population and for the survey's sample. A set of selected financial ratios were used to measure the SME liquidity,

profitability, solvency and efficiency. The four aforementioned were assigned equal weights and used to determine financial performance. It was found that differences in the level of quality implemented by SME had a direct effect on their equivalent financial performance. The SME which improved their quality level were the ones that also showed a higher level of sustainability to the financial distress caused by the crisis conditions.

The SPSS was used as a tool to analyse the SME financial performance, through their financial ratios, in all eight years of the crisis. With the SPSS software a special function was developed which offered the opportunity to identify the contribution that each ratio had (expressed as a coefficient) on the SME financial performance, for each of the years examined.

Differences in the financial ratios were found among different groups of SME, over the years examined (2008-2014). The following chapter, attempts to shed light on the relationship existing between those differences and the political and economic events which transpired throughout the period examined.

Chapter 7
Discussion-Conclusions-Implications and Recommendations for further study

Chapter 7: Discussion, Conclusions, Recommendations.

7.1 Introduction to Chapter 7

The challenge of this thesis was to establish a set of measurable quality elements that together with a set of measurable financial criteria (ratios), could determine the level and the impact of quality on the financial performance of Greek ISO certified SME. The challenge was substantial as the period examined was a period when Greece and the Greek market suffered severe economic, financial and political crisis conditions.

Three are the crucial components that characterise an economic and financial crisis. These are: the threat for bankruptcy, the abruptness of unpredictable events and the limited available time top management has in order to take corrective action. These components make the implementation of quality practices and TQM in particular, a valuable tool (Seeger et al., 1998). An improved set of elements such as the Quality processes and the Tools and techniques, supported from another set of elements such as the Appraisal techniques and a Quality oriented cultural environment, would positively contribute to an SME's ability to cope better with crisis conditions. So, as it was supported and from Vargo & Seville (2011), the challenge to quality is the ability to convert crisis conditions to opportunities.

Introducing quality elements in their operations could help Greek SME adjust or re-design their strategic plan or even enable them to design one in case they don't use one. This would in turn allow them to clarify their future preferences and handle the rapid, continuous and unexpected environmental changes and any socio-cultural issues.

The results derived from the analysis of the available data are analysed and discussed in a process that it is shown in Figure 72. The Discussion section begins with the analysis of the results derived from the qualitative analysis and the interviews conducted. It continues with the discussion on the results derived from the quantitative analysis and the 392 questionnaires collected. Both the surveys qualitative and quantitative results are compared and any similarities or differences among them are identified and analysed.

The data analysis and the discussion will support the thesis findings responding to the research question and the sub-questions and the aims of the research.

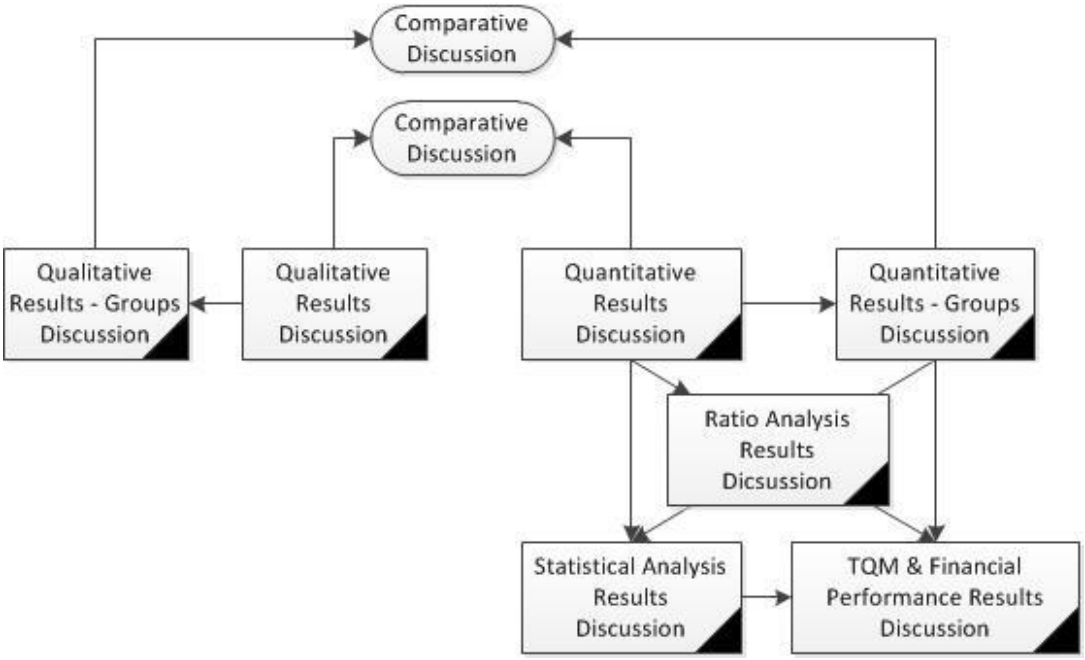


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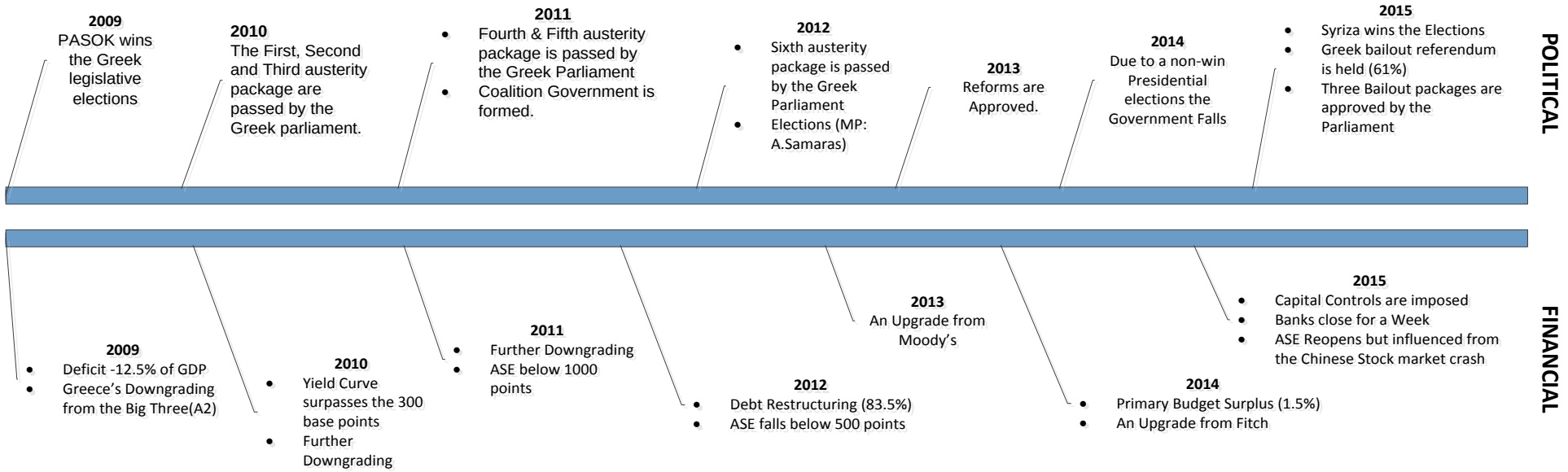
Figure 72: Discussion of the Results Derived

7.2 Discussion

The discussion begins with a reference to the results derived from the qualitative and the quantitative survey. It continues with the analysis of the financial ratios submitted from the Greek ISO certified SME that participated in the survey. An analysis and discussion is also conducted on the ratios of all the ISO certified SME whose financial data were included and downloaded from the i-Mentor Hellastat database (population). In the discussion, the results derived from the analysis of all different groups of SME formed, including those that have implement the quality element at different levels (i.e. the “ISO SME”, the “ISO+ SME” and the “TQM SME”), are elaborated on. The relationship of the TQM elements implemented by SME and how this determined the behaviour of the selected set of ratios is also discussed. Their behaviour was examined in relation to the level of their profitability, solvency, efficiency and liquidity that constitute components of their overall financial performance. The political and financial events that may influenced that behaviour, as these are shown in Figure 73 was also examined.

Figure 73: Indicative Political & Financial Events (2009-2015)



7.2.1. The qualitative Survey

From the qualitative analysis conducted and the scoring approach used, the results derived showed that the SME managers implement all the TQM elements at a rate slightly higher than the average (1.55/3.00). It is the participants' belief, that Quality culture is the important quality element (1.6/3.0) in TQM, because it incorporates practices like cooperation and teamwork, as well as the continuous improvement attitude. It also encourages innovation and creativity. The Performance appraisal element is the next valuable quality element (1.6/3.0). The belief is that inspection and control processes could keep a quality system functional for a longer period of time. The Quality tools (1.5/3.0) and Quality processes (1.5/3.0) elements show slightly lower rates in the preference of the participants. This explicitly indicates that their perception, that come in agreement with what Hansson (2001) supported, is that just the tools and the processes implemented, are not good enough if the SME wish to continue their quality journey and implement all the TQM elements.

In order to analyse their responses further, three different groups of SME were formed, based on the number of their employees. The groups formed were the Micro, the Small and the Medium SME. This grouping brought into light the privilege the Small SME have in favour of TQM implementation (1.75). The Medium SME (1.63/3.00) followed leaving the Micro SME (1.25/3.00) last. The Small SME were the ones that continued to invest in quality more than any of the other two groups. Their size and their ability to diversify as a means of facing crisis conditions, was what enabled them to offer their customers products and services at high quality. Instead, the Medium SME substantially reduced the size of the funds invested in quality, as a way of minimising their costs and increasing their profitability. Similar to that is the immediate response of the Micro SME. Having "felt" the consequences of the economic crisis, the Micro SME also stopped investing in quality and just tried to retain their ISO certification.

Being easier and less costly for them to formally implement practices of the Quality culture element, the Small SME were the ones that placed greater importance on quality culture issues (2.00/3.00). Instead the Medium SME, trying to impose greater control over their processes, placed greater importance on the performance appraisal element (2.00/3.00) that comes in congruence with what Hansson (2001) has supported . Their size was what explained that behaviour. It was easier for the smaller and harder for the bigger SME to implement the element of quality in their operations. This was mainly due to their efficient and more effective communication processes. Instead the larger in size SME used the performance appraisal element and a set of

control procedures to support any improved level in their quality. Instead, for the Quality tools and techniques element and the Quality processes element, the Micro SME placed greater emphasis on the first quality element and the Small SME placed more emphasis on the second. This supports the decision that the Micro SME to sustain their ISO certification, composed mainly from the quality tools and techniques element. On the contrary, the decision of the Small SME to continue their quality journey further, explained the importance they placed on their quality processes element. As this was also supported and from Youssef et al., (2002) the Just In Time production (JIT), the Design For Manufacturability (DFM), cellular manufacturing; statistical process control and design of experiment (DOE) being more applicable for production oriented SME;, can further support the TQM implementation and for other types of SME from achieving an improved level of customer's satisfaction.

Positive was the participants' response regarding the contribution of quality to the improvement of their SME's financial performance. They admitted that ISO is just the beginning of their quality journey. They accepted that ISO offers them the capability of organizing their processes better and that it had as a consequence improved their financial performance. However, a number of interviewees have expressed doubts regarding the contribution of TQM in the development of their SME financial strength, which is definitely required for coping with the crisis conditions that Greece is currently facing.

The interviewees' response referring to the SME's financial performance indicated that the Small SME were the ones that received the highest return on their investments (3.00). Next were the Micro SME (2.44) and at a slightly lower rate the Medium SME (2.42). The small SME were those that strongly believed that quality and financial performance are closely related. They also claimed, in congruence with what Demirbag et al., (2006) have supported, that when the TQM elements are further implemented the opportunity to overcome the consequences of the economic and financial crisis will be actualized more easily and at a lower cost.

7.2.2. The Quantitative Survey

From the quantitative analysis conducted, it was found that the Greek, ISO certified SME continue their quality journey to TQM showing a score slightly higher than the average (3.08/5.00). Supported from the triangulation strategy followed it was found that the Greek SME, under both research approaches (Qualitative & Quantitative) produced a score higher than the average. Both approaches also revealed that the

Small SME were those that implemented most of the TQM elements (3.292). Also, both approaches showed that the next group to further implement the quality elements was the Medium SME (3.074) and then the Micro SME (3.072) Differences existed in the participant's preferences on the quality elements implemented. Specifically in the quantitative survey, the participants placed less importance on the Quality culture (3.10) and the Performance appraisal (3.00) elements and higher importance on the Quality tools (3.15) and the Quality processes (3.18) elements, than in the qualitative survey. The low but with high significance score found for the Performance appraisal element, supports Deming's belief that imposing higher control in a company's operations reduces the employees' motivation for higher quality. The results supported the conclusion that the SME entrepreneurs and their quality managers were willing to further improve their quality standards through specifically improving their quality tools and techniques. But their concern was that without the implementation of the Quality culture element, this improvement would not be easily achieved. Innovation, creativity, cooperation and teamwork, constitute the quality practices supporting a company's 'continuous improvement' required for TQM implementation. Given that SME have limitations in the "knowhow" and the needed resources for fully implementing the TQM elements, they make compromises on what they can accomplish. That is, to make all the necessary improvements, as this was supported and from Sousa et al., (2005) focusing mainly on the less costly or easy to implement quality elements.

From the analysis of the formed groups of SME, it was established that the Small SME were those that showed the highest score (3.29/5.0) in implementing the quality elements, followed by the Medium SME (3.074/5.00) and the Micro SME (3.072/5.00). The results derived support the conclusion that the Small SME are more competent in further implementing the quality elements. Their preferences on the quality elements show that the Small SME invested more on the Quality processes (3.38) and the Performance appraisal (3.37) elements. The Quality culture element (3.21) is the next most important element for them together with the Quality tools element (3.21) that shared the same score. For the Medium SME, priority was given to the Quality culture element (3.27) followed by the Performance appraisal element (3.10), the Quality processes element (3.03) and the Quality tools element (2.90). For the Micro SME, first priority was the Quality processes (3.44), followed by the Quality tools (3.09), the Quality culture (2.93) and the Performance appraisal (2.83) elements. The results showed that the larger sized SME paid more attention to the Quality cultural and the Performance appraisal elements. That preference helped them impose better control on the already established and implemented Quality processes and Quality tools

elements. On the contrary, the Micro SME, the smallest in size SME, preferred to invest in the Quality processes and the Quality tools elements. Supporting those elements more, enabled them to better restructure and enrich their operations offering them the opportunity to be more flexible and diversified. That was the only alternative they had in order to cope with the crisis conditions they faced. The Small SME that stand in-between the two other groups, received the highest score in TQM implementation. They supported the Quality processes and the Performance appraisal elements more. Their belief that comes in agreement with what Reid and Sanders (2009) believe was that these two elements would further support and ensure the quality of the products or the services they produced. The other two quality elements, the Organizational culture and the Quality tools elements, being supportive to the first two, would enable those SME to accomplish the TQM level.

The analysis of the p-values, of the interrelationships between the quality elements showed high significance at $p<0.05$. The only relationship that showed no-significance was between the Performance appraisal and the Quality culture elements and specifically for the Medium SME (0.04961). This conclusion is supported from what Deming claims in his “seven deadly diseases”. He identified that the performance appraisal element is a barrier to the effective implementation of quality. Instead the Quality culture element as this is supported and from Soltani et al., (2006) is considered the most valuable quality element. This implies that the role of those elements in the implementation of TQM is also determined from the size of the SME supported also and from the survey conducted by Kalak & Hudson (2016) who claim that the difference between the Micro and the Small SME with the Medium SME is their credit risk. However, the management team of all groups of SME examined, attempted to implement both elements. This was because even the employees of the Medium SME considered as Fons (2011) has also considered, the appraisal methods and the techniques adopted as rigorous. Following that strategy, however made the adoption of quality culture practices, like teamwork and innovative procedures difficult to be established and expanded.

From the analysis of the covariance and correlation of all the quality elements for all the groups examined, it was found that for the Micro SME, the Quality processes and the Performance appraisal were the ones that mostly determined the implementation of TQM. For the Small SME the Quality tools and the Performance appraisal elements were considered as more important. For the Medium SME, the Quality processes and the Quality tools and techniques were shown to have the highest correlation. The

analysis of the element's correlations, also supports the conclusion that the larger SME were those that placed emphasis an0d attention to the Quality processes and the Quality tools and techniques elements adopted. Instead the smaller SME, paid attention to the Appraisal methods. Regarding the Quality culture element, the larger SME were those who gave greater emphasis and support to it and to its practices. That is why the Medium SME compared to all others, presented for the Quality culture element the highest score. That occurred because the resources they needed to implement this element were much higher, so its importance was much higher. For the other two groups (smaller groups), the Quality culture element was ranked as their third priority among all other quality elements. This was, as it is also supported and from Shortell et al., (1995) because its implementation needed the minimum of resources given that it is left upon their stakeholders.

7.2.3. The Greek SME and their Financial Performance

The financial ratios used in analysing the financial performance of SME were; the quick ratio for analysing the SME liquidity, the asset turnover, the inventory turnover and the receivable turnover for analysing the SME efficiency; the return on Assets and the return on Equity ratios for analysing the SME profitability; as well as the debt to equity ratio and the Altman's Z-score for analysing the SME solvency. In the analysis, the size of SME and the level of quality they implemented had a significant influence on the way the ratios behaved in a period were severe economic and financial crisis conditions were recorded.

The period that the financial ratios behaviour was examined was from 2008 to 2014. The year 2008 is considered the beginning of the Greek and European financial crisis. Within the first two years, the country's GDP dropped approximately 20%. As it is presented in the Small Business Administration-SBA report (2014c), the decline continued until the end of 2014, which is the end of the period examined and the time when a budgetary primary surplus in the country's GDP became equal to 1.5%.

From the descriptive statistics and the statistical tests applied (Appendix E) on the financial ratio values, the reliability of the results derived (i.e. normality, equality of means, homogeneity) was confirmed. So, the data used in the processing in order to come to conclusions that would support the survey's research question, were verified.

The group of SME used for the purpose of the financial analysis were the same as the ones used in the quantitative and the qualitative analysis conducted. The Micro, the Small and the Medium SME and their equivalent ratios were examined. The ratios

were used as they were also used by Shahin (2011) in order to examine the SME's liquidity, profitability, solvency and efficiency level for the examined period of time.

From the results derived (Appendix H' Post Hoc), it seems that the liquidity level of the Micro and the Medium SME are statistically significant (acid test). This significance was evident in almost all the years of the period examined (2009-2014).The Micro SME were the ones that performed better compared to the Medium SME in terms of their liquidity. Significance was also found between the Micro and the Small SME, in the years 2009 and 2011, in favour of the Micro SME. That significant rate meant that the smaller sized SME managed to hold more cash collected from their sales, as being needed due to the difficulties they face to raise any external financing (Loans or equity funds).

For the solvency ratio, only some significance among all group of SME was found. In particular, the debt to equity ratio of the Micro SME showed a relationship with the Medium SME, but only for the years 2008 and 2012. That relationship begun in the year 2008, a period that the Micro SME experienced an improved performance compared to the Medium SME. But this relationship was reversed in the year 2012. During that year, the Medium SME outperformed the Micro SME in the specific ratio. The decision from the European parliament to release the second economic bailout of €31.5 billion could explain this behaviour. A certain amount of that fund was given to the largest SME in an attempt to keep them alive and reduce the unemployment rate. Another reason, could be the discussions between the newly elected Greek Government and its creditors. These discussions which referred to the restructuring of Greece's total debt, presented and in Dasilas and Papasyriopoulos survey (2015), developed potential investors' expectations for greater and less risky investments. It is encouraging to note, that even when the full sample of SME was used, higher significance was shown in the year 2012. An indication that is also critically discussed and from the Anderson and Stallings (2014) that the sources of financing of the Greek SME were not entirely based on a structured and strategically related decision plan, but instead were opportunistic and mainly determined by the policies imposed by the Government, the central bank and particularly for Greece and by the Troika.

For the solvency ratios, the Z-score function combined a set of ratios trying to identify the probability of a company and more specifically of an SME going bankrupt. From its analysis few relationships among the groups of SME were identified and those were only in the years 2011 and 2012. Those were between the Micro and the Small SME with the first having a better performance than the second. This relationship proves

what literature and particularly karagianni and Labrianidis (2001) support, that is that the smaller in size SME assuming the role of subcontractors to larger companies, took on a smaller amount of risk associated with big projects, a fact that is also supported from their ability to diversify and be involved in more than one project at a given time.

A significant relationship between the Micro and the Medium SME was also revealed in the asset turnover ratio, but only for the year 2009. In that year, the SME responded in this survey that they managed to control their size and the use of their assets in relation to their sales level, effectively. The financial crisis conditions considered in all other years and the collapse of the real estate market, potentially explains the reduced size of their assets and sales values, as well as the reduction of their invested funds.

However, the inventory turnover, the second ratio of the efficiency ratios, showed a different behaviour. High significance was seen among the Micro and the Medium SME for the whole period examined. Significance was also found among the Small and the Medium SME. In addition, the Medium SME exhibited, a better performing inventory turnover ratio, than both the Micro and the Small SME for the whole period examined. Differences however existed between the results derived from the analysis of the sampled SME and those attained from the whole sample of SME registered in the i-Mentor Hellastat Database. It is interesting to note, that in the sample, the Medium SME showed better control over their inventory account in relation to their sales level. This difference could be due to the size of the sample analysed, considering that in literature the adequately flexible Micro SME, are those that organize their inventory control procedures better. The result is not totally irrelevant as this is supported and from Baños-Caballero et al., (2014), given that the Medium SME are those that have all the necessary resources they need in order to adequately organize their inventory control procedures. So, both have the potential for achieving better control over their inventory. The issue and the contribution of this survey, was to identify how different sized SME responded in structuring and controlling their inventory account, in a period where economic crisis conditions existed.

Significance was also recorded in the receivable turnover ratio. It was found that the Micro SME were significantly related to the Medium SME for the years 2009 and 2011. The Small SME, showed significance with the Micro SME for the years 2010, 2011 and 2014. The results derived come close to the results derived from the whole sample of SME examined. From all groups, the Micro SME were the ones that showed the best performance on the receivable turnover ratio. Despite the crisis causing payment delays from the suppliers and the public sector, the Small and the Micro SME did not

encounter a major problem in their ledger account, accounts receivable. The number, the size and the type of their agreements gave them, as this is revealed and in Anderson's and Stallings's survey (2014), the opportunity to keep their receivable accounts at a low level and impose better control over them.

The ROA (Return on Assets) ratio seemed to be significant only in the last years of the period examined. This significance was found to be between the Micro and the Medium SME for the years 2012 and 2014. In addition, significance between the Micro and the Small SME was recorded in the years 2010, 2012 and 2013. In all years the Micro and the Small SME down-performed in relation to the Medium SME in terms of their ROA ratio. Similar conclusions are derived from both samples of SME examined (survey & population) that come in congruence with what Miras-Rodríguez et al., (2015) have concluded. This acts as an indication that the largest SME are those that have the required resources to better control their investments and the high dependency of the smaller SME investment strategy on the largest ones.

For the second profitability ratio, the Return on Equity (ROE), significance was identified between the Micro and the Medium SME, but only in 2012. Specifically, the Medium outperformed the Micro SME. Significance between the Micro and Small SME with the Medium SME was revealed only in the population sample and for the years 2011, 2012 and 2013. In that analysis, the Micro and the Small SME were those that performed better than the Medium SME. To explain that behaviour, it is important to note, that in the year 2010 the general index of the Greek stock exchange started dropping and in 2013 fell below 500 points.

This resulted in the reduction of the equity value of the Greek Companies and the SME in particular. That reduced value in equity was better controlled by the Micro and the Small SME. That improved their financial performance further from 2010 onwards. Acting as subcontractors to Medium SME they managed to substantially reduce their operational and financial risk that is also supported and from Dasilas and Papasyriopoulos (2015) survey. This resulted in the further improvement of their ROE ratio, in comparison to the Medium SME. From the year 2013, potential Greek and international investors seemed more confident about the Greek economy and the relationship between the Small and the Medium SME. Positive contribution led to that year's upgrading of the Greek economy from Moody's organization.

From the function with the name “Financial Performance-(FP)” that was developed using the MANOVA syntax suitable for univariate and multivariate analysis, the contribution and importance of each ratio on the SME financial performance for each year, was identified. From the analysis it was found that the ratios, ROA, ROE, acid test ratio and asset turnover ratio were the ones that mostly determined the financial performance (FP) value of all SME. As is shown in Table 34, the results apply to all the SME included in the i-Mentor Hellastat database for all eight years examined.

Table 34: Ratio contribution to the Financial Performance (FP) determination-Whole Population

	2008	2009	2010	2011	2012	2013	2014
Asset Turnover	√	√		√		√	√
ROA		√	√	√	√	√	√
ROE	√	√			√	√	
Acid Test		√					√

As is seen from the results, during this time frame, the R.O.A (profitability) was the most important ratio for all the groups of SME. It is followed by the Asset turnover ratio (efficiency) and the R.O.E (Profitability) ratio. The least important was the acid test ratio (liquidity).

The above results, support the belief that what really worried the Greek, ISO certified SME entrepreneurs is not the size of their debt or the probability of going bankrupt. Instead, they cared about keeping their SME’ profitability at an adequate level in relation to the total investment (assets) made. Less importance was placed on the return of their own investment (Equity investment). They were also interested in keeping the SME liquidity at a level that would satisfy their short term obligations and needs. Characteristically, concerns for the level of their liquidity were aroused in the years 2009 and 2014, during which Greece was downgraded three consecutive times from all the “big three” credit rating agencies (Moody’s, Standard & Poor’s, Firtch). Particularly, in 2010 Greece expected the enforcement of three different austerity packages from Troika. From 2014 onwards the recovery of the Greek economy begun and the Greek bonds gradually started to be traded again, in the financial markets. However, the expectation that the forthcoming elections were going to be won by a left party (SYRIZA) which proclaimed in its political campaign the exit of Greece from the European Union, increased the feelings of uncertainty in the business environment. Of course, the closing down of most of the Greek Banks and the capital controls imposed

in 2015, supported the Greek entrepreneurs' concerns regarding the SME liquidity and solvency level.

From the analysis of the survey's sample size, it was found that the R.O.A and the Asset turnover ratio had once again the most important contribution to the SME financial performance. This time the R.O.E seemed to have a higher contribution to the SME financial performance. The acid test ratio, remained a valuable component in the determination of the SME financial performance, but contributed the least to it.

Table 35: Ratio contribution to the Financial Performance (FP) determination- Survey's sample

	2008	2009	2010	2011	2012	2013	2014
Asset Turnover		√	√		√	√	√
ROA	√	√	√	√	√	√	√
ROE			√	√	√	√	√
Acid Test	√	√	√				

In Table 35, the R.O.A ratio is revealed as being the most crucial and important ratio for all the SME entrepreneurs and the R.O.E ratio the least important. This behaviour leads to the conclusion that the SME entrepreneurs mostly worried about how they would keep their companies alive and their assets productive, than how they would improve their own return on investment.

The three downgrades of the Greek economy by the Fitch and the Moody's agencies; the four downgrades by the Standard and Poor's agency; the five austerity packages imposed and approved by Troika and the Greek parliament; the resignation of the Greek Government and the take over from a coalition Government, were some of the political and financial events that took place after 2011. The Greek SME entrepreneurs seeing and trying to predict the consequences of all aforementioned events, worried more about their survival and less about their liquidity adequacy. This is seen from the importance they placed on the asset turnover ratio, a ratio that is directly related to the SME's strategic and capital investment plan. Supported and from Shahin's (2011) survey, not that much importance is placed on the inventory turnover or the receivable turnover ratios, given that both are mostly related to the SME's working capital management and working capital fund.

From the financial ratio analysis conducted and the results derived (Appendix F-Section A) it was revealed at first that all groups of SME improved on average their profitability level between the years 2008 to 2012. For the last three years (2012-13-

14) however, a decline in the mean of their acid test ratio and their liquidity level was recorded. A similar decline was seen in the trend of the mean of their efficiency ratios. For their solvency, an average decline was recorded in the mean of the debt to equity ratio, but an increase was shown in the Z-score's average mean of all the groups of SME. This is an indication that all the SME managed by reducing the level of their liquidity, efficiency and solvency (debt to equity ratio) together with improving their profitability level;, to increase and improve their z-score (probability of going bankrupt).

From the financial ratio analysis of the per size groups of SME, it seemed that the Micro SME were those that better controlled their efficiency and specifically their inventory level (Ch.6, fig.12), compared to the other two groups of SME. The Micro SME were those that managed to reduce the probability of going bankrupt (z-score) (Ch.6, fig.17). The problems that the Micro SME were facing were with their asset turnover ratio (Ch.6, fig.11) and occasionally (years 2010 and 2013) with their debt to equity ratio (Ch.6, fig16). Being more flexible than all other groups, is what gave them the ability to diversify and find the way to survive, better than any other group of SME that is also supported and from Germanos conclusions (2011). However, based on the Small Business Administration report-SBA (2015), the large number of Micro SME that operated in the Greek business environment, with just one employee, had no other option but to liquidate. That is also supported from the negative values found in the Micro SME trend in their return on equity ratio (Ch.6, fig14).

The Medium SME instead preferred to be externally financed. This resulted in their higher probability (lower Z-score) of going bankrupt (z-score) (Ch.6, fig.17). The exception is the mean of the Medium SME asset turnover ratio. Having efficiently utilized their total assets they were able to keep a stable behaviour in all other efficiency ratios (Inventory and Receivable turnover). Such a behaviour was not found for their profitability and liquidity level. Among all the per size groups, the Medium SME were those that showed the worst behaviour in the mean of those ratios (Ch.6, fig.10, 14, 15).

The Small SME, in almost all the financial ratios exhibited a behaviour that lay in between the behaviour of the Micro and the Medium SME with the exception of the receivable turnover ratio, which for the Small SME showed a lower rate especially from the year 2010 onwards (Ch.6, fig.13). That behaviour could be due to their reduced level in sales and/ or from their increased level in their accounts receivable account. Irrespective of the reason, the consequence was their reduced level in liquidity as this is shown in Ch.6, fig.10. Their low sales level as a result of the low demand, and the

uncertainty they experienced with their customers (public and private sector) may have caused this decline. Supported and from Anderson and Stalling (2014) conclusions, this is explained from the customers' inability to pay his/her obligations on time is what caused that increase in the level of the accounts receivable account.

From all ratios, the most improved was the behaviour of the Z-score ratio of the Small SME (Ch.6, fig.17). Keeping their profitability, especially the R.O.E (Ch.6, fig.15), at a high level and their Debt to Equity ratio (Ch.6, fig.16) at a reduced and almost constant thus predictable level; the Small SME managed, from 2010 onwards, to reduce the probability of going bankrupt.

From the financial ratio analysis conducted using the data collected from the SME that participated in the survey (specific sample) and completed the questionnaire, no major differences were recorded between the two groups. Any differences recognized referred mainly to the period incurred and on the magnitude of each ratio's behaviour. For example, the Micro SME continued to be the ones with the highest liquidity level (Ch.6, fig.18), but in terms of their efficiency were not as good as the Medium SME (Ch.6, fig.19, 20, 21). Equally good was the performance of the Small SME in terms of their solvency (Ch.6, fig.24, 25) and profitability (Ch.6, fig.22, 23) compared to the other two groups of SME.

Specifically, the Medium SME showed an improved performance in their Asset and Receivable turnover ratios. Due to their larger size, the medium SME enjoyed better negotiating terms in the agreements with their customers and suppliers and managed to utilize their assets more. They managed to impose higher control on their sales and the accounts receivable account. Though, this improved behaviour didn't seem to improve their liquidity level. The acid test ratio (Ch.6, fig.18) still remained at a low level in comparison with the other two groups.

Similarly, the Small SME were the group of the "specific sample" that showed similar behaviour with the SME in the total sample, in terms of their liquidity and their efficiency ratios (Ch.6, fig.18, 19, 20, 21). Also, no difference was recognized in their debt to equity ratio (Ch.6, fig. 24). So, similar conclusions as the ones derived from the analysis of the "total sample" of SME were generated. However, their profitability ratios behaviour was found to be better (Ch.6, fig.22 & 23) and their Z-score ratio behaviour was found to be worse (Ch.6, fig.25). The reason for these minor differences, could be the smaller amount of Small SME included in the "specific sample" compared to those included in the total sample group of SME.

From the comparison of the Micro SME behaviour included in the “specific sample”, to the equivalent behaviour of the “total sample” of SME; it was revealed that the Micro SME of the “specific sample” group were equally efficient in controlling their inventory account and the account receivable account (Ch.6, fig.20, 21) despite being less efficient to utilize their assets (Ch.6, fig.19). In addition, the behaviour of their liquidity ratio was found to be similar (Ch.6, fig.18) but the behaviour of their profitability ratios was found to be at a higher level (Ch.6, fig.22 & 23). Considering that the number of SME included in the “specific sample” was what mainly caused these differences, it is important to note the importance Micro SME place on efficiently managing their working capital (inventory and receivable turnovers) and keeping their profitability at high levels.

Differences between the two samples in all groups of SME could be caused due to the special characteristics of those that are included in the “specific sample” group as for example their size, the industry sector, the asset and sales size. In addition, the assigned percentage weight that each group of SME (Micro, Small, and Medium) included in each sample (total vs specific) could cause these differences. These differences are not capable of changing the perception regarding the SME financial behaviour, given that almost all ratios of both samples produce very similar results. Conclusions on the SME financial performance in relation to their size can be reliably derived from the analysis of the “specific sample” of SME. In the next section the above is presented having taken into consideration the level of quality implemented in each group of SME.

7.2.4. The Greek SME-Financial Performance & TQM implementation (Trend Analysis)

The analysis of the SME financial performance follows. More specifically, in this section the results derived from the trend analysis conducted on the rates of the financial ratios collected from the SME participating in the survey (specific sample) are presented. In that trend analysis, the SME were categorized, firstly, based on their size (no. of employees employed) and secondly based on the level of quality they had implemented. The trend analysis was conducted on each financial ratio and for each group of SME formed, using as criteria their size and the level of quality that was derived from the analysis of the questionnaires collected. Based on their size, the “size groups” that emerged were the Micro, Small and Medium SME and based on the level of quality implemented the “quality groups” formed were the “TQM SME”, the “ISO-plus (+) SME” and the “ISO SME”.

The “ISO SME” group, exhibited the most stable behaviour among all sized groups of SME (Micro, Small and Medium) regarding the acid test ratio and the level of their liquidity (Ch.6, fig.41); followed by the Z-score ratio (Ch.6, fig.42), the level of their solvency, the A/R turnover ratio (Ch.6, fig.45) and the level of their efficiency. All other ratios presented a great variability over the period examined, with the highest shown during the last years of the period examined (2012-2014). Of that group, the Small SME showed the highest performance for all the ratios (Ch.6, fig.44). The same group, also showed with its R.O.A and R.O.E ratios (Ch.6, fig.46) that it managed to keep its profitability, at a declining yet sustainable level. The ratio that down performed, in this group of SME, was the debt to equity ratio (Ch.6, fig.42) and the level of their solvency. All quality groups showed a decline in their exposure to debt financing, considering the increase in their costs, with the Medium SME being the ones with the highest rate of decline, given that their operational costs were usually the highest.

From the analysis it seemed that the “ISO SME” managed to sustain their liquidity level and the utilization of their assets and A/R turnover, more than any other ratio. That is what gave them the opportunity to keep their Z-Score ratio high thus the probability of going bankrupt low, having the Micro SME receiving the highest rate.

For next quality group, the “ISO+ SME”, the liquidity ratio showed the highest growth among all different sized groups of SME (Ch.6, fig.34). Their profitability ratios were found to decline (Ch.6, fig. 40). This decline continued until 2012 when growth appeared again. Also remarkable was the down slopping behaviour of their debt to equity ratio (Ch.6, fig.35) in almost all size groups. Their initiative to change their capital structure could explain the upsloping curve in their Z-score ratio (Ch.6, fig.36) and the reduced probability of going bankrupt. The most unstable (risky) behaviour as this is supported and from Hirt et al., (2013) was identified in the inventory turnover ratio (Ch.6, fig.38), particularly from the Micro SME, despite this group outperforming in that efficiency ratio the other two size groups. So, in a period of instability, bearing more risk is what could bring more returns to a company. Noteworthy was also the behaviour of the profitability ratios which after the year 2012 displayed a growing rate (Ch.6, fig.40). The Micro and the Small SME were those whose performance on profitability was better compared to the Medium SME which came last. This was an indication that mass production and the economies of scale concepts are not capable of increasing the SME profitability; further supporting the decision of a large number of medium sized SME to search for new markets abroad. From the year 2002 there is a continuous increase of Greek exports to foreign markets and there is an expectation, as this is

presented in McKinsey Global Institute report (2012) that they will continue to grow from -9% to +2% (Exports over GDP) from 2010 to 2021.

In addition, the SME decision to reduce their external funding as a means of reducing their risk (lower Debt to equity ratio) was what gave them the opportunity to minimize their probability of bankruptcy. That decision was also supported from the initiative of the Greek Government to motivate the development and growth of the whole entrepreneurship environment and business creativity as this is reported in the Small Business Administration Report-SBA (2014c). Notable is the increase of the profitability of all size groups, especially of the Micro and the Small SME (Ch.6, fig.39 & 40). This growth is specifically evident during the last years of the period examined. Also notable is the improved efficiency characterised from the high inventory turnover ratio rate that both the Small and the Micro SME showed in relation to the low but stable rate of the Medium SME. Imposing better control on their inventory, explained the increased level in the liquidity for the first two size groups of SME. But it also explained the reduced, in relation to the Medium SME, level in their A/R turnover. By increasing the number of the purchase orders and reducing the size of those orders they managed to reduce their exposure to risk, minimizing the possibility of having a large number of units unsold at the end of a period,.

Regarding the last quality group of SME, the “TQM SME”, are the ones that showed the most improved financial performance in terms of their liquidity, efficiency and solvency. Decline was realized in their profitability. Considering that overreliance on a company’s profits is not needed in measuring an SME’s financial performance it is supported and from Pacheco (2015) that the “TQM SME” are those that managed to show the best financial performance among all other quality groups of SME. They specifically showed improvements in their liquidity level (Ch.6, fig.27) up to the year 2013 and improvements in their efficiency level (Ch.6, fig.30, 31, and 32). The progressive reduction in their debt to equity ratio (Ch.6, fig. 28) increased their sustainability in the market resulted from their increased z-score ratio (Ch.6, fig.29) that substantially reduced their bankruptcy probability.

Among the three sized groups, the Small SME were the ones that performed better in terms of their Z-score ratio. It is also important to note the great variability of the Micro SME’s behaviour and their deviation from the other groups regarding the inventory and the receivable turnover ratios. Their ability to be more flexible and easily diversifiable is what gave them the chance to be more efficient and effective. Offering better credit terms to their customers made them capable of increasing their sales level and their

inventory turnover rate. They also applied an adequate and efficient approach to collecting their receivables and this had as a consequence the improvement and of their liquidity level.

Summarizing the consequences from implementing the quality elements at different levels, for the whole number of SME, it was revealed that the “TQM SME” were the ones that have substantially improved their financial performance in the period examined. That conclusion comes close to what is supported in literature and in particular from Herzallah et al., (2014); Marimuthu et al., (2014); Paulet et al., (2014) and Rose and Approach, (2003) that is the SME inability to fully and effectively implement all the quality elements and make them part of their strategic plan, if one existed. Their inability to view their investment in quality as a long term investment and not a short term one, was also brought to light. The quality elements selected for determining the quality level adopted by Greek SME, revealed, as is supported by literature, that their improved financial performance is attained only from those companies that have fully implemented all the quality elements meaning the “TQM SME” (Ch.6, table.6).

The next quality group that was revealed to have an improved financial performance was the “ISO SME” group, which includes the SME that chose to implement quality elements only up to the level that satisfied the ISO standards. The quality group with the least improvement in their financial performance was the “ISO+ SME”. The ISO+ SME decision was to improve the selected quality elements but not in a fully structured manner and they have also considered their investment to quality as a short and not a long term investment. In addition, the role and contribution of quality to the improvement of their strategic plan was never considered.

From the “TQM SME” quality group, in terms of their size, the Micro TQM SME achieved the highest financial performance followed by the Small TQM SME and the Medium TQM SME. This is an indication that the smallest in size TQM SME, were the ones that managed to better control the selected quality elements resulting in their improved financial performance (Profitability, Efficiency, Solvency and Liquidity). The Micro SME flexibility and their ability to adapt to changes as this is shown also in the surveys conducted by Herzallah et al., (2014) and Sharma, (2005), so to be diversified when the economic and financial conditions impose such a behaviour, could explain that result. The Micro “TQM SME” were the ones that gave higher importance to their efficiency level, followed by their solvency level. In comparison to the other two groups

(Small TQM and Medium TQM SME) the Micro SME were those that placed greater importance on their solvency and liquidity level (Ch.6, Table.6).

For the next quality group, the “ISO SME” group, in terms of their size, the Micro SME showed the best financial performance in relation to the other groups. Similar to the previous quality group, emphasis was given on the improved efficiency and solvency level. It is important to note, that the efficiency and solvency performance was emphasized by all sized groups with the Micro ISO SME placing more emphasis on their efficiency level (Ch.6, Table.6).

Similarly for the “ISO+ SME” quality group, the Micro SME showed the best financial performance. The Micro SME placed higher importance on their efficiency and solvency level, similar to the importance that was given from the small ISO+ SME. Instead the medium ISO+ SME placed greater importance on the solvency and liquidity level of their financial performance (Ch.6, Table.6). Notable was that none of the groups placed importance on the profitability level supporting the conclusions derived from Pacheco L.(2015). Pacheco supported that profitability is not a good indicator of a company’s financial performance and instead emphasis should be placed on a company’s creditworthiness and ability to control its debt and equity variables. Efficiency together with solvency are the two of the most important financial performance indicators, a conclusion that is supported from this survey. Both financial indicators and the role and contribution of quality elements on them, are supported from a number of surveys presented in literature as for example from Kampouridis et al., (2015); Wali and Boujelbene, (2011) and from Zairi et al., (1994)., nonetheless with a great amount of criticism

To further support the results derived from the above analysis, table 6 (Ch.6) was replaced with a new table, forming table 7. In that new table (Ch.6, Table 7) the primary variable is the Micro, Small and Medium SME and the secondary variable is the level of quality that each one implements (ISO, ISO+ and TQM SME). From that table it was found that the Micro SME were the ones that showed the highest financial performance (score: 1.5). Of those, the micro TQM SME were the ones with the highest financial performance among the other quality groups (score: 2.29). Emphasis was placed again initially on their efficiency (score: 1.45) and secondly on their solvency (score: 0.54). All quality groups of that size group of SME showed similar preferences on these two financial performance indicators.

The Small SME (score: 0.88) follow with the “TQM SME” being those with the highest score in their financial performance (score: 1.31), placing importance on their solvency and liquidity level. They were followed by the “ISO+ SME” (score: 0.82) and of those the “ISO SME” (score: 0.52) being financial better, placing emphasis on their efficiency and solvency level.

The Medium SME, with a financial performance score equal to 0.74 (Ch.6, Table.7) attained the weakest position. In that group, the “TQM SME” were those that performed better financially (score: 1.26) having placed emphasis on their solvency and liquidity. This score was followed by that of the “ISO+ SME” and the “ISO SME" each of which placed similar emphasis on the solvency and efficiency.

From the results derived that come in agreement with the results of Lawless et al., (2015) survey it was concluded that the largest in size SME (medium) emphasized their liquidity adequacy, compared with the other two groups that emphasized their efficiency capabilities. That result leads to the conclusion supported by Kalak & Hudson (2016) that the Micro and the Small SME should be treated differently compared to the Medium SME on how to control and determine their credit risk. Solvency and the ability to be creditworthy was a financial criterion that was adopted with high priority from all groups of SME.

The survey’s conclusions regarding the micro SME being the group that presents the most improved financial performance during a crisis period, is also supported from the financial data presented in the report of the IIF (Institute of International Finance) as this is shown in the Anderson and Stallings, (2014) survey. That report shows that the Micro SME were and continue to be the ones that give the highest added value to the Greek economy (almost 50% of the value added from all SME). Due to the fact that almost 370.000 Greek SME defaulted their operations in the period 2009-2013, the consolidation of the least power micro SME primarily with the Small and secondarily with the Medium SME, in order to continue functioning, was an option that was followed empowering them further.

From the transition analysis (upgrading/ downgrading) of SME in-between different quality levels (ISO, ISO+, TQM) it was revealed that the “ISO” and the “ISO+ SME” were those whose quality level was mostly downgraded. The “TQM SME” quality level was also downgraded, due to the difficulties they faced in maintaining their quality system at such high levels. However, they were downgraded to the level of ISO+ SME but not lower. This is an indication supported and from the surveys conducted by

Anderson and Stallings, (2014) the Kalak and Hudson, (2016) and the Lawless et al., (2015) that the SME the further processes their quality level have managed to keep their quality standards at a high level ready to further implement them again in the future, when the crisis conditions ceased. It is important to note, that the average transitions recorded from the “ISO+ SME” and the “TQM SME” took place in the middle and towards the last years of the crisis period examined. This is an indication that any quality downgrading was not a result of management’s decision, but a result of the consequences of the crisis conditions. In contrast, the average number of transitions in all the “ISO SME” were recorded in the beginning and the middle of the period examined. This is an indication supported and from Prajogo and Brown, (2006) that the ISO SME were the ones that were affected first from the crisis conditions and their decision was to either upgrade their quality standards in order to survive or to default

7.3 Conclusions

The aim of the thesis, was to use the quality theory to identify the level of implementing the quality elements that characterise the Greek, ISO certified SME. The Quality tools and techniques, the Quality processes, the Quality culture and Performance appraisal elements and their recorded scores were used as a means of determining the sampled SME quality (TQM) level implemented. On those, the relationship and the consequences of implementing the quality elements on their financial performance was further examined. Their liquidity, profitability, solvency and efficiency level, using ratio analysis, were the performance criteria based on which their financial performance was evaluated.

7.3.1 Findings

It was identified from the qualitative analysis conducted that the Greek SME place more emphasis in supporting the Performance appraisal and the Quality culture elements, than the Quality tools and the Quality processes elements. The reason could be their inability to bear the high cost of implementing advanced Quality tools & techniques and Quality processes, compared to the lowers cost in adopting Performance appraisal techniques and introducing Quality cultural elements into their existing processes. The small SME, the largest in size SME, are the ones which continued to invest in quality and the micro SME opted to completely abandon their attempts to continue their quality journey, given their inability to invest.

Following the triangulation approach, the conclusions derived from the quantitative analysis come close to the qualitative analysis. Specifically, it showed that the Greek

SME continue their quality journey to TQM are placing more emphasis on the Quality tools and the Quality processes elements. Quality culture and Performance appraisal are the next two quality elements which Greek entrepreneurs focus on. The results derived reinforce the belief that the Greek entrepreneurs have understood the importance of the quality culture and the performance appraisal elements when implementing TQM in their SME. This is something that has been mostly recognized from the largest in size SME (small) and less by the smallest (micro) SME, due to their ability to financially support this quality journey. This conclusion was derived from both types of surveys conducted.

From the implementation of the Financial Performance (FP) function developed in the SPSS software (MANOVA syntax), it was found that the ROA and ROE (Profitability), the Acid Test ratio (Liquidity) and the Asset Turnover Ratio (Efficiency) were the ones that mostly determined the value of the SME financial performance.

The first part of the comparative analysis conducted, using the level of quality implemented, as a criterion, showed from the results derived that the TQM SME are the ones that showed a sustainable financial performance over the period examined, followed by the ISO SME and the ISO+ SME.

The results also showed that from the TQM SME, the ones that exhibit better financial results were the medium size SME (the largest), followed by the micro and then the small SME.

Amongst the ISO SME, the best financial performance was achieved by the micro SME with the other two groups showing similar results.

The best financial results were achieved by the micro ISO+ SME, with the small SME being in second place, leaving the medium SME last.

From the second part of the comparative analysis conducted, using the SME's size, as the criterion the results derived showed that the Micro SME (the smallest) were the ones that showed the most sustainable financial performance, followed by the small and the medium SME.

In all categories, the TQM SME were the ones that showed the best performance, followed by the ISO and the ISO+ SME, except in the small size SME where the ISO+ SME showed better performance than the ISO SME.

A clear indication that, at first, quality has a role in an SME's financial performance and that in a period of severe crisis conditions, quality is capable of offering SME the

competitive advantage that would enable them to sustain their operational and financial position within the market they operate.

7.3.2 Quality elements applied to SME

The primary data collected from the distributed and returned questionnaires showed a score nearly above the average in almost all the TQM elements implemented from the Greek ISO certified SME. This was an indication that they had the intention and the willingness to continue their quality journey. Those scores also showed that the quality elements they preferred to implement were the ones that are closer to the concepts and ideas of the ISO standards, these being the “Quality tools & techniques” and the “Quality processes” elements. The scores also showed that they intended to additionally implement the other two quality elements namely the “Quality culture” and the “Performance appraisal” elements, given that their scores are also higher than the average score. That comes close and is supported from the conclusions derived from the survey conducted by Siakas et al (2014) who pointed out the differences existing between the family and non-family Greek SME in relation to their improved financial performance. The differences they recognized were due to the use of their self-developed methods that were mainly supporting their cultural characteristics including strategy, governance, succession conflict; and appraisal characteristics. .

Literature and in particular Pinho (2008) reveals, that the level of implementing the TQM elements in SME is subject to criticism. In a number of surveys, it has been admitted that the role of quality implementation in SME is to give them primarily the opportunity to be competitive, utilize their (limited) resources effectively and easily identify their target markets. In almost all those studies among which is the Muhammad and Khairul (2015) study, the conclusions and/or suggestions that come in congruence with this survey’s conclusions were that the SME need to develop their own way of incorporating the quality elements into their own corporate strategy and operations. A way that would enable the SME to do this is the use of a model, as for example the S-P model that could be used as a guidance for establishing the needed for TQM implementation quality elements and standards. Incorporating such a model, the quality elements that this thesis proposed and proved as efficient and effective in different quality levels and in different sized SME; would motivate the Greek entrepreneurs to improve or sustain the already achieved quality level. The improved financial performance of the SME that reached the TQM level compared to all others, could offer additional motivation to the Greek entrepreneurs to continue their quality journey. The survey conducted by Nurazree and Mohd Faiz (2014) have also found

that implementing TQM would lead an SME to improve its operational and financial performance together with its learning processes.

7.3.3 Quality elements applied to different in size SME

To value the SME implemented quality level, the scoring analysis conducted was also based on the groups of SME formed based the number of employees employed. The results derived, showed that for all groups, the quality level implemented score was above average. That is, all groups continued or had the intention to continue their quality journey. The highest score though was attained from the small in size SME, followed by the Medium and the Micro SME.

The Small SME, being the ones that showed high importance in further implementing all the quality elements are those that gave more importance to the Quality processes and the Performance appraisal elements. Less importance was given to the Quality tools and Quality culture elements. The difference is due to the dedication and the strong motivation that characterises the work force of the small in size SME. Thus, placing higher importance on the Quality processes and Performance appraisal elements, the Small SME brought an improved effectiveness to the TQM implementation process and added higher value to their operations than the Medium SME. Similar conclusions are also derived from the surveys conducted by Fening et al., (2012), by Nyanga et al., (2013) and by Bourlakis et al., (2014).

Considering that the Micro SME (the smallest) are composed mostly of one or two employees, with one of them being the company's owner, it is considered easy and almost costless for them to give priority and implement the Quality culture element in their operations. The micro SME, were found to have similar results as the small SME. The only difference, rationally explained is the higher importance they give to the Quality tools and techniques and lower to the Performance appraisal elements. What characterises the Micro SME is to be OME (Owner-Manager entrepreneur) centric creating difficulties to them to implement the performance appraisal element. So, all the funds invested in developing performance appraisal techniques, instead are invested in developing new and innovative Quality tools and techniques, improving their overall quality level.

The Medium SME instead, placed high importance on the Quality culture and the Performance appraisal elements and lower importance on the Quality processes and Quality tools elements. Supportive to this low preference, is that those elements are in proportion to their size more difficult and more costly to implement. This comes in

congruence with the results derived for the Medium SME financial performance analysis that recognized them as the worst performing group among all, in the crisis period examined.

This conclusion supports what Bourlakis et al.,(2014) noted, that is the excel of the Small and the Micro SME compared to the Medium SME in terms of their study's selected sustainable performance criteria, i.e. gross profit margin, supply chain performance.

It is again important to note that all quality elements showed scores that were above the average.

Pun et al, (2012) have also stated that the Medium rather than any of the other two groups of SME (Micro and Small) place more emphasis on the Quality cultural element. They specifically point out that the large size SME positively influence the low "power distance" element, meaning that each employee has his/her position and responsibility in a company's hierarchy, which facilitates the implementation of the Quality management principles (QMP's). However, they have stated that as the size of an SME increases beyond 200 employees, that contribution is eliminated. They noted that the "uncertainty avoidance", the femininity, the collectivism and the "confusion dynamics" quality culture elements, do not facilitate the development of the QMPs. That could be the reason why the Performance appraisal element was the second preference among the managers of the Medium size SME.

Following the triangulation approach, the analysis of the interviews conducted gave similar conclusions with the results derived from the quantitative analysis. This further supported the conclusion that the Small SME were those that effectively and efficiently implemented the selected quality elements of TQM in a period where economic and financial crisis conditions were present. The qualitative survey analysis revealed that the preferences of the interviewees are in favour of further implementing all the quality elements. All scores recorded were slightly higher than the average score. The Small SME were those with the highest score followed by the Medium and the Micro SME. Their preferences on the quality elements were close to the preferences realized from the quantitative analysis with some worth mentioning differences. In particular, the Small SME placed more importance on the Quality processes element and less importance on the Quality tools and techniques. Their inability to find the necessary funds in order to invest in more advanced and technologically improved tools and techniques brought rendered the Quality culture and the Performance appraisal

elements in second place in their preferences. The Medium SME presented similar results to the quantitative survey's results, giving higher importance to the Performance appraisal element and for all other Quality elements showing equal scores. The Micro SME were those that came last in their quality implementation preferences. Their attention was on the Quality tools and techniques element and to the Quality culture element. Their preference on the Quality culture element supported and from Gherhes et.al., (2016) encourages the perception that the Micro SME constitute enterprises of an "owner-manager entrepreneurs". So the cultural background of the entrepreneur, characterises the Cultural element in the TQM implementation process. That gives a direct and an indirect role to the Quality culture element in the TQM implementation process, a fact which is also supported from the conclusions that Valmohammadi & Roshanzamir (2015) and Tidor et al., (2012) found in their survey's. In the first's survey results, the significant and direct relationship of culture and TQM on a company's performance and the indirect relationship of culture on TQM was identified. Similarly, in the second's survey results the establishment of a quality culture in improving an SME's financial performance was identified as being the first priority element before any other.

7.3.4 The financial performance of SME (trend analysis) under crisis conditions

SME entrepreneurs recognize the need for developing or altering their corporate strategy when financial and social crisis conditions exist. Those changes can be achieved by reinforcing the innovativeness of the products and services produced from increasing control of their costs and prices thus improving their financial performance; from better developing the relationships with their stakeholders and from improving their information management processes. All the above, can be interpreted from the simple introduction of the TQM elements into their operations. These changes will give them the "weapons" to fight and overcome the difficulties imposed on them from the economic crisis. That conclusion comes in congruence with the results derived from the survey conducted by Bourletidis & Triantafyllopoulos, (2014), with the exception that the term "TQM strategies" was not used.

In order to examine the SME financial performance, a trend analysis on a selected set of financial ratios was conducted. The selected ratios revealed the SME liquidity, profitability, solvency, and efficiency level. On the values assigned from each participant (Questionnaire) in each of the eight ratios selected, statistical significance tests were applied (Anova F-test and Welch F-test) and the hypothesis for the equality of their means was ratified. This allowed the application of the ratio analysis. The ratios

were selected from the pool of ratios that exist in literature. The number and the type of the ratios selected as a means of examining the SME profitability, liquidity, efficiency and solvency level, including the Altman Z-score rate; makes the results of the analysis valuable and pioneering. Those ratios (Acid test, Asset turnover, Accounts receivable turnover, Inventory turnover, ROA, ROE, debt to equity and Altman Z-score) were used in order to measure the SME and their per size and per quality level groups' financial performance.

In the ratio analysis conducted for the period 2008-2014, it was found that the Micro SME were the group that exhibited the most improved financial performance (on average) than all other groups, followed by the Small and the Medium SME, respectively.

The growth in the Micro-businesses is characterised from their business capabilities, the owner-manager's characteristics, the owner-manager's ambition and the business environment (Gherhes et al., 2016). Those characteristics distinguish them from all other groups. Those are the SME the growth of which is based on their capabilities to improve their efficiency, their liquidity, their profitability and partly their solvency level more easily and with adequate flexibility, compared to all other groups.

Regarding the efficiency ratios, the Medium SME revealed an increased variability (high risk) in all ratios and an improved rate on their asset and receivable turnover ratios. The Micro SME instead, showed an improved efficiency in their inventory turnover ratio and the Small SME low efficiency in almost all the efficiency ratios with the receivable turnover ratio being the lowest among all groups, over the period examined. Thus, the largest in size SME (medium), were those that their efficiency level was at the highest level. In contrast to the perception that stability rather than variability and flexibility are what the Medium SME are looking for the variability and the increased level of uncertainty recorded in the efficiency ratios behaviour were simply explained from the crisis conditions that the Medium SME were coping with as this was also supported and from the surveys conducted by Muhammad and Khairul, (2015) and Afthonidis and Tsiotras, (2014),. So, flexibility and adaptation to new environmental conditions is also required for the Medium SME to sustain their efficiency.

Examining the profitability ratios, a remarkable downturn was recorded until the year 2012, when growth was again achieved. The peak of the financial crisis, with more than five downgrades from all credit rating agencies (Fitch, Moody's, Standard &

Poor's) might have been the reason for this downturn. Improved however was the profitability level of the Micro and the Small SME from 2012 onwards. The Medium SME instead showed an occasional improvement in their profitability performance after 2012 though it was lower than the performance of any of the other two groups. Their stability and ability of not being as vulnerable to the external environmental conditions as the other two groups could explain that behaviour.

A continuous downturn expressed the behaviour of all the per size groups of SME regarding their solvency level. From those the Micro and the Medium SME were the ones that managed to experience occasional improvement in their solvency ratios. When Greece's economy was downgraded from the credit rating agencies in the period 2009-2010, the micro SME were offered the opportunity to minimize their credit risk. In addition, the Medium SME in the period 2011-2013, when the economy started to recover (upgrading from Moody's) and new funds (European) supported the economy, gave them the opportunity to improve their solvency level. This comes in agreement with what Marimuthu et.al (2014), have identified that the smaller in size SME are those that have shown a sustainable average performance in their solvency level compared to the large SME.

An up-sloping trend was evident for all per size groups of SME in their Altman Z-Score rate. The one with the highest trend was the Micro SME and with the lowest was the Small and the Medium SME interchangeably. This could be explained by the large number of Micro SME presented in Small Business Administration-SBA (2014b) that were liquidated in the early years of the crisis period. Based on that result, it was concluded and supported by Vermoesen et al., (2013) conclusions that the SME that managed to survive during the crisis period were those that their chances for identifying new investments were the highest and the Micro SME followed by the Small SME were the most suitable. Their probability for bankruptcy was also influenced as being the lowest, given that they exhibited the highest Z-score rate. The inability of the medium (largest) SME to be solvent and their high probability to default is due to their inability to generate an adequate level of sales that would support the use of their assets as this was also sustained and by Marimuthu, et.al, (2014).

It is also important to note, that comparing the results derived from the analysis of the two sets of data (sample population and sample SME) no major differences, in terms of their trends, were found. This is an indication that our sample adequately explains the behaviour of all the ISO certified SME that are registered in the database (i-Mentor Hellastat) used.

7.3.5 The financial performance of SME (MANOVA) under crisis conditions

To further statistically support the result derived from the ratio analysis conducted in section 7.3.3, MANOVA was used in identifying the SME and their financial behaviour on the per size groups over the period examined. All the necessary statistical tests, Box's M (equality of means), Pillai's test (normality) and levene's test (homogeneity) were used, proving the level of significance for all the ratios used in the period examined. The extra variable developed, using the Manova syntax function, contributed to that analysis. This extra variable was named the "financial performance variable (FP)" and a post Hoc test was conducted incorporating all the financial ratios used in the ratio analysis. The use of the post hoc test revealed any significant interrelationship existing among all the financial ratios used for each year of the period examined. The FP variable contributed in identifying the financial performance of all SME for each year of the period examined.

The results derived from the SME which responded to the questionnaire, showed that:

3.3.4. The best financial performance was exhibited in 2009 and in 2014, with the return on assets and the acid test ratios presenting the highest contribution to the SME financial performance in both years. The worse financial performance (FP) was in 2010 and in 2011, with only the R.O.A and the R.O.E ratios showing small but positive contribution to that value.

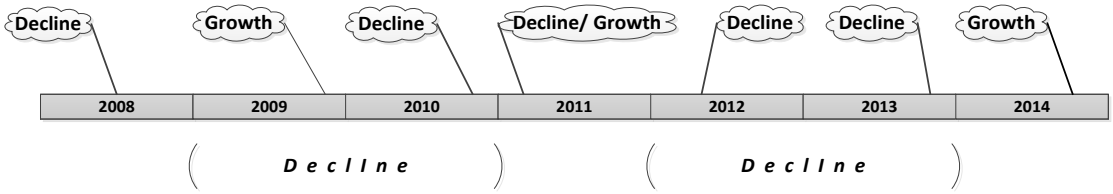
3.3.5. The SME' financial performance was mostly affected from the crisis conditions during the year 2008, as well as in the years from 2010 to 2013. In 2014, an improvement in their financial performance is evident from their improved efficiency (Asset and receivable turnover), profitability (ROA and ROE) and solvency (Z-score). This behaviour can be explained by the political and financial events that took place during those years and influenced positively the Greek financial environment, i.e. change in the Government, change in the Presidency of Democracy, change in the Ministry of Finance, surplus in the primary budget, issuance of a 3 billion Eurobond, and an upgrade of Greece from Fitch.

3.3.6. The post-hoc analysis conducted, revealed that the most statistically significant relationship was among the Micro and the Medium SME on the liquidity, profitability and efficiency ratios, for all the years examined. Instead no relationship was revealed among any group, regarding the solvency ratios. Some statistical significance was shown in the relationship between the Micro and the Small SME but only for the years 2012, 2013 and 2014. Notable was also the inverse

relationship recorded between the micro and the medium SME, showing that they both operated in a very competitive environment and a worst financial performance of the medium SME has as a consequence the improved performance of the micro SME and vise-versa. Imposing capital controls and closing of the stock exchange market the Government caused the dis-functioning of the medium SME leaving space for the micro SME to function better.

3.3.7. Summarizing, the total number of SME, included in the i-Mentor Hellastat database (1,245) showed a poor financial performance for the period 2009 to 2010, as well as for the period 2012 to 2013. Instead, in the years 2009, 2011 and 2014 they exhibited an improved financial performance. Similar were the results derived from the post hoc analysis of the sampled SME (392).

Figure 74: SME Financial Behaviour over the examined period (2008-2014)



7.3.6 The effect of quality elements on SME financial performance

While fully answering the research question of the thesis meaning identifying those quality elements the implementation level of which could contribute to the continuation of the Greek ISO certified SME' quality journey, resulting in the improvement of their financial performance and subsequently their ability to cope adequately with the financial crisis conditions that Greece has been facing for the last eight years, the following conclusions have been derived.

- Considering the results found, it is clear that the level of quality an SME implements, determines its financial performance under crisis conditions. This finding is also supported in the results derived from Shahin's analysis (2011). In his survey he has used also the ratio analysis as a tool of measuring a company's financial performance. The ratios he used were the current ratio, the quick ratio, the return of assets ratio, the return on equity ratio, the debt to total assets ratio, and the total assets turnover ratio. It outcome shown a 95% level of confidence that TQM has a positive influence on a company's financial performance. Being more focused on TQM and using the results derived from the current survey's quantitative survey as a criterion, the Quality processes and the Quality tools

elements are the ones that are emphasized most. Given that it is easier for the smaller in size SME to implement the Quality culture and Performance appraisal elements, the larger SME are those that implement those elements further. Following the triangulation strategy, similar are the results from the qualitative survey, which emphasized the Quality culture element more, indicating that all SME entrepreneurs have conceptually understood the importance of that element in order to continue their quality journey.

- Considering the above conclusions, the Micro SME size group, showed better financial performance over the period examined, followed by the Small SME and the Medium SME. For the Micro SME, the ones that coped better financially were the "TQM SME" followed by the "ISO SME" and the poorly performing "ISO+ SME". For the Medium SME, the best financial performance was exhibited by the "TQM SME" followed by the "ISO SME" and the "ISO+ SME". Finally, for the Small SME, the best financially performing companies were the "TQM SME", followed by the "ISO+ SME" and the "ISO SME". Concluding, the "TQM SME" were the ones whose financial performance was improved the most compared to any other quality group among all size groups proving the contribution of quality to the ISO certified Greek SME. The significant relationship between the TQM elements and the SME financial performance is also shown in the survey conducted by Herzallah et al., (2014). The authors managed to show the indirect, positive and significant relationship existing between the TQM elements and the SME financial performance among competitive strategies (i.e. cost leadership, differentiation and focus (Porter, 1980)) that under the Greek economy's crisis conditions could constitute alternative courses of action. Other studies, have shown no relationship between TQM and financial performance such as the study by Kober et al., (2012), support the need for focusing more on each sub-group of SME examined, the extent of the quality elements examined, as well as enlarging the areas of financial performance evaluation criteria, i.e. liquidity and efficiency ratios. This current study takes into account a set of financial ratios that examine different financial categories simultaneously (efficiency, profitability, solvency and profitability and the Z-Score rate) that may cause this differentiation in the results derived.

- At different levels of quality implemented, the quality group that coped better financially among all other groups, over the period examined, were the "TQM SME", followed by the "ISO SME" and then the "ISO+ SME". For the "TQM SME", the best financial performance was achieved by the Micro SME followed by the

Small and the Medium SME respectively. In the “ISO SME” group, the best financial performance was realized by the Micro SME followed by the Small and the Medium SME, which showed less improved financial performance with equal scores. For the “ISO+ SME” group, the best financial performance was attained by the Micro SME followed by the Small and the Medium SME. From the above referred results, it is clear that irrespective of the level of quality implemented in the Greek SME, the Micro SME characteristics are those that under crisis conditions, are capable of sustaining an adequate financial performance. Micro SME characteristics, like the customer’s satisfaction, management’s expertise, the owner’s management style and characteristics, the company’s financial and other resources, their existing corporate strategy and networking as this was also stated and from Fatoki, (2013), are those that would reinforce more the implementation of the TQM elements and support their sustainability and longevity.

- The importance placed on the efficiency and solvency and not on their profitability and liquidity of all size groups is also supported by Voulgaris et al., (2000) and Soininen et al., (2012) who identified them as significant before the crisis years. That leads to the conclusion supported and from (Campa and Camacho-Miñano, 2015) that their first priority should be to continue their operations, producing more of their products and services. They should also depend more on real activities and not on accruals, increasing this way their earnings management. Searching for new avenues in new markets to supply their production is the only available alternative for their survival under crisis conditions. This option is clearer to the smaller sized SME (Micro & Small) than to the larger sized SME (Medium) where importance is placed mostly on their solvency level, due to the larger size of their assets and required working capital funds. Though problems may occur from the lack of liquidity (imposed capital controls) as it was identified and from (Afrifa, 2016) but also and of the availability of funds invested in the SME’ required working capital for supporting sales.
- From the transition analysis conducted, the improvements and downgrades of the SME financial performance based on their Z-score value and their probability of going bankrupt, revealed that for the per size group of SME’s, the Medium and the Small SME are those that presented the least transitions compared to the Micro SME that showed the highest rate of transitions. In addition, for the per quality level group of SME, the “TQM SME” were those with the least number and size (risk level) of transitions compared to the “ISO” and the “ISO+ SME”. They

were those with the more volatile in terms of number and size (Risk level) of transitions. The downturns of the “ISO SME” were more that the downturns of the “ISO+ SME” which instead showed an increase in the number and size of their improvements. The conclusions derived are firstly that as the size of an SME increases the transitions to different levels of solvency (Z-score), lower for the larger SME and get higher for the smaller SME, but decrease in terms of their number and size. Similarly, as the quality level implemented approaches the TQM level, the number of transitions and their size are also reduced. So, the larger SME and the more quality oriented SME, are those that present better financial performance, and are much less likely to go bankrupt in a period of severe economic crisis conditions. Focusing on the SME size, it is also considered and supported from the thesis, and from the surveys conducted by (Bourlakis et al., 2014; El Kalak and Hudson, 2016) that between the Small and the Micro SME, no big differences exist in the way their credit risk behaves. Evidence of the fact that the higher the level of quality implemented in an SME, the better the improvement of its financial performance and bigger the reduction of the probability of going bankrupt is also supported from a number of different perspectives and from a number of surveys conducted such as those by Pinho, (2008); Ntombekaya, (2010); Pacheco, (2015); and Shahin, (2011).

7.4 Recommendations

Going one step further on the already existing research that refers to the TQM implementation on SME and its contribution to their financial performance, the element of risk is introduced, given that the thesis refers to the Greek ISO certified SME that are operating in severe financial crisis conditions.

The opportunity to further develop the same topic, entails the replication of the same study in a few years from now. This survey would show the progression in the implementation of TQM in Greek SME, in a period that the country and its economy would hopefully start recovering from the prolonged financial crisis.

An additional alternative in the same direction, could be as mentioned in the previous section changing the research approach from a self-study type to a longitudinal type. Though, the availability of data for that kind of research would be of a great concern.

Another research opportunity within this field could include developing a comparative study between the Greek ISO certified SME and the ISO certified SME of other

European, American or Asian countries, which have experienced but recovered from similar financial crisis conditions, such as Italy, Spain, Portugal, Philippines, Malaysia, Venezuela,

Another opportunity could be to expand the qualitative part of this survey and enrich it with more interviews or with a number of case studies. These new elements would examine the effect of TQM implementation on an SME's financial performance in more depth and its ability to cope with unstable and uncertain economic environment.

An option for further research, could also be the investigation of the relationship between the SME customers or employees satisfaction rate, at different levels of quality implemented and their equivalent financial performance, or researching on the consequences and effects realized from further implementing the quality elements on the capabilities of the core internal processes, or the corporate social responsibility level of the SME.

Finally, another opportunity could also be to investigate the possibility and the benefits derived from merging the SME that are not in a position to fully implement the TQM practices with those that can. This alternative is valid given that total quality is identified as a means of realizing long term profitability and an increase in an SME's market share. This could offer to these merged companies the opportunity to better survive under crisis conditions at the present or in a future occasion.

7.5. Implications

This thesis contributes to literature and to the business environment with a set of practical implications.

It is suggested that the Greek ISO certified SME, should continue to implement their already established quality elements, in an attempt to reach the TQM standards. It is concluded that the SME that improved their quality system further than what the ISO standards specify, managed to improve their financial performance and cope better with the consequences of the financial crisis that the Greek economy is facing. So, the SME that will manage to advance their already implemented quality system will be the ones that may improve their chances of surviving in a crisis or of growing in the future.

It is also important to reiterate, that the development of a theoretical framework is needed, regarding the TQM implementation process, for it to be suitable for all sizes of SME. An example of such a framework is the S-P model developed by Saunders & Preston (2006). This framework should be part of an SME's strategic plan making it a strategic quality plan suitable for SME.

From the results derived it is clear that the SME entrepreneurs and their quality managers have understood that improving their quality level is what could lead them in improving their financial performance . That is what will lead them in improving their internal processes, their cultural strategies and their product and service quality characteristics. This would have as a result the increase in the level of their employability, their productivity and innovativeness. They would contribute positively to the value of the Greek economy and make them stronger in order to better face the economic crisis conditions and reduce the probability of going bankrupt.

Managing to incorporate a quality plan within their strategic plan, SME can manage to improve their financial performance and this will give them the opportunity to reduce their probability of going bankrupt. In this scenario, a possible alternative could be to strengthen an SME's financial position by further implementing the quality elements making it feasible to be involved in a merging process with a stronger bigger company or to lead it to an agreement with companies that would support their internalization. This would increase the possibility for them to survive in such severe economic and financial crisis conditions.

7.6. Limitations

In any thesis stating the limitations that characterised the whole research process contributes to the more realistic and reliable interpretation of the conclusions and implications presented. The limitations that characterise the current survey and its conclusions are shown below.

1. One of the limitations identified was the type of survey conducted and the use of a self-report type questionnaire. This type of survey is prone to a number of biases including for example, that respondents may exaggerate their answers or attempt to minimize the importance of an issue so it is not recorded as a problem; or that questions may be misinterpreted or misunderstood. To overcome this bias, a qualitative survey also took place and a triangulation approach was followed as a means of realizing possible differences between the two derived results. In addition to this approach, certain validity tests were conducted to the results derived from the distributed questionnaire. It should be noted, that a self-report study is considered as the most valid way of collecting data when these data are characterised as subjective and based on the perception of the participants. Following the above approaches we strongly believe that we have substantially increased the validity of the results derived from this thesis.

2. A second limitation considered was the focus on a single market, the Greek market. Given that Greece is a country whose market heavily depends on the functioning of the SME industry and is among -if not the only- European country facing such severe consequences from the financial crisis; it was a challenge to maintain focus. The homogeneity of the market, may have given the researcher the ability to easily identify possible irrelevant factors that determined the results derived, the option of expanding the survey in other countries which are facing the same financial conditions constitutes an opportunity for future research.

3. The selection of the quality elements was considered a third limitation. Even though their selection was the result of a thoughtful and in-depth research regarding the variables that literature proposed for the determination of the quality level in a company and specifically for an SME, the comprehensive way they were examined could cause imperfection to the results derived. The option of individually analysing all the components that determine a quality element could give more reliable and complete results, though the inclusion of those, four quality elements (Quality tools and techniques, Quality processes, Quality culture and Performance appraisal) facilitated the process and minimized the possibility of realizing unexpected statistical errors.

4. A fourth limitation could be the way that the data were collected and statistically processed. The use of panel data and a cross sectional design instead of a time series and a longitudinal design could result in the loss of valuable information and conclusions including possible effects resulting from a time gap. Such an example is to research the SME level of quality implemented and their equivalent financial performance in a period where crisis conditions are not present and then develop proportional comparisons.

5. A fifth limitation could be the way that the sample of SME was selected. A web based platform (e-teacher) for uploading the questionnaire was used, followed by the forwarding of an email to 1,450 recipients, periodically for a period of six months, to all SME characterised as “ISO certified SME” in the i-Mentor Hellastat (Hellastat) database. A total number of 413 questionnaires were returned back to us representing a reliable number of completed questionnaires that managed to give us an acceptable response rate (28%) for the survey. The people who completed the questionnaire, identified themselves as the quality manager’s or the production managers responsible for quality issues or the owners of the company. This ratified the reliability and the quality of the information included in the returned

questionnaires. In addition to that and mostly for the qualitative survey conducted, an approval from the university's Ethics Committee was granted (ENT/PG/UH/00105).

7.7 Thesis Concluding Remarks

In this chapter the survey's findings were presented in a way that could be applied or used to enrich the existing literature. The implications of the survey's findings were also presented together with possible limitations.

This thesis aimed at enriching the literature regarding the effects of further implementing quality elements in an SME, which is transitioning from an ISO certified SME to a TQM SME, on its financial performance.

The current study directly contradicts the perception described in literature, which is that TQM implementation is applicable mainly in large companies rather than SME. It proposes that despite the difficulties, implementing TQM elements, can make SME financially stronger and thus enable them to cope more efficiently and effectively with possible financial crisis conditions.

The aim of this study, was to examine the strategic decision that the Greek ISO certified SME could take, regarding the continuation of their quality journey and the implementation of the TQM elements to their operations, during a period of economic and financial crisis conditions. In addition and in relation to that, it attempted to recognize the consequences of that decision and how it could influence their financial performance.

The quality theory and the financial analysis theory, constitute the theoretical framework of this study. The study's' design was based on the analysis of the results derived from the primary data collected and on what has been recorded in literature.

Originally based on the evaluation approach developed by Hunt (1993) and Saskin (1996), and a number of quality evaluation theories shown in literature; the TQM elements considered were the Quality tools and techniques, the Quality processes, the Quality culture and the Performance appraisal elements. Apart from exploring the level of implementation of all those quality elements in the Greek SME, the thesis also identified possible similarities and differences among the different groups of SME which were grouped based on the number of their employees. The current study claims that different sized SME, approach and implement the quality elements differently.

Different research methods were used as a means of examining the elements that mostly determined the implementation level of the quality elements in different sized SME. The influence that these quality elements had on the liquidity, profitability, solvency and efficiency level of all SME and on each group separately was examined.

The methodology adopted was a multi-stage research approach, incorporating a quantitative survey that was also supported from a qualitative survey in an attempt to apply the triangulation approach. The triangulation approach adopted as a methodology, increased the reliability and validity of the concepts that this thesis entails. The use of primary and secondary financial data were incorporated into the analysis process. A cross-sectional study with the use of a questionnaire distributed to a set of randomly selected Greek, ISO certified SME and the use of a semi-structured set of interviews, enabled the identification and the analysis of the perception and experience of the SME quality managers.

Ten interviews and a total of 389 valid questionnaires were collected within the period 2013-2016, that constituted the period based on which the TQM level of implementation to the Greek ISO certified SME and their equivalent financial performance was examined. Significant contribution was found in all the quality elements in relation to the implementation of TQM to the Greek, ISO certified SME. Different elements were identified as being more significant to different sized SME (Micro, Small and Medium). With the use of correlation tests, the identification of which elements mostly influence the implementation of quality, in different sized SME, was revealed.

A financial ratio analysis was conducted using the E-Views and the MS-Excel software, for all SME that participated in the survey and for the Greek, ISO certified SME the financial data of which were downloaded from the i-Mentor Hellastat database, for the years 2008 to 2014 when Greece was faced with severe economic and financial crisis conditions. The analysis focused on all the SME collected and on each group formed based on size (number of employees).

Complementary to the ratio analysis, a MANOVA analysis was conducted, with the use of the SPSS software. The analysis identified the contribution of each ratio of each group of SME on their financial performance and the syntax of the “Financial Performance” variable for each year. This gave us the ability to determine the contribution of each ratio to the SME liquidity, solvency, efficiency and profitability level and to their financial performance overall. The analysis was applied to the SME that

participated in the survey and with the aim of increasing the results reliability were also applied to the whole sample of SME for which the financial data was collected from the i-Mentor Hellastat database. The analysis revealed the consequences of the financial crisis on the SME and on each group of SME' financial performance. For our sample (392) the best years for the SME financial performance were the years 2009, 2012 and 2014. The worst was the year 2011. It was also identified that for the years 2008, 2011 and 2014, the total number of SME (1,245) in the database showed the best financial performance. The worst was shown in 2010. Their statistical significance was also verified.

In the final stage of the analysis, ratio analysis was applied to the SME which depending on the level of quality applied, were characterised as either "ISO", "ISO+" or "TQM" SME.

In a period where the economic crisis conditions have imposed difficulties in the operational and financial performance of the small and medium size companies, those that their micro size and the full adoption of the quality elements (TQM) are the ones that have managed to survive better.

Considering that the crisis and its consequences continue and will continue in the future, the option the Greek SME entrepreneurs have is to continue implementing the quality elements as being, possibly the only way to sustain or even improve their financial performance

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APPENDICES

Appendix A

Quantitative Survey's Questionnaire

Summary: Appendix A has the questionnaire used in the quantitative survey conducted. It also includes the welcome page and the author's invitation for participation letter shown in the 'e-teacher' software that was used in collecting the survey's primary data. A set of 52 questions are presented in the Greek and English language.

TQM & Financial Performance Questionnaire /Ολική Ποιότητα & Χρημα/μική απόδοση

This Questionnaire refers to my PHD Thesis. The goal is to collect data/Information on whether ISO-9001 certified SME's operating in the Greek Environment continued their Quality Journy implementing Total Quality Management (TQM) practices and how its adoption affected its financial performance.

(Το Ερωτηματολόγιο αναφέρεται στην Διδακτορική μου διατριβή. Στόχος είναι η συλλογή στοιχείων Ελληνικών Μικρομεσαίων Επιχειρήσεων που έχουν πιστοποιηθεί με ISO-9001 διαπιστώνοντας εάν συνέχισαν το ταξίδι τους στην ποιότητα με την εφαρμογή της φιλοσοφίας της Ολικής ποιότητας, καθώς και εάν και κατά πόσον επηρεάστηκε από αυτό η Χρηματοοικονομική τους απόδοση.)

(The questionnaire has an English and a Greek Version) *(Το ερωτηματολόγιο έχει Αγγλική και Ελληνική έκδοση)*

(English Version)

Dear Manager,

Developments in global competition, has prompted Companies, to *implement* Quality Assurance Systems (ISO 9001:2000 and ISO 9001:2008) followed by the implementation of Total Quality Management Systems (TQM) as a strategic alternative in order to meet customers' requirements.

It *is recognized* that TQM and ISO 9001 can complement each other and that ISO 9001 is a good start for the TQM journey.

The *research question* that this thesis is going to explore is whether and to what extent the Greek SME's, ISO 9001 certified companies, are continuing their *Quality journey* towards a TQM system, after registration, and identify the impact of Quality practices to the company's' financial performance.(Especially under economic crisis conditions)

We would like to ensure you that your answers will be *confidential*!

To complete the questionnaire you need approximately 10-15 minutes.

Moreover, provided that you wish, after the completion of the research *a copy* of the results will be sent to you.

We believe that, you will find the subject of our study *interesting* and you will contribute with *your knowledge and experience* in the development of useful and valuable conclusions.

Thank you very much for your contribution

George Sainis

(Ελληνική έκδοση)

Αξιότιμο Στέλεχος

Οι εξελίξεις στον παγκόσμιο ανταγωνισμό, έχουν προτρέψει τις επιχειρήσεις, να εφαρμόσουν συστήματα διασφάλισης ποιότητας (ISO 9001:2000 και ISO 9001:2008) που ακολουθούνται από την εφαρμογή ενός συνολικού συστήματος Ολικής Ποιότητας (TQM) ως εναλλακτική στρατηγική για να την καλύτερη κάλυψη των απαιτήσεων των πελατών τους.

Αναγνωρίζεται ότι το TQM και το ISO 9001 μπορούν να συμπληρώσουν το ένα το άλλο, και ότι το ISO 9001 είναι μια καλή αρχή για μία επιχείρηση που έχει πάρει απόφαση να παρακολουθήσει το ταξίδι της Ολικής Ποιότητας (TQM).

Η ερευνητική ερώτηση αυτής της διατριβής είναι να εξερευνήσει εάν και σε τι βαθμό οι Ελληνικές ΜΜΕ, πιστοποιημένες σύμφωνα με τα πρότυπα του ISO 9001, συνεχίζουν το ποιοτικό τους ταξίδι προς την Ολική ποιότητα, μετά από την πιστοποίηση τους, και κατά πόσο η εφαρμογή αυτή επηρεάζει την χρηματοοικονομική απόδοση τους. *(Ιδιαίτερα σε μία περίοδο οικονομικής κρίσης)*

Θα επιθυμούσαμε να σας διασφαλίσουμε ότι οι απαντήσεις σας θα είναι εμπιστευτικές!

Για την ολοκλήρωση του Ερωτηματολογίου απαιτούνται περίπου 10-15 λεπτά.

Επιπλέον, υπό τον όρο ότι το επιθυμείτε, μετά από την ολοκλήρωση της έρευνας ένα αντίγραφο των αποτελεσμάτων θα σας αποσταλεί.

Πιστεύουμε ότι, θα βρείτε το θέμα της μελέτης μας ενδιαφέρον και θα συμβάλετε ουσιαστικά με τη γνώση και την εμπειρία σας στην ανάπτυξη χρήσιμων και πολύτιμων συμπερασμάτων.

Με εκτίμηση

Σαΐνης Γεώργιος

There are 52 questions in this survey

Quality Management tools and Techniques / Εργαλεία και τεχνικές της Διαχείρισης της Ποιότητας

- **First set of questions referring to the Quality management tools and techniques**

(Πρώτη σειρά ερωτήσεων που αφορούν την έρευνα στην διαχείριση της ποιότητας και τις τεχνικές που εφαρμόζονται.)

1. *In this organization, employees at all levels, receive training programs on quality improvement tools and techniques. (Σε αυτήν την Επιχείρηση, οι υπάλληλοι σε όλα τα επίπεδα, λαμβάνουν τα απαιτούμενα επιμορφωτικά προγράμματα, τα εργαλεία και τις τεχνικές βελτίωσης της ποιότητας.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

2. *Employees apply structured quality improvement tools and techniques to measure and improve quality. (Οι υπάλληλοι εφαρμόζουν δομημένα εργαλεία και τεχνικές βελτίωσης της ποιότητας για να μετρήσουν και να βελτιώσουν την ποιότητα στην Επιχείρηση.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

3. *Employees develop, Pareto charts, Histograms, Affinity diagrams, flowcharts, Run charts, Pie charts and use basic statistical process control (SPC) charts, to inspect the quality of products/services, and to identify potential causes of problems. (Τα στελέχη αναπτύσσουν, διαγράμματα Pareto, ιστογραμμάτα, διαγράμματα ροής, διαγράμματα τρεξίματος, διαγράμματα στήλης, γραμμής, περιοχής, διασποράς κλπ, και χρησιμοποιούν τα βασικά στατιστικά διαγράμματα ελέγχου διεργασίας (SPC), για να επιθεωρήσουν την ποιότητα των προϊόντων/των υπηρεσιών, και για να προσδιορίσουν τις πιθανές αιτίες προβλημάτων.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

4. *Employees apply advanced quality improvement techniques ("Design of Experiments" (Taguchi method) & Quality Function Deployment (QFD) approach). Οι υπάλληλοι εφαρμόζουν τις προηγμένες τεχνικές βελτίωσης της ποιότητας ("Σχεδιασμός Πειραμάτων" (μέθοδος Taguchi) & Quality Function Deployment (QFD).)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

5. *Employees participate in Quality Circles /Quality Improvement Teams (group of individuals who come together to solve quality-related problems). (Οι υπάλληλοι συμμετέχουν σε ποιοτικούς κύκλους/ ομάδες βελτίωσης της ποιότητας (ομάδα ατόμων που συνεργάζονται για να λύσουν προβλήματα σχετικά με την ποιότητα).)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

6. *Surveys are used to assess the quality and outcomes of employees work. ('Ερευνες χρησιμοποιούνται για να αξιολογήσουν την ποιότητα και την απόδοση των εργασιών των εργαζομένων της.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

7. *Team building techniques are well established in the workplace, improving at the same time the group membership relationships. (Τεχνικές δημιουργίας ομάδων εργασίας καθιερώνονται στον χώρο εργασίας, οι οποίες βελτιώνουν ταυτόχρονα και τις σχέσεις των μελών των ομάδων.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

▪ Organizational Culture / Επιχειρησιακή Φιλοσοφία

8. *People in this organization are aware of the mission, vision, values and the Company's organizational strategy. (Τα στελέχη της Επιχείρησης γνωρίζουν την αποστολή, το όραμα, τις αξίες και την οργανωτική της στρατηγική.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

9. *Continuous improvement is seen as essential and is implemented by all organizational members. (Η συνεχής βελτίωση θεωρείται ουσιαστική και εφαρμόζεται από όλα τα στελέχη της Επιχείρησης.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

10. *Creativity and innovation is actively encouraged and supported in this organization. (Η δημιουργικότητα και η καινοτομία ενθαρρύνονται και υποστηρίζονται ενεργά στην Επιχείρηση αυτή.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

11. *The spirit of cooperation & teamwork exists in this organization. (Στην Επιχείρηση αυτή υπάρχει πνεύμα συνεργασίας & ομαδικής εργασίας.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

12. *People in this organization know how to define quality of what (Job) they are doing. (Τα στελέχη στην Επιχείρηση αυτή, ξέρουν πώς να ορίζουν την ποιότητα αυτών (εργασιών) που κάνουν.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

13. *Company's Leadership is committed to provide quality products/ services/ work. (Η ηγεσία της Επιχείρησης είναι δεσμευμένη στην παροχή ποιοτικών Προϊόντων/ Υπηρεσιών/ Εργασιών.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

14. *The way things are done in this organization is consistent with quality. (Ο τρόπος που γίνονται τα πράγματα σε αυτήν την Επιχείρηση είναι σύμφωνα με τους κανόνες της ποιότητας.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

15. *People in this organization know who their customers are. (Τα στελέχη στην Επιχείρηση ξέρουν ποιοί είναι οι πελάτες τους.)* *

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

16. *We constantly aim at customers satisfaction from our products/services/ work. (Πάντα στοχεύουμε στην ικανοποίηση των πελατών μας από τα προϊόντα μας/ τις υπηρεσίες μας/ την εργασία μας.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

17. *People in this organization typically have the authority to take decisions and actions for their job responsibilities, without the approval of their superior manager. (Τα στελέχη της επιχείρηση έχουν την εξουσία να λαμβάνουν αποφάσεις και μέτρα σχετικά με τις εργασιακές τους ευθύνες χωρίς την έγκριση ανώτερου στελέχους της Επιχείρησης.)* *

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

18. *People in this organization care about Customers and are committed in meeting their needs and expectations. (Τά στελέχη της Επιχείρηση φροντίζουν τους Πελάτες της και είναι δεσμευμένοι να ικανοποιήσουν τις ανάγκες και προσδοκίες τους.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

19. *It is the Company's Policy to meet frequently with customers in discussing their approach to quality services and their needs. (Είναι στην Πολιτική της Επιχείρησης να συναντιέται συχνά με τους πελάτες της και να συζητάει μαζί τους την προσέγγισή τους στην Ποιότητα και τις ανάγκες τους.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

20. *Performance and quality information are used by all people in this organization, to achieve continuous improvement and not just to judge individuals' performance. (Οι πληροφορίες απόδοσης και ποιότητας, χρησιμοποιούνται από τα στελέχη της Επιχείρησης, με στόχο την συνεχή βελτίωση τους και όχι μόνο την αξιολόγηση της απόδοσης τους.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

21. *Effective communication channels exist in this Company, reinforcing the need for continuous improvement and error minimization. (Αποτελεσματικά κανάλια επικοινωνίας υπάρχουν στην Επιχείρηση, που ενισχύουν την ανάγκη για συνεχή βελτίωση και ελαχιστοποίηση των λαθών.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

22. *The Company involves everyone in the quality improvement process. (Η Επιχείρηση συμπεριλαμβάνει όλα τα στελέχη της στην διαδικασία βελτίωσης της ποιότητας.)* *

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

23. *Surveys are used to assess employee opinion about the organization's practices and policies. (Έρευνες χρησιμοποιούνται για να αξιολογήσουν την άποψη των υπαλλήλων για τις πρακτικές και τις πολιτικές της Επιχείρησης.)* *

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

▪ Processes / Διαδικασίες

24. *To What Extent the following factors are used to determine if improvements in quality are needed. (Μέχρι ποιό σημείο οι ακόλουθοι παράγοντες χρησιμοποιούνται για να καθορίσουν εάν οι βελτιώσεις στην ποιότητα απαιτούνται.)* *

Please choose the appropriate response for each item:

	1	2	3	4	5
Surveys (Έρευνα)	○	○	○	○	○
Formal Interviews (Συνεντεύξεις)	○	○	○	○	○
Focus group methods (Μέθοδοι επιλογής κοινού)	○	○	○	○	○
Analysis of performance data (Ανάλυση στοιχείων απόδοσης)	○	○	○	○	○

	1	2	3	4	5
Senior management / leadership guidelines/ policies (Ανώτερη Διοίκηση/ Ηγετικές κατευθύνσεις/ Αρχές)	○	○	○	○	○
Employee suggestions (Προτάσεις Στελεχών)	○	○	○	○	○
Legal considerations (Νομικά δεδομένα)	○	○	○	○	○
Benchmarking data (Σημεία Αναφοράς)	○	○	○	○	○
Stakeholder's suggestions (Suppliers, Partners etc.) (Προτάσεις μετόχων - (Προμηθευτές, Συνεργάτες))	○	○	○	○	○
Technological advancements (τεχνολογικά επιτεύγματα)	○	○	○	○	○
Economic considerations (Οικονομικοί παράγοντες)	○	○	○	○	○

To What extent (Σε τί βαθμό):

*25. Employees are familiar with the company's quality improvement policies? (Τα στελέχη γνωρίζουν τις βασικές αρχές βελτίωσης της Ποιότητας της Επιχείρησης;) **

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

To What extent (Σε ποιό βαθμό):

*26. The organization's quality improvement policies are taken seriously by the employees? (Οι Αρχές βελτίωσης της ποιότητας λαμβάνονται σοβαρά υπόψη από τα στελέχη;) **

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

To What extent (Σε ποιό βαθμό):

27. *Managers at all levels have defined roles in the quality improvement process? (Τα Στελέχη όλων των επιπέδων έχουν ορίσει τους ρόλους τους στην διαδικασία της βελτίωσης της ποιότητας;) **

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

To What extent (Σε ποιό βαθμό):

28. *The company has a database /tracking system for relevant quality information? (Η Επιχείρηση έχει βάση δεδομένων/ σύστημα διαχείρισης σχετικών στοιχείων ποιότητας;) **

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

To What extent (Σε τι βαθμο):

29. *The company has set a long term plan (objectives & strategies) referring to quality improvements? (Η Επιχειρηση έχει ορίσει μακροπρόθεσμο σχέδιο (Στόχους & Στρατηγικές) που αφορά την βελτίωση της ποιότητας;) **

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

30. *The company has set a short term plan (objectives & strategies) regarding quality improvements? (Η Επιχείρηση έχει βραχυπρόθεσμο σχέδιο (στόχους & στρατηγικές) που αφορά βελτιώσεις στην Ποιότητα;) **

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

To What extent (Σε τι βαθμό) :

31. *In your company's strategic planning there is an integration of quality improvement planning? (Στον Στρατηγικό Σχεδιασμό της επιχείρησης σας, υπάρχει σχέδιο ποιοτικής βελτίωσης;) **

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

To What extent (Σε τί βαθμό):

32. *Appropriate training for the use of all kind of equipment/ Technology has been implemented? (Εφαρμόζεται πρόγραμμα κατάρτισης για όλα τα μηχανήματα και τις τεχνολογίες της επιχείρησης;) **

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

▪ Performance Appaisal / Εκτίμηση/ Έλεγχος απόδοσης

To what extent…(Σε τί βαθμό)

33. *The Company monitor's data regarding Efficiency? (Η Επιχείρηση συλλέγει και παρακολουθεί στοιχεία σχετικά με την Αποδοτικότητα της;) **

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

To what extent….(Σε τι βαθμό)

34. *The Company monitor's data regarding Effectiveness? (Η Επιχείρηση παρακολουθεί τα στοιχεία που αφορούν την Αποτελεσματικότητα της;) **

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

To what extent….(Σε τι βαθμό)

35. *The Company monitor's data regarding Quality of Services /Products /Work? (Η Επιχείρηση παρακολουθεί τα στοιχεία σχετικά με την ποιότητα των υπηρεσιών/ προϊόντων και εργασιών της;) **

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

To what extent….(Σε τί βαθμό....)

36. *The Company monitor's data regarding timeliness of work? (Η επιχείρηση σας συλλέγει στοιχεία σχετικά με τις εργασίες που ξεπερνούν τα προκαθορισμένα όρια εφαρμογής τους;) **

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

To what extent….(Σε τι βαθμό.....)

37. *The Company monitor's data regarding innovativeness? (Η Επιχείρηση συλλέγει στοιχεία σχετικά με την καινοτομία των διεργασιών;) **

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

To what extent….(Σε τι βαθμό.....)

38. *The Company monitor's data regarding Quality of Working life for its employees? (Η Επιχείρηση συλλέγει στοιχεία σχετικά με την ποιότητα εργασίας των στελεχών της;)*

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

To what extent….(Σε τι βαθμό.....)

39. The Company monitor's data regarding Financial issues? (Η Επιχείρηση παρακολουθεί τα χρηματοοικονομικά της στοιχεία;)

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

To what extent….(Σε τι βαθμό.....)

40. In the company's strategic planning there is a process of monitoring quality improvement effectiveness over time? (Στον Στρατηγικό σχεδιασμό της Επιχείρησης υπάρχει διαδικασία που ελέγχει την αποτελεσματικότητα των ποιοτικών βελτιώσεων στον χρόνο;)

Please choose only one of the following:

1	2	3	4	5
Does Not Apply Δεν Ισχύει	Applies Slightly Ισχύει Ελάχιστα	Applies Partly Ισχύει Μερικώς	Applies Mostly Ισχύει Συνήθως	Applies Completely Ισχύει Πάντα

*41. The Company's performance Assessment criteria are….. (Τα Κριτήρια αξιολόγησης της Επιχειρηματικής απόδοσης .....) **

Please choose the appropriate response for each item:

	1	2	3	4	5
Tracked over time *(Παρακολουθούνται στον χρόνο)*	○	○	○	○	○
Compared with goals, standards or objectives *(Συγκρίνονται με στόχους, σταθερές ή σκοπούς)*	○	○	○	○	○
Compared with other similar organizations and the best in the industry *(Συγκρίνονται με παρόμοιες ή/και τις καλύτερες Επιχειρήσεις στον χώρο)*	○	○	○	○	○

1. Does not Apply 2. Applies Slightly 3. Apply Partly 4. Applies Mostly 5. Applies Completely

▪ Financial Performance Indicators (Financial Ratios) - Χρημα/μικοί Δείκτες

42. For the Years 2008 till 2014, please fill in the following table using data taken from the i-Mentor database:

- *(Για τα έτη 2008 έως 2014 παρακαλώ συμπληρώστε τον παρακάτω πίνακα αντλώντας στοιχεία από την Βάση δεδομένων i-Mentor.*

Year	Acid-Test Ratio	Asset Turnover	Inventory Turnover	Acc. Receivable Turnover	Debt/Equity Ratio	Z-Score Ratio	Return on Assets	Return on Equity
2008								
2009								
2010								
2011								
2012								
2013								
2014								

▪ Demographics - Δημογραφικά

43. Please select the Industry Sector you operate.

Παρακαλώ επιλέξτε τον Κλάδο της Βιομηχανίας που λειτουργείται. *

Please choose all that apply:

☐ Oil & Gas (Πετρέλαιο και Αέριο)

☐ Chemicals (Χημικά)

☐ Basic Resources (Πρώτες Υλες)

☐ Construction & Materials (Κατασκευές & Υλικά Κατασκευών)

☐ Industrial Goods & Services (Βιομηχανικά Προϊόντα & Υπηρεσίες)

☐ Food & Beverage (Τρόφιμα & Ποτά)

☐ Personal & Household Goods (Προσωπικά & Οικιακά Αγαθά)

☐ Health Care (Υγεία)

☐ Retail (Εμπόριο)

☐ Media (Μέσα Ενημέρωσης)

☐ Travel & Leisure (Ταξίδια & Αναψυχή)

☐ Telecommunications (Τηλεπικοινωνίες)

☐ Utilities (Υπηρεσίες Κοινής Ωφέλειας)

☐ Banks (Τράπεζες)

☐ Insurance (Ασφάλειες)

☐ Real Estate (Ακίνητη Περιουσία)

☐ Financial Services (Χρηματοοικονομικές Υπηρεσίες)

☐ Technology (Τεχνολογία)

☐ GCM Securities market (ΓΕΜ Αγοράς αξιών)

☐ GCM Derivatives market (ΓΕΜ Αγοράς παραγώγων)

44. What is the number of the full-time employees employed in your company? Please specify: (Ποιος είναι ο αριθμός των υπαλλήλων που πλήρως απασχολούνται στην Επιχείρηση σας; Παρακαλώ συμπληρώστε :)

No. of Employees (Αρ. Υπαλλήλων) = _____

45. To which quality assurance system(s) is your company Certified (if any) and when the certificate was attained for the first time? (Σε ποιο σύστημα(τα) διασφάλισης ποιότητας η Επιχείρηση σας είναι πιστοποιημένη και πότε πιστοποιηθήκατε για πρώτη φορά;)

Please choose all that apply and provide a comment:

☐ ISO 9001:2008 _____

☐ ISO 22000 (HACCP)_____

☐ ISO OHSAS-18001_____

☐ ISO 27001-27002_____

☐ ISO 1429_____

☐ ISO 1431_____

☐ ISO 1435_____

☐ SA8000:2008_____

Note: *First Check the Quality system, then the year it was awarded it and then check the second Quality system (if any).*

46. What is your sex? (Φύλλο;)

Please choose only one of the following:

○ Female

○ Male

*47. What is your Age (Select one....) - Ποιά είναι η ηλικία σας; (Επιλέξτε...) **

Please choose only one of the following:

- ○ 21-30
- ○ 31-40
- ○ 41-50
- ○ 51 and above

*48. What is the highest degree in education you have completed? (Ποιο είναι το ανώτερο πτυχίο σπουδών που έχετε ολοκληρώσει;) **

Please choose all that apply:

- ☐ High school graduate –
- ☐ Associate degree
- ☐ Bachelor's degree
- ☐ Master's degree
- ☐ Professional degree
- ☐ Doctorate degree

*49. Working Position (Θέση Εργασίας) **

Please choose all that apply:

- ☐ Top-Level Management
- ☐ Middle-level Management
- ☐ First-level Management

*50. Working experience (in years). (Προϋπηρεσία (σε έτη).) **

Please choose all that apply:

- ☐ 0-5 years
- ☐ 6-10 years
- ☐ 10-20 years
- ☐ More than 20 years

*51. Your quality management experience is as….. (Η Εμπειρία σας στην ποιότητα ήταν ως…….) **

Please choose all that apply:

☐ Analyst

☐ χ Associate

☐ χ Auditor

☐ χ Black belt

☐ χ Calibration technician

☐ χ Champion

☐ χ Quality Consultant

☐ χ Coordinator

☐ χ Director

☐ χ Educator/ Instructor

☐ χ Green Belt

☐ χ Inspector

☐ χ Manager

☐ χ Master Black Belt

☐ χ Process/manufacturing/project engineer

☐ χ Quality engineer

☐ χ Reliability/ safety engineer

☐ χ Software quality engineer

☐ χ Specialist

☐ χ Supervisor

☐ χ Supplier quality engineer / professional

☐ χ Technician

☐ χ Vice President/ executive

I would like to thank you for your contribution to the development of accurate and reliable Information.

Θα ήθελα να σας ευχαριστήσω για την συμβολή σας στην ανάπτυξη αξιόπιστων πληροφοριών.

Appendix B

Qualitative Survey

(Interview Questions)

Summary: Appendix B has the questionnaire used in the Qualitative survey conducted. A set of eight questions are presented in the Greek and English language.

The Interview Questions

Question (Ερώτηση)
PART A' **A1=** Τα στελέχη της Επιχείρησης σε όλα τα επίπεδα ιεραρχίας, έχουν εκπαιδευτεί στα εργαλεία και τις μεθόδους βελτίωσης της ποιότητας καθώς και στις τεχνικές του TQM (Διοίκησης Ολικής Ποιότητας); *The company's staff members at all levels have been trained in using tools and methods of improving quality as well as techniques for TQM (Total Quality Management)?*
A2= Εφαρμόζουν τα στελέχη της επιχείρησης σας, τα εργαλεία και τις μεθόδους βελτίωσης της ποιότητας για να πετύχουν μία γενικότερη βελτίωση της λειτουργίας της επιχείρησης; *Do, your company's staff members use tools and methods form improving quality as a mean of improving the company's performance?*
PART B' **B1=** Πως καλλιεργείται η συνεργασία και η ομαδική εργασία στην επιχείρηση αυτή; *How cooperation and teamwork is reinforced in the company?*
B2= Πως ενθαρρύνεται και υποστηρίζεται η δημιουργικότητα, η καινοτομία των στελεχών στην επιχείρηση αυτή; *How innovation and creativity of staff members is reinforced and supported in this company?*
B3= Πως εφαρμόζεται η έννοια της συνεχούς βελτίωσης των διαδικασιών σε αυτή την επιχείρηση; *How the concept of a continuous improvement in the company's procedures is implemented in this company?*
PART D' **D1=** Έχει η επιχείρηση συντάξει ένα μακροπρόθεσμο σχέδιο για την βελτίωση ης ποιότητας και με ποιο τρόπο το υλοποιεί; *Does the company developed a long-term plan for quality improvement and in what way is trying to implement it?*
PART E' **E1**= Η Επιχείρηση παρακολουθεί και καταγράφει στοιχεία που σχετίζονται με την ποιότητα, και πώς (π.χ. δείκτες ποιότητας, κόστος ποιότητας κλπ.); *The company follows and records data related to quality and how (i.e. quality ratios, Quality cost etc.)?*
PART F' **F1**= Θεωρείται ότι η Επιχείρηση βελτίωσε την χρηματοοικονομική της θέση και λειτουργία με την εφαρμογή του συστήματος ποιότητας και ότι η Ολική ποιότητα θα την ενίσχυση ακόμα περισσότερο; *You consider that your company improved its financial position and performance with the implementation of a quality system Appand that total quality management will improve it further?*

APPENDIX C

QUALITATIVE SURVEY'S RESULTS

Summary: Appendix C shows the results derived from the Qualitative survey conducted. It includes seven tables were the results derived from the ten interviews conducted are shown.

○ Table 1: Qualitative TQM Survey's Results

	Interview Number						1	2	3	4	5	6	7	8	9	10	
	Number of employees						**70**	**30**	**7**	**11**	**33**	**7**	**189**	**36**	**100**	**100**	
	Theme	**Code**		**Weight**	**Results**	**Sum**	Responses										**Results**
A1	Tools & Methods	A.1.1	No, just have ISO	1	6	6		1	1				1	1	1	1	
		A.1.2	Satisfy ISO and look for TQM	2	6	3				1	1	1					
		A.1.3	Yes, look for TQM	3	3	1	1										
	Tools & Methods				15	10											**1.50**
A2	The Use of processes in improving quality and performance	A.2.1	No, just have ISO	1	6	6			1	1		1	1		1	1	
		A.2.2	More that ISO needs, but less than TQM	2	6	3		1			1			1			
		A.2.3	Yes, look for TQM	3	3	1	1										
	Processes				15												**1.50**
B1	Cooperation and Teamwork	B.1.1	Meet ISO needs mainly	1	4	4				1			1		1	1	
		B.1.2	Meet ISO needs and works towards TQM	2	10	5		1	1		1	1		1			
		B.1.3	Meet TQM standards	3	3	1	1										
					17												**1.70**
B2	Innovation & Creativity	B.2.1	Meet ISO needs mainly	1	6	6			1	1		1	1		1	1	
		B.2.2	Meet ISO needs and works towards TQM	2	8	4	1	1			1			1			
		B.2.3	Meet TQM standards	3	0	0											
					14												**1.40**
B3	Continues improvement	B.3.1	Up to ISO level	1	4	4			1			1	1			1	
		B.3.2	Meet ISO standards and more	2	10	5		1		1	1			1	1		
		B.3.3	Meet TQM standards	3	3	1	1										

APPENDIX C – Qualitative Survey's Results

	Interview Number						1	2	3	4	5	6	7	8	9	10	
					17												**1.70**
	Culture				16												**1.60**
D1[1]	L/T quality improvements (Strategic plan)	D.1.1	one year as specified by ISO	1	9	9		1	1	1	1	1	1	1	1	1	
		D.1.2	More than one year- Formal/ Move to TQM	2	2	1	1										
		D.1.3	More than one year- Informal/TQM	3	0	0											
	Quality in Strategic planning				11												**1.10**
E1	Quality costs - Performance appraisal methods	E.1.1	Refer to ISO standards	1	5	5		1	1	1		1				1	
		E.1.2	More than ISO standards	2	8	4					1		1	1	1		
		E.1.3	TQM measurement methods (failure rates)	3	3	1	1										
	Performance appraisal				16												**1.60**
TQM (A1, A2, B1, B2, B3, E1)					**62**												**1.55**

[1] Due to software's weakness, section C is omitted.

○ Table 2: Financial Results (All Data)

F1	**ISO improved fin. Performance?**	**F.1.1.1**	**NO,**	**1**	**1**	**1**										**1**	
		F.1.1.2	Kind of ….	2	6	3			1	1		1					
		F.1.1.3	Yes,	3	18	6	1	1			1		1	1	1		
		F.1.1.4	More than expected	4	0	0											
					25												2.50
F1	Continue to TQM will improve more Fin performance?	F.1.2.1	No, it will not be improved	1	1	1										1	
		F.1.2.2	No, it will became worse	2	2	1			1								
		F.1.2.3	Yes, it will be improved	3	21	7	1	1			1	1	1	1	1		
		F.1.2.4	Yes, it will be improved more than expected	4	4	1				1							
					28												2.80
F1	Improved to better face economic crisis	F.1.3.1	No, it didn't improved	1	2	2			1							1	
		F.1.3.2	No, it became worse	2													
		F.1.3.3	Yer, it was improved	3	24	8	1	1		1	1	1	1	1	1		
		F.1.3.4	Yes, More than expected	4	0	0											
					26												**2.60**
	Total Value for Financial Performance																**2.63**

○ Table 3: Cumulative Interview Results (All Data)

Variable	Rate
Quality Tools	1.50
Organizational Culture	1.60
Processes	1.50
Organizational Performance (appraisal)	1.60
TQM	**1.55**
Financial Performance	**2.63**

○ Table 4: Quality Survey's Results per Group

C	Theme	Codes	V																												
	Interview Code					**1**	**9**	**1**	**7**				**2**																		
	Number of employees			**Medium**			**7**	**1**	**1**	**1**		**Small**			**3**				**Micro**												
	Theme	**Code**	**Response**																												
A	Training in Tools & methods (TQM techniques)	A.1.1	No, just maintain ISO					1	1	1	1			1																	
		A.1.2	Satisfy ISO and look for TQM								2										1			**C**		**E**	
		A.1.3	Yes, look for TQM				1				3													**L**		**M**	
	Tools & Tech.																							**1**		**1**	
A	Use Processes in improving quality and performance	A.2.1	No, just maintain ISO					1	1	1	1										1						
		A.2.2	More that ISO needs, but less than TQM								2			1													
		A.2.3	Yes, look for TQM				1				3																
	Processes																							**1**		**2**	

APPENDIX C – Qualitative Survey's Results

C	Theme	Codes	V																							
B	Cooperation and Teamwork	B.1.1 Meet ISO needs mainly					1	1	1	1																
		B.1.2 Meet ISO needs and works towards TQM								2			1						1							
		B.1.3 Meet TQM standards				1				3																
																								1	**2**	
B	Innovation & Creativity	B.2.1 Meet ISO needs mainly					1	1	1	1									1							
		B.2.2 Meet ISO needs and works towards TQM				1				2			1													
		B.2.3 Meet TQM standards								3																
																								1	**2**	
B	Continues improvement	B.3.1 Up to ISO level						1	1	1									1							
		B.3.2 Meet ISO standards and more					1			2			1													
		B.3.3 Meet TQM standards				1				3																
																								1	**2**	
	Culture																							**1**	**2**	

C	Theme	Codes	V																					
D	L/T quality improvements (Strategic plan)	D.1.1 one year as specified by ISO					1	1	1	1			1						1					
		D.1.2 More than one year-Formal/ Move to TQM				1				2														
		D.1.3 More than one year-Informal/TQM								3														
	Quality in Strategic planning																					**1**	1	
E	Quality costs - Performance appraisal methods	E.1.1 Refer to ISO standards						1		1			1						1					
		E.1.2 More than ISO standards					1		1	2														
		E.1.3 TQM measurement methods (failure rates)				1				3														
	Performance appraisal																					**2**	1	
	TQM (A1, A2, B1, B2, B3, E1)																					**1**	1	

○ Table 5: TQM results per Group (Continue)

				Medium	Small	Micro
	Theme	**Response**		**Results Per Group**		
A1	Training in Tools & methods (TQM techniques)	A.1.1	No, just maintain ISO			
		A.1.2	Satisfy ISO and look for TQM			
		A.1.3	Yes, look for TQM			
	Tools & Techniques			**1.50**	**1.33**	**1.67**
A2	Use Processes in improving quality and performance	A.2.1	No, just maintain ISO			
		A.2.2	More that ISO needs, but less than TQM			
		A.2.3	Yes, look for TQM			
	Processes			**1.50**	**2.00**	**1.00**
B1	Cooperation and Teamwork	B.1.1	Meet ISO needs mainly			
		B.1.2	Meet ISO needs and works towards TQM			
		B.1.3	Meet TQM standards			
				1.50	**2.00**	**1.67**
B2	Innovation & Creativity	B.2.1	Meet ISO needs mainly			
		B.2.2	Meet ISO needs and works towards TQM			
		B.2.3	Meet TQM standards			
				1.25	**2.00**	**1.00**
B3	Continues improvement	B.3.1	Up to ISO level			
		B.3.2	Meet ISO standards and more			
		B.3.3	Meet TQM standards			
				1.75	**2.00**	**1.33**
	Culture			**1.50**	**2.00**	**1.33**
D1	L/T quality improvements (Strategic plan)	D.1.1	one year as specified by ISO			
		D.1.2	More than one year-Formal/ Move to TQM			
		D.1.3	More than one year-Informal/TQM			
	Quality in Strategic planning			**1.25**	**1.00**	**1.00**
E1	Quality costs - Performance appraisal methods	E.1.1	Refer to ISO standards			
		E.1.2	More than ISO standards			
		E.1.3	TQM measurement methods (failure rates)			
	Performance appraisal			**2.00**	**1.67**	**1.00**
	TQM (A1, A2, B1, B2, B3, E1)			**1.63**	**1.75**	**1.25**

○ Table 6: Cumulative TQM Results per Group

TQM RESULTS	QTT	OC	PR	PA	TQM
GROUP A (Micro)	**1.67**	**1.33**	**1.00**	**1.00**	**1.25**
GROUP B (Small)	**1.33**	**2.00**	**2.00**	**1.67**	**1.75**
GROUP C (Medium)	**1.50**	**1.50**	**1.50**	**2.00**	**1.63**

QT: Quality Tools and Techniques
OC: Organizational culture
PR: Quality Processes
PA: Performance Appraisal

Table 7: Financial Performance Results - Interviews

Below the perception of the interview participants regarding the SMEs financial performance, is shown.

F.1.1.1	NO,	1	0	1			1		0	0				0	0								
F.1.1.2	Kind of ….	2	0	0					0	0				6	3	1	1	1					
F.1.1.3	Yes,	3	9	3	1	1		1	9	3	1	1	1	0	0								
F.1.1.4	More than expected	4	0	0					0	0				0	0								
			9						9					6					**2.25**	**3.00**	**2.00**			
F.1.2.1	No, it will not be improved	1	1	1			1		0	0				0	0								
F.1.2.2	No, it will became worse	2	0	0					0	0				2	1		1						
F.1.2.3	Yes, it will be improved	3	9	3	1	1		1	9	3	1	1	1	3	1	1							
F.1.2.4	Yes, it will be improved more than expected	4	0	0					0	0				4	1			1					
			10						9					9					**2.50**	**3.00**	**3.00**			
F.1.3.1	No, it didn't improved	1	1	1			1		0	0				1	1		1						
F.1.3.2	No, it became worse	2		0					0	0				0	0								
F.1.3.3	Yer, it was improved	3	9	3	1	1		1	9	3	1	1	1	6	2	1		1					
F.1.3.4	Yes, More than expected	4	0	0					0	0				0	0								
			10						9					7					**2.50**	**3.00**	**2.33**			
	The total value can be from 0 to 6 for a single company																		**2.42**	**3.00**	**2.44**			

	Medium	Small	Micro
ISO improves Fin performance	2.25	3.00	2.00
TQM will improve it further	2.50	3.00	3.00
With TQM face crisis better	2.50	3.00	2.33
Financial Performance	**2.42**	**3.00**	**2.44**
	3	1	2

Appendix D
Quantitative survey Data Collected

Summary: Appendix D includes the data collected/ downloaded from e-teacher software where the participants completed the Questionnaire.

Questinnaire No.	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	B8	B9
1	5	4	3	1	3	3	3	4	5	5	4	4	5	5	5	5
2	4	4	3	1	4	4	3	4	5	5	5	4	5	5	5	5
3	4	3	4	3	3	3	4	4	4	5	5	5	5	4	4	5
4	5	4	3	1	3	3	3	4	5	5	5	4	5	5	5	5
5	3	5	4	3	3	4	4	4	4	3	3	4	4	4	5	4
6	3	2	1	1	3	2	4	4	4	4	5	4	4	5	5	3
7	3	3	2	1	3	3	3	4	4	4	3	5	4	4	4	3
8	3	4	1	2	4	3	2	3	4	4	4	5	5	5	5	4
9	5	4	2	1	3	3	3	3	5	5	5	2	4	4	4	5
10	5	5	3	4	3	4	3	4	4	3	5	2	5	5	5	5
11	5	3	4	3	5	4	4	4	4	4	5	4	5	5	5	5
12	5	4	4	4	3	2	4	4	4	4	5	2	4	5	5	5
13	5	5	5	3	3	3	4	5	4	4	5	2	5	4	5	5
14	4	5	5	3	2	5	3	5	5	5	3	5	5	5	5	5
15	4	5	1	1	3	2	3	4	5	3	4	5	5	4	4	3
16	4	4	1	1	3	2	2	4	4	3	3	2	4	4	5	5
17	3	3	2	3	3	3	3	3	4	4	4	5	4	4	4	3
18	4	3	3	1	4	4	4	5	5	4	5	5	5	4	5	5
19	4	4	2	1	4	4	2	4	4	5	4	5	4	4	4	3
20	4	2	1	4	3	4	3	4	5	3	4	4	4	5	4	3
21	2	2	1	2	3	3	4	4	4	5	5	4	5	5	4	5
22	2	2	4	2	3	3	4	3	5	3	3	3	4	4	5	4
23	3	3	3	3	3	4	4	4	4	3	3	3	4	4	4	4
24	5	2	2	1	3	2	2	5	5	5	5	4	5	5	5	5
25	5	2	4	4	5	5	4	5	5	5	4	5	5	5	5	5
26	5	3	3	1	5	5	4	5	4	5	3	3	5	4	5	5
27	5	3	2	2	3	2	4	4	4	5	5	3	5	4	5	5
28	3	3	2	1	2	2	3	4	4	5	5	3	5	4	4	5
29	4	3	1	4	5	2	3	4	5	5	4	4	4	4	5	3
30	3	3	3	4	4	4	4	3	4	5	4	3	5	4	5	5
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Questinnaire No.	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	B8	B9
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39	1	3	1	1	1	1	1	4	5	4	4	3	4	5	5	5
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50	3	3	2	2	3	1	2	4	3	5	5	5	5	4	5	5
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72	4	5	3	2	5	1	2	2	4	3	2	2	3	5	4	3
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Questinnaire No.	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	B8	B9
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76	4	1	1	1	1	4	1	2	5	5	4	5	1	5	5	5
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81	5	4	3	1	3	5	4	5	4	5	3	4	5	5	4	5
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Questinnaire No.	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	B8	B9
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113	4	3	3	1	4	4	3	5	4	2	5	5	5	4	3	5
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118	4	4	2	2	3	2	2	4	4	3	4	3	4	4	5	5
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122	4	3	3	1	4	4	3	4	4	5	5	5	5	5	5	5
123	4	3	1	1	5	3	1	4	4	5	5	5	5	5	5	5
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125	5	3	1	4	3	5	2	4	3	4	4	5	5	4	4	5
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127	3	4	4	3	4	4	3	5	5	2	5	3	4	4	5	5
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133	4	3	2	1	3	1	3	4	4	4	5	5	4	5	3	5
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143	4	3	2	4	3	4	1	4	5	4	5	2	5	5	5	5
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145	5	4	4	2	3	4	3	5	4	4	5	4	5	5	5	5
146	4	4	1	1	2	2	1	5	5	4	5	4	4	4	5	5
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Questinnaire No.	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	B8	B9
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150	5	3	3	3	4	2	3	4	5	4	4	4	4	5	4	5
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183	4	4	1	2	4	2	3	4	4	3	4	3	4	4	4	5
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Questinnaire No.	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	B8	B9
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192	3	5	2	1	2	2	3	2	2	3	4	3	5	4	4	4
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220	4	5	2	1	2	3	3	3	5	3	2	3	5	1	5	5
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Questinnaire No.	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	B8	B9
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226	3	4	4	4	3	3	3	2	4	3	3	4	4	5	4	5
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235	3	3	3	1	1	2	1	3	3	2	3	5	5	5	5	4
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237	4	5	3	3	4	4	4	5	4	4	4	5	5	4	5	5
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239	5	3	2	2	3	4	4	5	4	3	5	4	4	4	5	3
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243	5	4	3	4	5	5	4	4	5	4	4	3	5	4	5	5
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253	4	4	3	1	3	4	1	5	4	2	4	4	4	5	3	5
254	4	3	3	1	4	2	4	5	4	4	4	4	3	4	5	5
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256	3	3	2	2	3	2	3	4	3	3	4	4	5	4	5	5
257	1	3	1	2	2	4	4	3	4	2	5	3	4	5	4	5
258	5	4	1	1	3	1	2	3	5	2	4	3	5	4	5	5

Questinnaire No.	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	B8	B9
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261	5	3	3	2	2	3	3	4	4	4	4	5	3	5	3	4
262	1	4	3	2	3	4	3	3	4	4	5	5	5	5	4	5
263	3	3	1	1	4	3	3	5	4	5	5	5	5	4	5	5
264	5	3	4	4	5	4	5	5	5	5	5	5	5	5	5	5
265	5	4	2	1	2	2	2	3	5	4	5	2	5	4	4	5
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268	4	4	3	2	3	1	2	4	1	5	1	4	5	5	5	5
269	5	5	5	3	3	2	3	3	2	4	3	4	4	4	4	5
270	3	5	2	2	3	3	3	3	5	4	4	5	5	3	5	4
271	4	3	2	1	3	2	3	4	4	5	5	3	5	4	5	5
272	4	2	1	1	4	1	5	5	5	5	5	5	5	5	5	5
273	3	4	2	1	2	2	2	5	3	4	5	3	4	4	4	5
274	3	4	4	5	1	5	1	4	4	3	4	4	5	5	5	5
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286	5	4	2	3	4	2	5	5	5	5	5	5	5	5	5	5
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293	3	3	1	1	3	3	4	4	5	3	3	4	4	5	5	5
294	4	3	1	2	2	2	5	3	5	3	4	4	4	5	5	4
295	5	3	3	2	5	1	4	5	4	4	5	3	5	5	4	4

Questinnaire No.	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	B8	B9
296	3	3	2	2	5	3	5	5	3	3	5	3	5	4	4	5
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298	3	4	1	1	4	1	3	4	4	5	4	3	3	4	5	5
299	2	2	3	3	3	3	3	4	3	3	4	3	3	4	5	5
300	3	1	2	1	4	3	3	5	4	3	4	4	4	4	5	5
301	3	1	2	1	2	3	3	4	4	4	3	3	3	3	4	4
302	5	3	5	5	5	3	4	4	5	4	4	5	5	4	5	5
303	4	3	1	2	1	1	2	3	2	5	2	3	3	4	2	5
304	4	2	3	3	4	4	3	4	4	5	4	4	4	4	5	5
305	3	1	2	2	2	1	1	1	3	3	3	4	4	4	5	5
306	2	1	1	1	3	3	3	3	3	3	4	3	3	4	5	5
307	5	3	5	3	5	3	5	5	5	4	4	5	5	4	5	5
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309	3	4	2	1	3	2	2	3	3	4	4	3	4	4	4	5
310	4	4	3	2	5	5	4	4	4	3	4	4	4	4	5	5
311	3	5	3	1	3	4	3	4	4	4	4	4	4	4	4	5
312	4	3	4	1	3	1	2	5	4	4	4	3	4	5	4	4
313	3	4	2	2	3	2	3	2	3	3	3	3	5	4	4	4
314	5	3	5	1	3	2	3	4	5	4	3	4	5	5	5	5
315	4	3	3	1	3	5	3	3	4	3	4	4	5	4	5	5
316	3	4	3	2	4	4	4	4	4	4	4	4	5	4	5	5
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318	3	5	4	1	4	5	5	5	5	5	5	5	5	4	4	5
319	3	4	3	2	4	4	4	4	4	4	5	4	5	4	5	5
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322	5	4	4	1	5	4	5	5	5	5	5	5	5	5	5	5
323	5	4	2	3	4	5	4	5	4	4	5	5	4	4	5	5
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325	3	5	4	5	4	5	5	5	4	5	5	5	5	5	4	5
326	4	5	4	4	3	3	4	4	5	5	4	5	5	5	5	5
327	4	4	3	5	4	4	4	4	5	4	4	5	5	5	4	5
328	3	5	4	3	5	3	4	4	4	5	5	4	5	5	5	4
329	4	4	2	1	4	3	4	4	4	4	4	4	4	5	5	5
330	4	4	2	4	5	4	5	4	4	4	4	4	4	5	4	5
331	4	4	3	2	5	4	4	5	4	5	5	4	5	4	5	5
332	3	5	2	5	4	3	4	4	5	5	5	5	5	5	5	5

Questinnaire No.	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	B8	B9
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334	4	5	4	3	5	4	4	5	5	4	4	4	5	5	4	5
335	3	5	3	3	3	3	4	5	4	4	5	5	4	5	5	5
336	4	4	4	1	4	4	5	4	4	5	4	4	5	4	5	5
337	5	4	4	1	3	3	4	5	4	4	4	4	5	5	5	5
338	3	4	4	2	4	4	2	5	4	4	4	4	5	5	5	5
339	4	4	3	1	4	1	2	5	5	4	4	4	4	4	5	5
340	4	4	5	3	3	3	4	4	4	5	5	4	4	5	4	4
341	3	5	3	5	4	1	3	4	5	5	4	4	5	4	4	5
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343	3	3	1	1	2	1	3	4	4	5	5	4	4	4	5	5
344	3	3	1	1	2	3	4	4	4	3	3	4	4	5	3	4
345	4	4	2	1	3	4	4	5	5	3	5	4	5	5	5	5
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348	2	4	2	4	5	2	2	4	4	3	4	4	5	5	5	4
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350	4	3	3	2	4	1	4	3	4	3	5	4	4	3	5	5
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352	3	4	4	1	4	4	2	4	5	2	4	4	4	5	5	5
353	4	5	2	1	3	3	3	4	3	1	4	4	4	5	4	5
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356	2	3	1	1	1	1	1	3	3	5	3	4	5	4	4	5
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359	3	4	4	1	3	1	2	3	4	4	4	2	3	5	5	5
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364	4	5	2	2	5	5	5	5	5	5	5	5	5	5	5	5
365	3	5	1	2	5	4	5	4	2	4	4	5	5	5	4	4
366	4	1	3	1	1	4	2	4	2	2	4	3	4	3	3	5
367	2	2	4	2	4	4	4	4	4	4	4	4	5	5	5	5
368	1	2	1	1	1	1	1	2	1	1	2	3	2	3	4	4
369	2	2	2	2	4	4	2	5	2	3	2	4	5	3	3	5

Questinnaire No.	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	B6	B7	B8	B9
370	4	3	4	2	2	4	4	4	4	4	4	5	5	5	4	5
371	5	4	3	4	5	3	3	5	3	5	5	4	5	4	5	5
372	5	4	4	4	4	3	1	5	5	5	5	5	5	5	5	5
373	4	4	3	3	2	3	4	2	1	2	4	3	5	3	4	5
374	4	3	2	4	3	3	3	1	4	1	5	4	4	5	5	5
375	4	5	2	1	2	1	1	2	3	2	5	4	5	5	5	5
376	3	5	1	4	4	1	4	4	5	1	5	5	5	4	5	5
377	3	4	2	3	5	3	3	4	4	3	4	4	4	5	4	4
378	3	3	2	2	3	4	2	4	5	5	4	4	5	4	3	5
379	3	2	2	1	3	2	1	4	3	2	3	4	4	4	4	5
380	4	2	3	1	4	2	2	3	3	2	3	4	5	4	4	5
381	5	5	4	1	5	5	5	5	5	5	5	5	5	5	5	5
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384	5	3	1	1	2	3	2	2	5	3	4	3	5	5	4	5
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386	3	4	3	1	5	1	2	5	5	4	4	3	4	5	4	4
387	4	4	5	3	4	4	4	5	5	4	4	5	5	4	5	5
388	5	4	1	1	4	2	4	2	4	3	4	2	5	5	3	5
389	4	4	5	1	4	1	4	4	3	4	3	4	4	4	5	5
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391	4	4	2	1	3	1	1	4	4	4	4	3	4	4	5	5
392	4	3	1	1	3	2	2	4	4	4	4	3	4	4	4	4

Questinnaire No.	B10	B11	B12	B13	B14	B15	B16	D1	D2	D3	D4	D5	D6	D7	D8	D9
1	5	2	2	4	4	5	3	3	4	4	5	5	3	4	3	4
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3	3	5	5	4	4	4	4	3	5	3	2	4	4	4	4	5
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6	5	4	2	5	3	5	3	4	3	4	3	3	4	5	5	4
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8	2	5	3	4	4	4	1	4	4	4	4	4	2	3	4	5
9	4	5	4	2	4	4	2	4	5	5	4	5	3	5	5	5
10	4	5	4	3	5	3	3	4	4	5	5	3	4	3	3	4
11	3	5	5	5	4	4	1	4	5	5	5	5	4	4	5	5
12	3	4	3	4	4	4	4	3	5	3	3	5	4	3	3	5
13	4	4	3	5	4	5	5	4	4	3	3	5	3	3	4	3
14	4	4	5	5	3	4	5	4	3	3	4	4	3	4	5	3
15	4	5	5	4	4	5	3	4	5	5	4	5	2	4	5	3
16	3	4	2	4	4	4	1	4	4	3	2	5	4	5	4	4
17	3	4	3	3	3	4	3	4	3	3	3	3	3	3	3	3
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19	3	2	2	5	4	4	3	3	3	4	2	3	4	5	5	4
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22	5	4	2	4	5	3	4	3	4	4	5	5	3	3	4	5
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24	3	5	4	4	4	5	3	3	4	5	5	5	4	5	4	4
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34	5	5	5	4	5	3	4	4	4	3	3	5	2	5	5	4
35	3	5	5	5	4	5	5	4	3	4	4	4	4	4	4	4
36	4	5	5	3	4	5	4	4	3	3	4	4	4	5	3	4

Questinnaire No.	B10	B11	B12	B13	B14	B15	B16	D1	D2	D3	D4	D5	D6	D7	D8	D9
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38	3	4	4	4	3	2	4	2	3	3	3	3	5	5	4	4
39	3	4	5	4	5	5	2	2	3	3	3	5	3	5	4	4
40	3	4	4	4	4	3	2	3	4	5	3	4	3	5	4	4
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42	3	5	5	5	2	5	3	3	5	5	4	4	4	4	4	4
43	4	5	4	4	2	5	4	3	4	3	4	3	4	4	4	3
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46	3	5	4	5	4	5	3	3	4	5	4	3	3	4	4	4
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48	4	5	5	5	5	5	4	3	4	5	3	4	5	5	4	5
49	4	4	5	5	4	4	2	3	4	5	3	4	5	5	4	4
50	4	4	5	4	4	5	3	3	3	5	3	4	4	3	4	5
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52	3	4	4	4	4	5	2	3	2	4	4	3	3	4	5	5
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54	4	3	4	4	4	4	2	3	5	4	4	4	4	5	4	3
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56	4	4	5	5	4	4	4	3	5	3	4	4	4	3	4	5
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58	3	5	4	5	5	5	3	3	4	4	4	4	5	4	5	4
59	2	4	4	5	5	5	2	3	4	5	4	3	5	5	4	5
60	3	5	5	4	4	4	2	3	4	5	3	3	5	3	4	4
61	2	3	2	4	4	4	2	4	4	5	3	3	4	4	4	3
62	3	5	4	4	4	5	3	4	3	5	3	3	4	4	5	4
63	3	4	5	5	4	4	3	3	3	4	3	3	5	3	4	5
64	3	3	4	4	4	5	5	3	5	4	3	3	5	5	4	5
65	2	5	4	5	4	3	5	4	5	4	4	3	5	4	5	3
66	3	4	5	4	5	3	5	3	5	3	4	3	4	2	4	4
67	3	4	4	5	4	3	2	3	2	3	3	3	3	4	4	3
68	2	3	4	5	3	3	2	4	2	4	4	4	4	4	5	4
69	2	5	4	5	5	2	5	3	5	5	4	4	3	5	5	4
70	4	5	4	5	3	3	5	3	3	5	4	4	4	3	4	3
71	3	3	2	2	3	2	2	3	4	5	4	4	5	5	4	5
72	4	4	5	5	3	5	1	3	4	5	3	4	3	4	4	5
73	4	5	5	4	5	4	1	3	4	3	3	4	3	2	4	5

Questinnaire No.	B10	B11	B12	B13	B14	B15	B16	D1	D2	D3	D4	D5	D6	D7	D8	D9
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75	3	2	1	2	5	5	4	3	5	4	4	5	4	3	2	3
76	4	2	5	4	5	5	4	3	5	4	4	5	4	3	2	4
77	1	2	1	2	1	2	1	2	4	3	3	1	2	2	2	1
78	4	5	5	4	4	4	4	3	4	4	4	3	4	4	4	3
79	3	5	5	4	3	4	2	3	5	5	3	1	2	4	4	3
80	1	5	4	4	1	2	2	3	4	5	3	3	2	5	5	3
81	3	5	4	5	3	1	4	3	4	3	3	3	4	5	5	3
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86	4	5	5	5	5	5	4	4	5	5	5	5	5	5	5	5
87	4	4	4	5	5	4	4	3	5	4	4	4	5	4	4	1
88	4	5	5	5	5	5	4	3	5	4	4	5	5	4	5	2
89	2	3	2	4	4	5	3	3	5	5	4	5	4	5	5	3
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91	3	5	5	4	4	4	1	3	3	4	4	3	4	5	5	5
92	4	3	5	5	5	5	4	3	4	4	4	3	3	4	3	4
93	4	3	5	5	5	5	4	3	4	5	4	4	3	5	2	5
94	2	3	3	1	1	1	1	3	3	3	4	2	1	3	3	3
95	4	4	3	4	5	1	4	3	4	4	4	2	1	4	4	3
96	4	5	2	5	1	4	3	3	4	5	3	4	4	5	4	3
97	3	4	5	4	5	4	2	4	3	5	4	2	5	5	4	1
98	4	5	4	4	5	4	4	3	3	4	4	2	1	5	5	2
99	3	4	4	5	4	5	1	3	3	5	4	3	5	4	5	2
100	2	4	5	4	4	5	5	3	4	5	4	4	5	4	4	1
101	3	4	5	4	4	4	5	3	3	5	4	4	3	4	4	2
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103	1	5	5	5	5	4	3	3	3	5	4	3	4	5	4	3
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106	3	5	5	4	5	5	5	2	3	3	3	5	5	5	4	4
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108	4	4	4	4	4	4	4	3	3	3	3	5	5	5	5	4
109	4	5	4	5	4	4	4	3	3	5	3	5	3	5	4	4
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Questinnaire No.	B10	B11	B12	B13	B14	B15	B16	D1	D2	D3	D4	D5	D6	D7	D8	D9
111	3	5	5	5	5	5	5	3	4	5	4	3	3	5	4	4
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113	3	5	4	5	4	5	3	3	4	5	4	3	3	4	4	4
114	3	5	4	5	4	4	3	3	4	3	4	3	3	4	4	4
115	2	4	4	4	4	4	3	3	4	3	4	3	3	4	4	5
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118	4	4	5	4	4	4	3	3	5	3	4	4	3	3	4	5
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123	4	5	4	4	5	5	4	4	4	4	4	3	4	3	4	5
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125	2	5	2	5	5	4	3	4	5	4	4	3	4	3	5	3
126	3	5	2	4	4	3	2	3	5	3	5	3	3	4	5	3
127	3	3	2	5	4	3	2	3	2	3	5	3	5	5	5	3
128	2	3	4	5		3	5	3	2	3	5	3	5	5	5	3
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136	3	4	5	2	3	4	5	3	4	5	4	3	4	3	4	4
137	3	3	2	2	3	2	4	3	4	5	4	3	4	4	5	5
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141	1	5	4	4	1	2	5	3	5	4	4	3	2	4	5	1
142	1	2	2	4	4	4	5	3	4	4	3	3	4	2	5	1
143	5	5	1	5	4	5	5	3	5	4	3	3	4	2	5	3
144	1	2	1	2	1	2	1	2	4	3	3	1	2	2	2	1
145	4	5	5	4	4	4	4	3	4	4	4	3	4	4	4	3
146	3	5	5	4	3	4	2	4	5	4	5	4	4	4	5	4
147	3	5	5	4	3	4	1	4	5	4	5	5	4	4	5	4

Questinnaire No.	B10	B11	B12	B13	B14	B15	B16	D1	D2	D3	D4	D5	D6	D7	D8	D9
148	4	5	3	4	5	5	2	4	5	5	5	5	5	4	5	4
149	5	3	3	5	5	5	4	4	3	5	4	4	5	4	5	4
150	4	3	3	2	1	5	4	3	3	5	4	5	5	5	3	4
151	4	4	2	4	4	4	4	3	3	4	4	4	5	5	5	5
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153	4	5	5	5	5	5	4	4	5	5	5	5	5	5	5	5
154	4	5	2	1	5	5	4	3	3	4	4	3	5	5	5	4
155	2	5	2	1	5	4	1	3	3	5	5	3	1	2	5	4
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158	4	5	4	4	4	4	3	3	5	4	5	2	4	2	5	5
159	5	5	4	4	3	5	3	3	4	3	5	3	4	2	5	5
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161	2	3	3	1	1	1	1	3	3	3	4	2	1	2	3	3
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163	5	3	3	5	5	1	5	3	5	3	4	4	1	4	3	3
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165	4	5	4	4	5	4	4	3	5	3	4	3	4	4	3	3
166	3	5	4	4	4	4	3	4	4	4	5	3	4	5	3	3
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168	4	4	3	4	4	1	3	3	4	5	4	3	4	2	4	5
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170	3	5	4	5	5	4	5	3	5	4	5	3	4	2	4	2
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173	5	5	2	5	4	5	5	4	5	4	5	4	4	3	4	2
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176	5	5	3	4	4	4	5	4	5	4	4	3	4	3	3	4
177	3	4	4	4	4	5	5	2	2	2	2	3	1	1	2	2
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180	3	4	5	4	4	4	4	3	4	3	2	3	3	2	3	3
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182	3	3	4	4	4	5	3	4	2	2	2	3	5	3	2	3
183	2	3	4	5	5	5	3	2	2	2	1	4	2	3	5	3
184	1	4	5	4	5	5	5	5	4	3	5	4	2	4	4	4

Questinnaire No.	B10	B11	B12	B13	B14	B15	B16	D1	D2	D3	D4	D5	D6	D7	D8	D9
185	3	5	4	5	4	5	3	3	4	3	2	4	4	2	3	2
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187	3	4	4	3	4	5	1	3	3	2	2	3	4	2	3	2
188	3	4	5	4	5	5	2	2	2	3	2	3	4	2	3	3
189	2	5	3	5	3	4	1	2	2	3	2	3	3	2	3	4
190	4	4	5	4	5	4	3	2	2	2	2	3	3	3	3	3
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192	3	5	4	4	4	4	3	4	4	3	3	4	4	4	3	3
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200	2	2	4	5	5	5	3	4	4	3	2	3	3	3	4	4
201	3	4	4	4	4	4	5	5	4	3	2	4	4	2	4	3
202	3	5	5	5	4	5	4	4	2	2	2	4	5	2	3	4
203	4	5	5	5	5	3	4	4	3	3	2	4	1	3	4	3
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211	2	3	2	2	3	5	5	4	3	4	3	4	3	3	4	1
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217	4	5	5	4	4	4	4	3	3	3	3	3	3	3	3	4
218	3	5	5	4	3	4	2	1	2	1	1	5	1	4	4	4
219	1	2	4	4	1	4	3	1	2	1	3	2	2	2	4	2
220	2	3	1	5	1	5	2	4	4	3	2	3	3	2	3	2
221	3	5	1	5	4	2	5	5	3	3	2	4	3	3	3	2

Questinnaire No.	B10	B11	B12	B13	B14	B15	B16	D1	D2	D3	D4	D5	D6	D7	D8	D9
222	2	4	4	4	5	2	5	3	3	4	4	4	1	3	4	3
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224	4	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4
225	4	5	5	5	5	5	4	4	4	3	4	4	5	3	3	5
226	3	4	5	4	4	5	4	4	4	1	3	3	4	2	4	4
227	3	5	5	2	5	5	4	4	4	4	4	3	2	4	4	5
228	2	3	5	3	5	4	4	5	3	1	2	2	5	4	3	5
229	3	2	4	4	4	4	4	2	3	3	2	1	5	5	2	3
230	4	2	4	5	5	5	5	1	4	5	2	1	3	4	2	4
231	4	4	5	5	1	5	3	3	3	1	1	4	4	1	1	1
232	3	5	5	4	5	5	2	3	4	3	3	3	3	5	1	2
233	2	3	5	1	1	1	1	1	3	3	1	1	2	4	3	3
234	2	5	3	1	4	1	4	3	4	3	4	4	4	4	4	3
235	4	5	5	4	5	4	3	4	2	3	4	2	1	4	3	2
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237	4	5	4	4	5	4	4	4	2	4	3	2	5	5	3	3
238	4	4	4	4	4	5	4	2	2	3	3	3	2	3	3	3
239	4	5	4	4	4	5	3	2	4	1	2	3	2	3	3	2
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245	4	5	5	5	5	3	5	3	3	1	3	3	5	3	1	3
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249	1	4	3	1	2	1	1	1	2	1	1	1	2	2	1	1
250	1	5	3	1	2	5	5	2	2	5	4	4	2	2	1	4
251	2	5	4	4	2	4	2	1	4	5	3	3	3	3	4	2
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253	4	4	3	3	4	2	2	2	2	1	5	4	4	5	4	2
254	4	4	3	3	4	4	5	2	4	4	1	3	4	2	2	3
255	3	5	4	3	4	5	2	1	3	3	3	4	3	3	2	2
256	2	4	5	4	4	4	2	1	4	4	4	5	4	5	2	2
257	2	5	4	4	4	4	5	2	1	3	4	4	4	5	4	3
258	4	5	5	5	5	5	4	3	2	2	4	4	4	4	2	4

Questinnaire No.	B10	B11	B12	B13	B14	B15	B16	D1	D2	D3	D4	D5	D6	D7	D8	D9
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261	5	5	4	5	5	5	4	3	4	2	3	5	5	3	1	4
262	3	4	5	5	5	3	5	1	3	3	2	3	5	4	2	3
263	4	5	4	4	4	5	3	2	2	3	4	4	4	3	3	2
264	4	5	5	5	5	5	4	4	3	4	4	4	5	4	4	4
265	4	4	4	4	4	5	5	4	4	4	3	5	5	4	1	3
266	4	5	5	5	3	4	3	3	1	4	4	5	1	3	1	4
267	4	5	3	5	2	3	3	1	5	3	4	5	3	4	2	4
268	5	5	2	4	1	1	5	2	3	3	5	2	4	3	2	3
269	3	4	2	4	5	4	5	2	4	2	4	3	4	5	3	3
270	3	5	5	5	5	5	4	2	3	4	4	3	4	3	1	2
271	3	4	2	3	4	4	3	2	3	1	2	4	3	5	3	4
272	1	5	5	5	5	5	1	1	1	1	3	5	5	3	5	5
273	3	4	3	3	5	4	4	3	1	4	2	4	3	4	3	2
274	4	4	4	4	4	4	4	4	4	1	4	3	3	2	3	2
275	2	5	4	4	4	5	3	4	1	1	3	3	5	3	3	3
276	2	4	2	3	3	3	1	2	3	2	2	5	2	5	2	3
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279	2	5	5	5	5	3	4	3	3	1	3	3	3	3	4	5
280	4	5	5	5	5	5	4	4	5	4	4	4	4	5	4	5
281	4	5	4	3	3	3	3	3	4	3	3	3	3	3	3	3
282	4	5	5	5	4	4	3	2	1	1	4	5	4	3	2	3
283	3	5	5	3	3	3	2	5	2	2	3	4	3	4	1	4
284	4	5	3	4	5	5	4	3	1	1	3	4	4	4	1	2
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286	3	5	4	4	4	5	4	4	1	1	3	5	5	5	5	4
287	4	4	5	4	5	5	4	3	2	2	1	5	5	5	3	4
288	3	5	3	4	5	4	4	3	2	3	4	5	3	4	4	2
289	3	5	4	5	4	3	3	4	3	4	3	2	4	3	4	3
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291	4	4	3	3	5	3	2	4	4	1	5	4	5	4	5	5
292	4	4	3	5	3	3	2	4	4	1	2	3	4	4	4	4
293	4	4	5	3	4	4	5	3	4	2	2	4	4	3	3	5
294	5	5	4	3	5	3	1	3	4	3	3	5	3	3	5	5
295	2	5	2	4	5	5	1	2	4	2	4	5	4	2	1	4

Questinnaire No.	B10	B11	B12	B13	B14	B15	B16	D1	D2	D3	D4	D5	D6	D7	D8	D9
296	3	4	1	5	5	5	5	2	1	1	5	5	3	1	2	4
297	5	4	5	3	3	3	3	3	4	1	2	2	3	5	4	3
298	5	4	3	5	4	4	2	3	3	3	3	3	3	3	3	3
299	4	5	4	3	3	5	2	4	4	2	3	3	2	3	4	4
300	1	5	5	3	3	3	1	4	1	1	3	4	4	2	3	3
301	2	5	4	5	4	3	2	4	1	1	1	4	4	4	1	3
302	4	5	5	5	4	5	2	1	2	3	4	4	3	5	5	4
303	4	4	1	2	3	3	2	1	2	3	4	4	4	3	3	2
304	4	4	5	4	4	5	3	2	2	3	3	3	3	3	3	3
305	3	4	3	4	3	4	1	5	2	1	1	1	3	3	4	3
306	3	4	4	4	4	4	4	4	4	3	4	5	4	5	4	4
307	4	5	4	4	4	5	3	3	3	2	5	5	3	5	5	3
308	4	5	4	4	4	5	4	3	3	3	3	4	4	4	3	3
309	3	5	5	4	4	5	2	1	1	3	2	4	4	2	2	4
310	4	4	4	4	4	5	3	4	2	1	4	5	4	5	2	4
311	4	5	4	4	4	4	4	4	2	2	2	4	5	3	3	4
312	3	4	5	4	2	4	3	1	2	4	3	4	4	3	1	3
313	3	4	4	3	3	3	1	2	3	2	1	3	4	3	2	2
314	3	5	4	3	3	5	3	1	4	1	2	3	5	3	2	2
315	3	5	4	5	4	4	3	5	2	2	5	5	5	5	2	4
316	4	5	5	4	4	4	5	4	3	3	4	3	4	4	3	4
317	4	5	5	5	4	4	5	4	2	3	4	3	4	5	2	3
318	5	5	4	5	5	5	4	3	3	2	5	4	5	2	3	4
319	4	5	5	4	4	4	5	4	3	3	4	3	4	4	5	4
320	4	4	5	4	4	4	4	5	3	2	4	3	4	2	4	4
321	5	5	4	5	5	5	4	4	2	2	5	4	4	2	2	3
322	1	5	2	5	5	5	4	3	3	3	4	4	4	5	3	4
323	4	5	2	4	5	5	4	4	3	3	4	4	4	5	3	4
324	3	5	4	5	4	5	5	3	3	2	4	5	5	5	3	3
325	3	5	5	5	5	3	3	5	4	3	5	5	5	2	5	5
326	3	5	3	4	4	4	4	3	3	3	4	4	4	4	4	4
327	5	4	3	4	4	3	3	5	4	3	4	4	4	2	4	5
328	3	5	5	5	5	4	4	3	3	1	3	4	4	4	5	4
329	4	5	5	4	4	4	3	3	4	4	3	4	4	4	4	3
330	4	5	4	5	4	4	3	4	4	4	4	4	5	4	3	3
331	1	4	3	5	5	4	3	4	3	3	5	4	4	2	3	4
332	5	5	5	5	5	5	4	3	3	4	5	3	4	5	4	4

Questinnaire No.	B10	B11	B12	B13	B14	B15	B16	D1	D2	D3	D4	D5	D6	D7	D8	D9
333	3	5	5	4	4	3	5	4	4	3	4	4	4	2	5	3
334	3	5	5	4	5	4	4	5	2	2	4	3	4	4	4	3
335	4	5	4	5	5	5	3	4	3	4	3	4	5	4	4	2
336	1	4	4	4	4	4	3	4	2	3	4	3	4	2	3	3
337	1	4	4	4	3	5	3	3	2	4	4	3	4	2	4	2
338	3	4	5	4	3	5	3	4	3	3	3	3	4	4	5	2
339	3	4	3	4	4	4	2	3	2	4	4	4	5	5	4	3
340	3	3	3	5	4	4	2	3	4	3	4	4	4	5	4	4
341	4	5	4	4	4	5	4	5	4	2	5	5	4	4	4	4
342	4	5	4	4	5	5	4	5	4	4	5	5	5	4	4	4
343	4	4	3	4	4	3	1	5	4	3	5	5	4	4	3	4
344	2	4	3	4	4	4	3	3	3	4	3	2	4	3	4	4
345	3	5	5	4	4	4	4	4	4	1	5	5	4	5	5	4
346	3	5	4	4	4	3	2	2	4	3	3	4	4	3	3	4
347	3	4	3	3	2	3	3	1	1	1	1	1	2	2	2	2
348	3	5	3	4	2	3	2	4	1	3	3	1	4	3	2	2
349	3	4	4	3	4	4	2	3	4	2	3	2	2	2	5	3
350	4	5	4	4	3	4	2	4	3	1	3	4	4	3	3	3
351	3	5	3	4	5	5	4	4	1	1	1	3	4	4	4	2
352	1	4	4	4	4	4	3	3	4	3	2	4	5	4	4	4
353	1	4	5	3	3	5	3	3	3	4	4	1	4	3	5	1
354	3	5	4	4	2	5	4	4	3	5	3	2	5	2	3	3
355	3	4	3	3	3	5	2	5	4	3	2	1	5	2	4	3
356	3	3	3	3	3	5	3	5	3	2	2	4	3	5	5	4
357	4	3	3	3	4	5	2	4	3	4	3	3	3	5	3	4
358	1	4	4	4	3	3	2	4	2	1	4	3	3	2	3	3
359	3	4	4	4	4	4	3	4	3	3	4	4	3	5	2	4
360	3	4	4	3	3	5	4	3	1	2	3	4	4	2	3	3
361	4	4	4	3	4	3	4	5	2	3	3	4	5	3	4	3
362	5	4	3	4	3	3	3	5	3	2	3	3	4	4	4	2
363	3	4	4	3	4	4	4	1	4	2	4	3	5	4	3	4
364	5	5	4	5	5	5	5	5	5	3	4	4	3	3	3	3
365	4	5	4	5	5	4	5	4	3	1	3	4	5	3	3	1
366	3	3	3	3	2	1	3	2	1	1	1	3	2	1	2	1
367	4	5	4	4	4	4	4	3	3	3	3	3	3	4	3	4
368	1	4	2	3	5	1	3	4	4	3	1	3	2	1	5	5
369	3	3	2	5	2	4	4	5	3	1	3	4	2	1	2	4

Questinnaire No.	B10	B11	B12	B13	B14	B15	B16	D1	D2	D3	D4	D5	D6	D7	D8	D9
370	3	4	3	3	3	3	2	5	3	2	4	4	4	2	4	5
371	3	5	5	5	4	4	3	3	3	4	4	5	5	5	5	4
372	1	5	5	5	5	5	3	2	2	3	5	5	5	3	5	4
373	1	5	5	3	5	3	1	4	3	2	5	3	4	4	5	4
374	3	4	4	5	4	5	3	5	1	3	3	5	5	3	2	3
375	1	5	5	2	4	5	1	1	1	1	3	5	4	5	5	4
376	3	3	5	5	4	4	4	5	4	3	4	5	2	5	2	3
377	1	5	3	2	5	4	3	5	4	2	3	5	4	5	4	2
378	2	5	5	5	4	3	4	3	4	1	4	5	5	5	2	4
379	3	4	3	3	3	3	2	3	3	1	3	4	5	4	4	4
380	2	4	5	3	3	3	2	4	3	2	3	3	4	3	5	3
381	2	5	4	4	5	5	4	3	3	2	4	5	5	4	3	4
382	3	5	5	5	5	5	2	4	3	2	4	4	3	3	2	3
383	1	5	4	4	5	4	2	4	3	2	2	4	3	4	4	3
384	2	5	5	5	5	4	1	4	3	3	3	5	4	5	3	5
385	4	4	5	4	3	3	4	1	2	2	2	3	4	2	2	4
386	2	5	4	4	5	5	3	5	2	3	3	4	4	2	3	5
387	2	4	4	5	4	5	3	4	2	3	4	4	3	5	3	4
388	4	4	5	5	4	3	4	4	3	2	4	4	4	5	3	4
389	3	5	5	5	3	4	3	3	2	3	1	3	3	4	2	3
390	2	4	4	4	4	5	4	3	1	1	3	4	4	3	5	2
391	2	4	4	3	2	3	1	2	1	1	1	4	3	1	2	2
392	3	4	2	4	4	4	3	1	1	1	3	3	3	1	3	3

Questinnaire No.	E1	E2	E3	E4	E5	E6	E7	E8	No. Emplyees	Questinnaire No.	ACID	AS_TURN	D_E	INV_TURN
1	3	3	3	2	4	4	4	3	38	1	1.22	0.91	8.03	3.37
2	5	4	4	3	4	4	4	3	7	2	0.47	1.29	11.15	3.00
3	5	5	4	1	4	4	4	4	55	3	1.29	1.48	0.63	9.13
4	3	3	3	2	3	4	5	5	70	4	1.02	0.79	1.52	3.28
5	5	5	5	4	3	5	5	4	38	5	3.66	0.42	0.06	58.26
6	4	4	4	4	5	4	5	4	9	6	0.48	0.88	3.28	4.92
7	5	4	4	4	4	4	4	4	91	7	1.04	0.60	6.53	97.74
8	3	4	5	2	5	5	4	5	40	8	1.06	0.34	12.26	58.26
9	3	5	3	3	2	5	4	5	10	9	0.47	0.62	0.53	2.70
10	4	4	4	2	2	4	4	4	6	10	1.28	1.40	3.06	75.19
11	5	5	5	4	4	4	4	4	6	11	1.31	1.26	3.15	4.14
12	5	5	4	1	4	4	4	5	75	12	1.01	1.36	3.78	21.50
13	3	4	4	4	4	5	4	5	85	13	1.39	0.49	1.58	2.23
14	3	3	4	5	2	5	4	5	25	14	0.82	1.52	6.56	4.61
15	3	3	3	4	2	5	5	5	55	15	1.22	1.24	2.57	34.51
16	4	4	4	5	4	4	5	4	45	16	2.85	1.29	0.21	2.19
17	3	3	4	3	5	4	4	5	94	17	0.96	1.04	1.34	37.22
18	4	4	4	4	4	4	4	4	53	18	0.86	1.26	5.41	8.20
19	4	4	5	3	5	4	4	5	100	19	1.74	2.06	1.17	58.26
20	4	5	5	1	5	4	4	5	6	20	0.82	0.58	1.65	0.89
21	4	4	4	1	5	4	5	4	82	21	0.30	0.67	0.53	1.79
22	4	4	5	4	5	4	5	3	9	22	1.47	1.10	0.67	6.40
23	3	5	5	3	5	2	4	1	83	23	0.52	0.76	4.01	1.19
24	4	4	3	2	4	4	4	3	18	24	1.35	0.75	1.09	20.66
25	5	5	5	4	4	4	5	4	4	25	0.81	1.42	2.16	1.47
26	4	4	4	4	2	5	5	3	13	26	1.61	0.31	0.53	1.73
27	4	4	4	4	2	4	5	3	10	27	0.75	1.15	5.07	2.91
28	3	4	4	3	2	3	5	3	100	28	0.96	2.02	3.10	12.40
29	4	5	5	3	3	4	4	4	16	29	1.01	0.96	0.65	4.92
30	5	4	3	2	3	4	4	5	103	30	1.34	1.60	3.83	3.83
31	4	4	4	3	4	5	4	4	72	31	1.49	3.64	1.23	9.79
32	4	5	5	4	2	3	5	4	14	32	1.38	0.85	1.92	7.31
33	5	4	3	4	4	4	5	4	30	33	1.77	0.68	0.69	13.88
34	3	4	4	4	5	5	5	5	10	34	1.07	1.30	5.25	25.39
35	4	4	5	3	4	4	4	5	11	35	0.52	0.19	1.05	0.42
36	4	4	4	3	4	5	4	4	102	36	0.94	0.33	7.08	1.30

Questinnaire No.	E1	E2	E3	E4	E5	E6	E7	E8	No. Emplyees	Questinnaire No.	ACID	AS_TURN	D_E	INV_TURN
37	5	4	4	4	4	4	5	3	100	37	1.37	1.26	0.61	3.27
38	4	5	5	4	2	4	4	4	90	38	2.19	0.46	0.23	2.55
39	4	4	5	5	4	5	5	4	50	39	0.52	1.18	1.04	2.55
40	4	4	5	4	4	5	5	4	160	40	3.56	1.66	0.32	8.10
41	5	4	5	4	4	5	5	3	74	41	1.50	1.13	0.46	4.02
42	5	4	5	5	3	5	5	3	10	42	1.73	0.81	0.96	23.04
43	4	4	5	4	3	5	4	4	35	43	1.86	0.96	0.42	2.05
44	5	4	4	1	4	4	4	3	10	44	0.85	0.44	0.42	78.60
45	4	4	5	5	2	5	5	4	75	45	1.26	1.82	3.50	58.26
46	3	4	4	1	2	5	4	3	14	46	1.14	0.98	2.31	18.55
47	3	5	5	4	3	5	5	4	70	47	2.45	1.62	0.48	6.86
48	5	4	4	5	5	5	5	3	24	48	5.77	0.95	0.14	58.26
49	4	4	4	5	4	5	5	3	18	49	0.87	0.84	3.65	5.43
50	3	4	5	4	5	4	5	3	9	50	1.29	0.24	1.99	2.77
51	4	5	5	5	4	5	5	4	24	51	2.10	1.23	0.11	13.81
52	5	5	4	4	5	4	4	4	1	52	1.77	0.93	0.57	2.64
53	5	5	5	4	5	5	5	4	37	53	0.93	1.27	2.45	8.68
54	5	4	5	4	5	5	4	4	192	54	1.54	0.42	0.12	0.73
55	5	5	5	4	4	5	5	4	32	55	1.06	1.27	0.71	13.92
56	3	4	5	4	4	5	4	4	9	56	5.04	1.23	0.24	73.93
57	5	4	4	5	5	5	5	4	10	57	1.33	0.52	1.92	3.19
58	4	4	4	5	2	4	5	4	70	58	2.64	1.33	0.47	29.01
59	4	4	5	3	2	5	5	4	10	59	2.79	0.94	0.39	4.23
60	4	4	5	3	3	4	5	4	50	60	0.69	2.07	2.83	3.56
61	5	5	5	4	2	5	5	1	4	61	1.58	2.37	1.79	58.26
62	3	4	5	5	4	4	4	3	21	62	2.50	1.98	0.54	6.93
63	4	4	5	5	5	5	5	3	9	63	3.17	1.14	0.21	16.67
64	4	4	5	4	5	4	5	4	77	64	0.12	0.41	0.44	0.47
65	5	4	4	3	2	5	5	3	12	65	0.58	0.62	2.27	1.29
66	5	4	4	4	4	4	4	4	95	66	1.13	0.43	0.37	1.70
67	3	4	4	3	3	4	5	3	32	67	0.87	0.04	0.13	0.34
68	3	4	5	4	5	4	5	4	8	68	1.51	0.56	0.79	58.26
69	4	4	5	4	2	4	5	4	190	69	7.19	1.44	0.08	37.58
70	4	4	4	5	3	5	5	3	5	70	1.59	1.09	0.64	6.67
71	5	5	4	4	4	4	5	4	16	71	1.34	0.24	1.33	0.78
72	5	4	5	5	5	4	5	4	6	72	0.67	0.35	0.29	33.48
73	5	4	5	5	5	4	5	4	14	73	2.82	1.42	0.30	36.34

Questinnaire No.	E1	E2	E3	E4	E5	E6	E7	E8	No. Emplyees	Questinnaire No.	ACID	AS_TURN	D_E	INV_TURN
74	5	4	5	2	4	4	5	4	9	74	1.11	1.63	5.08	67.87
75	4	4	5	2	5	4	5	4	34	75	2.84	1.60	0.94	8.14
76	4	4	4	4	4	4	4	4	2	76	1.68	1.26	0.92	18.19
77	4	4	4	4	4	5	5	5	97	77	0.84	1.84	1.65	4.02
78	5	5	5	5	4	4	5	4	10	78	1.45	0.92	0.32	2.91
79	4	4	4	4	4	2	5	4	9	79	1.14	0.85	4.70	162.49
80	4	5	4	5	4	4	5	5	90	80	1.08	1.19	1.96	5.99
81	4	5	5	5	4	5	5	4	9	81	2.68	0.91	0.27	34.38
82	4	4	5	4	4	4	5	4	7	82	0.73	1.01	1.31	8.58
83	4	4	4	4	4	5	5	4	18	83	3.13	1.04	0.47	6.38
84	3	4	4	5	4	2	5	3	10	84	2.61	0.53	0.95	58.26
85	4	4	4	4	4	5	5	5	50	85	0.64	0.00	0.29	0.32
86	4	5	5	4	4	2	5	4	25	86	2.15	1.04	0.54	37.81
87	3	4	4	4	4	4	5	3	80	87	1.50	1.45	1.29	16.47
88	5	4	4	2	4	5	5	4	60	88	2.04	0.36	0.23	88.60
89	4	4	4	2	4	5	5	5	60	89	1.63	0.45	0.36	22.03
90	4	4	5	2	4	4	5	4	40	90	0.69	1.62	7.91	41.17
91	4	4	5	4	4	5	5	4	10	91	3.13	0.93	0.45	9.98
92	4	5	4	5	4	2	5	4	50	92	1.08	0.89	0.64	2.72
93	4	4	5	5	4	5	5	5	20	93	0.85	0.40	0.43	10.86
94	4	4	4	2	4	4	5	4	5	94	1.58	1.08	1.37	2.75
95	4	4	4	5	4	4	5	5	20	95	1.15	1.21	1.56	9.68
96	4	4	4	3	4	4	5	3	100	96	2.38	0.64	0.34	58.26
97	4	5	4	3	4	4	5	5	46	97	0.87	0.98	2.55	4.01
98	4	4	4	3	4	4	5	5	29	98	0.64	0.34	0.23	1.47
99	4	4	4	4	4	4	5	5	1	99	0.84	0.86	0.55	2.00
100	4	4	4	3	4	4	5	5	25	100	4.21	0.76	0.17	2.77
101	4	4	4	5	4	4	5	4	12	101	1.14	1.68	2.32	58.26
102	4	4	5	3	4	4	5	3	9	102	2.27	1.32	0.69	8.18
103	4	4	4	4	4	4	5	4	10	103	1.41	1.28	1.49	15.95
104	4	4	4	3	4	4	5	4	26	104	0.80	1.49	19.30	4.70
105	4	4	4	5	4	4	4	4	7	105	1.41	1.20	1.19	11.15
106	4	4	5	5	4	5	4	4	8	106	3.80	1.02	0.20	58.26
107	4	4	4	5	4	5	4	5	25	107	1.24	0.52	0.41	39.32
108	4	4	4	5	4	5	4	5	135	108	1.22	0.85	0.58	132.08
109	3	4	5	1	4	5	4	5	40	109				
110	3	4	5	5	2,	5	4	5	1	110	0.81	2.41	8.63	98.56

Questinnaire No.	E1	E2	E3	E4	E5	E6	E7	E8	No. Emplyees	Questinnaire No.	ACID	AS_TURN	D_E	INV_TURN
111	3	4	4	5	2	4	5	4	3	111	1.23	0.96	0.64	2.32
112	3	5	4	5	2	4	5	4	6	112	4.81	1.49	0.26	6.79
113	3	4	4	1	2	4	4	4	18	113	1.62	0.63	0.46	2.60
114	4	4	4	5	4	4	5	4	85	114	5.40	0.37	0.05	2.25
115	4	5	4	5	4	5	5	4	25	115	1.86	0.76	0.28	2.94
116	4	5	5	4	2	5	4	5	32	116	1.45	1.41	0.81	6.98
117	4	5	5	5	4	5	4	5	9	117	1.01	1.26	2.84	3.95
118	4	5	5	5	4	5	5	4	12	118	0.66	2.37	0.68	4.02
119	5	5	4	5	4	5	5	5	12	119	1.31	1.70	1.78	10.80
120	5	5	5	4	4	4	4	5	10	120	1.79	1.12	1.66	15.52
121	5	5	5	4	4	5	4	4	16	121	0.64	0.22	0.42	0.92
122	5	5	5	4	4	5	5	4	43	122	0.94	0.33	7.08	1.30
123	5	5	4	5	4	5	4	5	48	123	1.37	1.26	0.61	3.27
124	4	5	4	4	4	5	4	5	140	124	2.19	0.46	0.23	2.55
125	4	4	5	4	4	5	4	5	2	125	0.52	1.18	1.04	2.55
126	4	4	4	3	4	5	4	5	10	126	3.56	1.66	0.32	8.10
127	5	4	5	3	4	5	5	4	177	127	1.50	1.13	0.46	4.02
128	3	4	4	3	3	5	5	3	15	128	1.73	0.81	0.96	23.04
129	3	4	4	3	3	5	5	3	7	129	1.86	0.96	0.42	2.05
130	4	4	4	3	2	4	5	3	33	130	0.85	0.44	0.42	78.60
131	4	4	4	3	2	5	5	3	50	131	1.26	1.82	3.50	58.26
132	4	4	4	3	2	5	5	3	20	132	1.14	0.98	2.31	18.55
133	3	4	4	3	2	5	5	4	6	133	2.45	1.62	0.48	6.86
134	3	4	4	4	3	4	5	3	9	134	5.77	0.95	0.14	58.26
135	4	5	4	4	3	4	5	4	5	135	0.87	0.84	3.65	5.43
136	5	5	4	4	3	4	5	5	20	136	1.29	0.24	1.99	2.77
137	5	5	4	4	4	4	4	5	12	137	2.10	1.23	0.11	13.81
138	4	5	4	4	4	4	4	4	7	138	1.77	0.93	0.57	2.64
139	3	5	5	4	4	5	5	5	20	139	0.93	1.27	2.45	8.68
140	3	5	4	4	4	5	5	5	57	140	1.54	0.42	0.12	0.73
141	3	5	4	5	5	5	5	5	42	141	1.06	1.27	0.71	13.92
142	3	5	4	3	5	5	4	4	16	142	5.04	1.23	0.24	73.93
143	4	4	4	3	5	4	5	4	25	143	1.33	0.52	1.92	3.19
144	4	5	4	3	4	5	4	4	83	144	2.64	1.33	0.47	29.01
145	5	5	5	5	4	4	5	4	15	145	2.79	0.94	0.39	4.23
146	4	4	4	4	4	5	5	4	78	146	0.69	2.07	2.83	3.56
147	5	,5	4	4	4	5	5	4	10	147	1.58	2.37	1.79	58.26

Questinnaire No.	E1	E2	E3	E4	E5	E6	E7	E8	No. Emplyees	Questinnaire No.	ACID	AS_TURN	D_E	INV_TURN
148	4	5	4	3	4	5	5	5	27	148	2.50	1.98	0.54	6.93
149	4	5	4	2	4	5	5	5	52	149	3.17	1.14	0.21	16.67
150	4	5	4	2	4	5	5	5	10	150	0.12	0.41	0.44	0.47
151	4	5	5	2	4	4	5	5	1	151	0.58	0.62	2.27	1.29
152	4	4	4	4	4	5	5	5	3	152	1.13	0.43	0.37	1.70
153	4	5	5	4	4	2	5	4	14	153	0.87	0.04	0.13	0.34
154	5	4	5	2	4	5	5	5	21	154	1.51	0.56	0.79	58.26
155	5	4	5	2	4	4	5	5	120	155	7.19	1.44	0.08	37.58
156	5	4	4	2	4	4	5	4	160	156	1.59	1.09	0.64	6.67
157	4	4	5	4	4	4	5	5	90	157	1.34	0.24	1.33	0.78
158	4	4	4	4	4	4	5	3	31	158	0.67	0.35	0.29	33.48
159	4	5	5	4	4	4	5	3	6	159	2.82	1.42	0.30	36.34
160	4	5	5	4	4	4	5	3	15	160	1.11	1.63	5.08	67.87
161	4	4	4	2	4	4	5	4	70	161	2.84	1.60	0.94	8.14
162	5	4	5	3	4	4	5	4	26	162	1.68	1.26	0.92	18.19
163	5	4	5	3	4	4	4	3	26	163	0.84	1.84	1.65	4.02
164	5	5	5	3	4	4	4	4	67	164	1.45	0.92	0.32	2.91
165	5	4	4	3	3	5	5	5	3	165	1.14	0.85	4.70	162.49
166	4	4	5	4	3	5	5	5	56	166	1.08	1.19	1.96	5.99
167	4	4	4	4	4	5	5	5	60	167	2.68	0.91	0.27	34.38
168	5	4	4	4	4	4	5	5	10	168	0.73	1.01	1.31	8.58
169	4	4	5	3	4	4	5	3	10	169	3.13	1.04	0.47	6.38
170	4	4	4	4	4	4	5	3	24	170	2.61	0.53	0.95	58.26
171	4	4	4	3	4	4	5	3	30	171	0.64	0.00	0.29	0.32
172	5	4	5	3	4	4	5	4	40	172	2.15	1.04	0.54	37.81
173	5	5	5	4	4	4	5	4	1	173	1.66	0.34	0.52	1.49
174	5	4	4	3	4	4	5	5	3	174	3.26	0.43	0.15	2.32
175	4	4	5	3	4	4	5	5	70	175	1.44	0.17	0.38	133.09
176	5	4	4	4	4	4	5	5	2	176	3.33	1.86	0.31	32.32
177	3	1	2	4	3	3	3	3	4	177	1.03	1.92	1.61	5.25
178	2	2	3	3	3	5	5	5	4	178	1.41	1.10	0.57	3.19
179	2	2	4	5	4	5	4	4	4	179	1.61	1.24	0.46	3.20
180	2	2	4	3	3	4	4	4	5	180	2.11	0.18	0.02	1.15
181	3	3	5	4	4	4	3	3	4	181	3.30	0.71	0.08	1.59
182	3	3	2	2	4	5	5	3	4	182	2.91	0.84	0.39	4.07
183	4	5	4	4	3	4	4	4	4	183	3.60	1.18	0.35	31.98
184	3	4	4	4	3	5	4	4	5	184	1.86	1.09	0.18	4.19

Questinnaire No.	E1	E2	E3	E4	E5	E6	E7	E8	No. Emplyees	Questinnaire No.	ACID	AS_TURN	D_E	INV_TURN
185	3	4	4	5	4	3	3	4	4	185	1.46	0.83	0.21	68.76
186	3	4	5	5	3	3	3	3	4	186	0.41	0.50	2.69	6.05
187	2	3	3	3	3	3	3	4	4	187	1.25	2.14	10.40	10.89
188	2	4	2	3	4	4	4	3	4	188	0.69	0.81	7.88	2.26
189	4	4	5	4	4	5	3	3	5	189	0.43	2.27	2.57	5.50
190	3	3	5	3	4	4	3	3	4	190	0.46	0.61	3.74	2.17
191	3	4	3	4	3	3	3	4	4	191	0.62	0.74	1.16	2.68
192	3	3	2	4	3	3	4	4	4	192	0.86	0.36	0.57	1.95
193	4	4	2	5	3	4	3	3	4	193	1.94	0.91	2.30	7.98
194	4	3	4	5	4	3	4	4	4	194	0.38	1.42	5.40	7.05
195	2	1	4	5	3	3	3	4	4	195	1.25	0.61	2.11	13.98
196	4	4	4	5	3	3	3	4	4	196	0.56	3.87	-0.93	37.18
197	3	3	5	4	4	4	3	3	5	197	1.55	1.15	0.75	53.73
198	1	3	5	4	3	3	4	3	4	198	2.47	1.24	0.38	15.23
199	1	4	2	3	3	3	3	5	5	199	1.12	1.12	2.89	2.61
200	3	3	5	3	4	5	5	5	5	200	1.04	1.09	16.51	11.99
201	5	4	5	4	4	3	5	3	4	201	0.72	1.86	1.76	2.17
202	2	4	4	4	3	3	3	4	4	202	1.24	2.28	1.42	36.69
203	4	3	4	4	3	3	4	5	4	203	0.83	0.81	1.82	15.23
204	4	5	5	4	4	3	5	5	5	204	1.34	0.90	1.07	2.49
205	4	5	2	3	4	3	4	4	4	205	1.66	0.94	0.67	6.15
206	4	4	2	3	3	3	3	4	4	206	1.09	1.14	1.70	3.68
207	3	1	4	3	3	3	4	5	5	207	0.92	1.19	0.95	11.45
208	3	3	4	4	3	3	4	5	4	208	0.78	1.02	2.59	15.23
209	3	4	4	4	4	4	3	3	4	209	0.65	0.57	3.08	1.36
210	4	5	4	3	4	3	5	3	4	210	0.73	0.87	0.82	4.91
211	1	3	4	4	4	3	3	2	2	211	0.81	0.58	1.56	1.52
212	1	3	3	4	3	5	4	4	4	212	0.42	2.33	0.97	5.23
213	2	2	3	5	3	3	2	2	5	213	1.20	0.78	4.15	5.10
214	2	4	4	5	4	4	4	2	2	214	2.33	0.48	0.78	7.21
215	2	4	4	4	4	4	2	4	2	215	1.17	0.42	0.60	9.05
216	1	5	4	3	3	1	2	2	2	216	1.28	0.63	0.46	5.09
217	2	3	4	4	4	3	4	4	4	217	1.83	1.06	1.42	3.71
218	2	4	4	4	3	2	2	3	5	218	1.76	0.62	0.73	1.90
219	1	3	3	5	5	1	4	4	3	219	1.48	1.15	0.86	5.85
220	2	5	3	3	5	1	3	5	3	220	0.52	0.56	4.02	2.67
221	1	5	5	3	5	4	5	5	4	221	1.24	1.25	1.04	5.68

Questinnaire No.	E1	E2	E3	E4	E5	E6	E7	E8	No. Emplyees	Questinnaire No.	ACID	AS_TURN	D_E	INV_TURN
222	3	4	5	3	4	3	4	3	4	222	1.02	1.65	0.57	4.29
223	4	4	4	4	4	3	4	4	4	223	0.99	1.03	0.90	4.43
224	4	4	5	4	5	4	5	5	5	224	6.31	0.30	0.06	5.67
225	5	4	5	5	5	5	5	5	5	225	1.08	0.86	0.74	2.64
226	4	4	4	5	4	5	4	4	5	226	1.63	1.36	0.40	2.75
227	3	3	5	5	5	4	3	4	3	227	2.44	0.33	0.54	113.14
228	3	3	5	4	5	4	1	3	3	228	0.16	1.81	5.96	2.18
229	5	5	4	5	4	5	4	3	4	229	2.14	0.99	0.45	5.76
230	5	3	4	4	5	5	2	5	4	230				
231	5	4	5	5	4	3	3	5	3	231	1.17	1.51	1.21	3.17
232	3	4	3	3	4	3	5	2	4	232	1.29	1.75	2.40	15.23
233	3	5	3	3	4	2	1	2	3	233	1.55	0.66	0.69	2.83
234	4	4	5	4	4	2	5	4	4	234	2.12	0.89	0.82	15.23
235	1	3	4	5	5	4	1	5	4	235	0.50	0.67	0.39	8.94
236	1	3	4	5	5	4	1	3	3	236	1.66	0.61	0.42	3.19
237	2	5	5	4	4	2	4	1	4	237	1.44	1.03	0.51	1.92
238	3	3	5	4	4	2	4	2	5	238	1.70	1.85	0.48	7.89
239	4	4	3	5	4	3	3	2	4	239				
240	5	2	3	3	5	3	4	4	3	240	1.36	1.45	1.84	20.73
241	2	3	4	5	4	3	4	4	4	241	1.93	1.00	0.54	3.19
242	3	3	4	4	4	3	4	5	4	242	1.29	0.65	0.63	3.03
243	5	3	3	4	4	5	4	5	3	243	2.16	1.26	0.39	8.26
244	1	1	4	4	4	4	4	5	2	244	1.89	1.28	0.49	11.07
245	2	2	4	3	4	4	2	4	2	245	1.55	0.47	0.15	60.97
246	4	2	5	4	4	5	4	2	4	246	0.56	1.37	0.70	2.21
247	4	4	2	4	5	3	2	3	4	247	0.88	0.78	2.29	2.33
248	5	4	4	5	5	1	2	2	3	248	3.50	1.14	2.97	14.63
249	1	2	2	3	1	4	2	2	2	249	1.86	0.66	0.69	5.40
250	4	4	4	4	1	4	3	4	4	250	2.55	0.89	0.37	7.78
251	3	3	5	5	1	3	4	4	3	251	2.26	1.03	0.20	3.34
252	3	1	3	5	5	4	2	5	3	252	3.03	0.18	0.11	1.62
253	3	4	5	4	4	5	4	4	4	253	1.60	0.91	1.67	2.06
254	2	2	3	3	4	5	4	5	4	254	2.58	0.75	0.17	1.19
255	2	1	2	4	2	4	3	3	3	255	6.60	1.10	0.10	5.62
256	2	4	2	4	2	4	2	3	2	256	4.65	1.04	0.23	27.15
257	3	3	4	4	2	4	3	3	2	257	1.42	1.54	1.23	6.53
258	3	4	4	4	4	4	3	3	4	258	4.32	1.59	0.72	8.60

Questinnaire No.	E1	E2	E3	E4	E5	E6	E7	E8	No. Emplyees	Questinnaire No.	ACID	AS_TURN	D_E	INV_TURN
259	1	1	5	5	5	5	3	4	5	259	1.09	1.06	0.99	3.94
260	1	4	3	5	5	3	4	4	2	260	1.48	1.15	0.53	1.77
261	3	3	3	5	4	3	4	5	2	261	1.44	1.40	0.78	3.71
262	5	1	5	4	2	5	5	3	4	262	2.22	1.07	0.79	33.58
263	5	4	5	5	4	5	4	4	4	263	1.35	1.33	2.02	42.88
264	3	5	5	5	5	5	5	5	5	264	0.91	0.63	0.84	3.28
265	3	3	4	3	4	5	3	4	5	265	1.64	0.51	1.13	1.57
266	2	4	5	4	1	4	4	5	4	266	1.75	0.66	0.42	4.24
267	3	3	3	5	1	3	2	5	5	267	0.89	1.22	0.72	6.23
268	2	4	2	5	5	5	4	4	4	268	1.24	1.47	1.38	3.83
269	1	4	2	4	4	5	3	2	3	269	0.57	0.54	0.59	4.43
270	3	4	3	4	4	4	4	5	4	270	1.53	0.47	0.88	9.71
271	4	4	4	3	3	2	2	2	3	271	1.45	1.14	1.01	6.61
272	3	3	5	5	4	1	5	5	5	272	0.95	1.51	3.15	6.59
273	4	3	4	3	3	2	3	5	5	273	0.81	0.58	1.56	1.52
274	3	4	4	4	4	5	5	5	4	274	0.42	2.33	0.97	5.23
275	3	5	5	5	5	5	5	5	5	275	1.20	0.78	4.15	5.10
276	3	5	2	3	3	2	2	4	2	276	2.33	0.48	0.78	7.21
277	5	3	5	5	5	5	5	5	5	277	1.17	0.42	0.60	9.05
278	5	5	4	3	3	1	5	4	4	278	1.28	0.63	0.46	5.09
279	3	3	4	3	3	2	5	4	5	279	1.83	1.06	1.42	3.71
280	4	4	4	4	5	5	4	4	4	280	1.76	0.62	0.73	1.90
281	3	3	4	4	4	4	3	3	4	281	1.48	1.15	0.86	5.85
282	4	4	3	5	4	3	3	3	3	282	0.52	0.56	4.02	2.67
283	3	4	5	4	4	4	4	4	4	283	1.24	1.25	1.04	5.68
284	4	4	5	5	5	5	5	5	5	284	1.02	1.65	0.57	4.29
285	4	5	2	4	5	4	5	4	3	285	0.99	1.03	0.90	4.43
286	4	4	5	4	5	5	5	4	5	286	6.31	0.30	0.06	5.67
287	4	5	4	5	4	5	3	5	4	287	1.08	0.86	0.74	2.64
288	3	5	3	5	4	5	4	4	5	288	1.63	1.36	0.40	2.75
289	2	1	3	4	5	5	4	4	5	289	2.44	0.33	0.54	113.14
290	4	4	4	4	4	5	4	4	4	290	0.16	1.81	5.96	2.18
291	5	5	5	5	5	5	5	5	5	291	2.14	0.99	0.45	5.76
292	4	4	4	4	4	4	5	5	4	292				
293	1	4	5	5	4	3	4	3	4	293	1.17	1.51	1.21	3.17
294	2	5	5	5	5	4	3	5	5	294	1.29	1.75	2.40	15.23
295	2	4	4	5	2	5	3	3	3	295	1.55	0.66	0.69	2.83

Questinnaire No.	E1	E2	E3	E4	E5	E6	E7	E8	No. Emplyees	Questinnaire No.	ACID	AS_TURN	D_E	INV_TURN
296	1	5	4	4	4	5	4	3	4	296	2.12	0.89	0.82	15.23
297	4	4	3	3	4	4	3	2	3	297	0.50	0.67	0.39	8.94
298	3	3	5	4	4	5	5	5	5	298	1.66	0.61	0.42	3.19
299	5	5	2	1	2	4	4	4	4	299	1.44	1.03	0.51	1.92
300	3	4	3	3	3	5	4	4	4	300	1.70	1.85	0.48	7.89
301	3	3	3	3	3	5	4	4	3	301				
302	5	5	3	5	3	5	4	4	4	302	1.36	1.45	1.84	20.73
303	4	4	3	4	2	4	1	2	3	303	1.93	1.00	0.54	3.19
304	4	4	4	4	4	5	3	3	4	304	1.29	0.65	0.63	3.03
305	4	4	3	3	3	3	2	3	3	305	2.16	1.26	0.39	8.26
306	5	5	3	3	3	4	4	4	3	306	1.77	0.79	0.79	2.30
307	4	5	5	5	5	5	5	5	5	307	1.36	1.50	1.05	7.81
308	4	4	5	4	5	4	5	5	5	308	2.25	1.20	0.32	2.50
309	2	4	4	3	4	2	4	4	4	309	1.97	0.53	0.13	2.45
310	3	4	5	4	4	4	3	4	5	310	0.87	0.33	0.60	2.55
311	4	4	4	4	3	4	3	4	4	311	3.79	1.00	0.25	21.70
312	1	4	5	3	3	4	3	4	4	312	1.37	1.58	2.21	10.38
313	3	4	3	3	2	5	2	5	2	313	0.98	0.76	1.45	2.40
314	2	3	4	4	2	4	3	3	5	314	1.77	0.79	0.79	2.30
315	2	5	4	5	4	4	4	4	4	315	1.36	1.50	1.05	7.81
316	5	4	4	4	3	4	3	4	3	316	2.25	1.20	0.32	2.50
317	4	5	5	5	3	5	4	5	4	317	1.97	0.53	0.13	2.45
318	2	4	4	5	4	5	5	5	5	318	0.87	0.33	0.60	2.55
319	4	4	4	4	3	4	3	4	3	319	3.79	1.00	0.25	21.70
320	4	4	4	4	4	4	5	4	4	320	1.37	1.58	2.21	10.38
321	2	4	4	5	4	5	4	5	4	321	0.98	0.76	1.45	2.40
322	4	5	5	5	5	5	5	5	5	322	1.25	1.50	3.90	5.09
323	3	5	5	4	5	5	4	4	4	323	0.59	1.42	3.29	11.23
324	5	5	4	5	4	5	5	5	5	324	0.83	0.56	1.50	2.28
325	5	5	5	5	5	5	4	5	5	325	0.30	0.22	1.90	72.59
326	4	4	4	5	4	5	4	4	4	326	0.93	0.65	6.25	0.56
327	4	4	4	4	4	4	3	4	4	327	0.68	0.93	3.07	3.68
328	4	4	4	4	5	4	3	4	4	328	1.00	0.45	7.11	1.48
329	4	4	4	4	4	5	4	4	5	329	1.83	0.91	0.57	25.63
330	3	4	5	5	4	5	4	5	5	330	1.05	1.38	5.12	5.71
331	5	5	4	4	5	5	3	5	5	331	0.64	0.69	1.49	37.46
332	3	3	4	4	5	4	5	4	4	332	1.08	3.45	7.80	37.46

Questinnaire No.	E1	E2	E3	E4	E5	E6	E7	E8	No. Emplyees	Questinnaire No.	ACID	AS_TURN	D_E	INV_TURN
333	5	4	5	4	4	4	3	4	4	333	2.35	1.15	0.72	18.10
334	4	5	4	5	4	5	3	4	4	334	0.68	1.13	1.31	5.54
335	4	5	4	5	5	4	4	5	3	335	2.24	0.32	0.43	31.30
336	5	4	5	4	3	4	3	4	4	336	3.05	0.31	0.40	4.13
337	5	3	5	4	3	5	4	4	4	337	3.35	1.67	0.51	6.68
338	5	3	4	5	4	4	4	4	4	338	1.30	1.10	0.54	2.58
339	3	4	4	4	3	5	4	5	5	339	2.07	1.21	0.31	2.48
340	4	5	5	4	5	5	3	4	4	340	1.05	1.12	2.39	7.70
341	4	4	5	4	3	5	4	4	4	341	1.06	1.11	0.57	4.07
342	4	5	5	5	5	5	5	5	5	342	2.09	1.23	0.57	5.21
343	2	4	4	5	4	4	5	5	5	343	1.49	1.67	0.72	8.65
344	4	3	3	4	3	4	3	4	4	344	0.39	1.39	1.53	2.26
345	4	4	4	4	5	5	5	5	5	345	0.77	1.67	0.72	3.59
346	4	4	4	4	4	4	5	5	5	346	1.33	1.03	0.52	5.33
347	2	2	3	3	3	3	3	3	3	347	1.14	1.89	2.09	6.67
348	4	2	3	3	4	4	3	4	3	348	1.09	0.57	0.98	3.19
349	3	4	3	3	3	5	3	3	4	349	3.03	1.15	0.22	6.84
350	5	5	4	3	3	3	4	3	3	350	1.31	1.24	1.35	5.23
351	5	4	3	4	4	3	5	4	3	351	1.20	1.33	0.69	2.92
352	3	5	3	5	4	5	3	5	4	352	2.62	0.75	0.18	2.33
353	3	4	4	4	5	4	3	4	3	353	1.40	1.11	0.63	4.23
354	4	3	5	5	4	4	4	5	5	354	0.81	0.99	1.12	3.29
355	4	2	3	4	4	3	5	4	5	355	0.98	1.21	1.59	2.71
356	4	5	2	4	2	3	4	5	5	356	0.86	2.36	1.45	8.41
357	3	2	2	4	2	3	5	3	3	357	1.99	1.28	0.73	13.30
358	3	4	3	3	2	3	3	3	3	358	0.76	0.78	1.96	5.32
359	4	4	3	3	4	4	3	3	5	359	2.04	0.73	0.19	1.26
360	4	4	4	3	4	4	3	4	4	360	1.35	0.98	0.74	7.89
361	4	2	3	4	5	5	4	5	4	361	0.62	2.52	2.61	5.64
362	4	1	2	5	3	4	3	5	3	362	3.20	1.88	0.22	5.40
363	3	4	3	5	3	5	5	4	4	363	1.98	1.14	0.32	2.29
364	4	4	5	5	5	5	5	5	5	364	3.28	0.78	0.45	4.63
365	3	1	5	4	4	4	3	4	3	365	1.69	0.54	0.14	3.82
366	1	1	3	3	3	4	4	3	3	366	2.33	1.11	0.23	10.38
367	3	4	4	4	4	5	4	4	5	367	1.94	0.71	0.36	13.87
368	1	4	4	3	4	5	4	3	5	368	0.90	1.78	3.06	6.75
369	1	4	5	3	3	5	4	5	4	369	5.28	0.97	0.56	6.20

Questinnaire No.	E1	E2	E3	E4	E5	E6	E7	E8	No. Emplyees	Questinnaire No.	ACID	AS_TURN	D_E	INV_TURN
370	4	4	4	4	3	5	4	4	4	370	1.67	0.85	0.42	12.55
371	5	5	5	5	4	5	4	5	5	371	1.39	0.90	0.54	9.60
372	3	5	5	4	5	5	5	5	5	372	1.52	1.51	0.28	5.60
373	1	5	4	1	4	4	4	4	5	373	2.62	0.42	0.16	0.88
374	4	5	3	4	5	5	5	5	4	374	2.23	0.82	0.40	4.10
375	5	5	4	1	3	5	4	5	5	375	0.71	1.28	10.43	5.47
376	5	4	4	5	3	4	5	5	5	376	1.77	3.46	0.48	18.07
377	4	2	5	4	4	5	4	5	4	377	0.51	0.47	1.55	0.90
378	4	5	4	5	3	4	4	5	4	378	1.31	0.86	0.50	2.81
379	3	3	5	1	3	5	3	4	4	379	0.11	0.56	0.58	8.13
380	3	1	4	4	4	4	3	4	5	380	3.75	0.52	0.09	46.21
381	3	1	5	5	4	5	5	5	5	381	0.88	2.17	0.84	12.15
382	5	5	4	4	5	5	5	5	5	382	5.06	0.59	0.20	2.02
383	4	4	5	4	4	5	4	5	5	383	3.06	0.68	0.14	4.15
384	3	5	2	5	4	5	5	5	5	384	1.93	1.13	0.33	2.96
385	3	4	2	3	2	1	4	3	4	385	0.86	0.82	2.26	3.53
386	4	4	3	3	5	1	4	5	5	386	1.59	1.18	0.72	6.27
387	4	4	4	4	4	5	4	5	5	387	2.27	0.26	0.07	37.46
388	3	3	2	4	2	5	5	3	4	388	4.14	0.52	0.14	5.54
389	5	5	2	5	2	4	5	4	5	389	3.26	0.76	0.21	2.61
390	4	4	3	3	3	5	4	5	5	390	0.88	2.17	0.84	12.15
391	4	4	3	3	2	3	3	4	4	391	1.75	1.08	0.95	6.69
392	4	5	4	4	3	3	3	3	3					

Questinnaire No.	08				2009								
	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID
1	1.75	0.01	0.06	2.43	1.66	0.94	6.45	4.76	1.75	0.01	0.08	3.01	1.51
2	3.90	-0.16	-0.20	-3.26	0.55	1.12	5.85	3.85	2.64	-0.02	-0.12	-3.34	0.54
3	3.22	0.01	0.02	3.75	2.10	1.51	0.43	28.16	2.66	0.11	0.16	6.19	2.00
4	1.99	0.03	0.07	2.04	1.08	0.56	1.22	1.96	1.50	0.02	0.04	2.27	1.20
5	5.58	0.00	0.00	1.66	2.37	0.57	0.23	86.41	5.65	0.00	0.00	4.25	1.40
6	2.83	0.02	0.10	-0.93	0.45	0.81	1.55	3.81	3.14	0.02	0.04	0.00	0.32
7	22.52	0.03	0.22	1.22	1.10	1.47	3.87	187.86	3.43	0.20	0.10	2.99	1.04
8	0.36	0.03	0.42	0.95	1.06	0.15	9.21	86.41	0.16	0.02	0.16	0.61	1.14
9	5.06	0.00	0.01	2.18	0.38	0.49	0.55	2.01	4.05	-0.03	-0.04	1.75	0.86
10	2.38	0.16	0.64	3.67	1.43	2.03	1.96	114.67	2.51	0.14	0.41	4.28	1.84
11	3.01	0.03	0.13	3.39	1.25	0.93	5.37	6.43	2.65	0.01	0.08	2.45	1.87
12	4.12	0.06	0.28	1.60	1.34	1.23	2.82	24.08	2.04	0.09	0.33	3.31	1.43
13	0.65	0.02	0.05	4.51	1.39	0.43	1.30	1.33	0.62	0.00	0.00	4.65	1.44
14	2.30	0.02	0.12	1.01	0.79	1.55	6.85	4.92	2.34	0.01	0.06	0.50	0.80
15	1.53	0.01	0.05	1.46	1.34	1.56	2.29	120.43	1.88	0.01	0.03	1.79	1.04
16	3.04	0.10	0.12	1.26	0.99	0.91	3.15	6.15	1.28	0.06	0.26	2.18	1.43
17	1.99	0.20	0.48	2.74	1.35	1.19	0.68	44.36	2.18	0.21	0.36	5.04	1.36
18	1.78	0.03	0.18	0.94	0.97	1.18	4.50	10.62	1.53	0.05	0.25	1.61	0.98
19	2.51	0.15	0.33	4.85	2.51	1.52	1.98	86.41	2.26	0.14	0.42	5.55	2.50
20	2.91	0.00	0.01	2.90	0.91	0.57	1.78	0.88	2.35	0.00	0.01	2.78	0.70
21	10.08	0.01	0.02	2.59	1.03	0.69	0.34	2.10	4.68	0.02	0.02	4.73	0.85
22	1.91	0.01	0.01	3.71	1.09	1.08	0.81	3.08	3.51	0.00	0.01	3.15	0.61
23	2.29	0.02	0.12	1.46	1.13	0.61	5.59	1.22	2.21	0.02	0.13	3.32	1.18
24	1.22	0.00	0.00	2.48	1.08	0.21	1.26	86.41	0.38	-0.06	-0.13	0.60	0.46
25	5.40	0.09	0.28	3.89	3.54	2.21	1.03	5.92	9.07	0.21	0.42	8.53	2.88
26	1.61	-0.05	-0.08	3.69	2.09	0.36	0.36	2.63	1.72	0.00	0.00	4.84	1.94
27	1.94	0.02	0.14	1.40	0.97	1.33	4.16	6.37	1.78	0.09	0.44	1.98	0.84
28	4.15	0.04	0.15	1.53	1.39	1.24	2.69	7.31	2.25	0.02	0.07	2.94	1.28
29	2.74	0.01	0.01	3.00	1.05	0.84	0.57	10.58	2.37	0.01	0.01	2.57	1.47
30	3.04	0.31	0.20	5.59	1.04	1.39	4.61	2.56	2.87	0.04	0.28	5.32	1.07
31	14.58	0.06	0.13	5.52	1.04	2.70	1.60	10.52	8.11	0.06	0.16	3.45	0.98
32	2.64	0.10	0.30	3.27	1.28	0.72	1.70	7.66	2.22	0.02	0.05	2.51	1.11
33	2.90	-0.02	-0.03	4.03	8.07	0.40	0.76	14.47	2.55	-0.01	-0.02	4.99	0.72
34	2.78	0.24	0.15	2.27	1.27	1.25	2.90	296.41	3.59	0.17	0.64	3.13	2.82
35	0.96	0.03	0.06	1.26	0.44	0.14	1.03	0.33	0.78	0.00	0.00	0.77	0.54
36	0.40	0.01	0.11	1.56	0.85	0.41	5.95	0.84	0.75	-0.04	-0.03	1.91	0.91

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID
37	2.63	0.06	0.09	5.56	1.73	1.15	0.90	3.58	2.58	0.05	0.09	5.37	2.10
38	1.32	0.04	0.05	7.40	2.60	0.32	0.21	2.05	0.85	0.03	0.04	7.96	3.52
39	5.50	0.05	0.10	2.31	0.52	1.11	1.68	2.05	4.45	0.00	0.00	1.66	0.76
40	2.05	0.06	0.09	9.24	2.31	1.57	0.57	7.18	1.98	0.02	0.03	6.59	1.93
41	3.08	0.14	0.20	6.79	2.06	0.68	0.29	2.23	2.13	0.10	0.13	8.27	1.96
42	1.12	0.05	0.10	4.83	1.76	0.79	1.21	18.79	1.59	0.09	0.19	4.30	2.13
43	2.41	0.24	0.35	8.54	1.69	0.67	0.50	1.12	2.90	0.16	0.25	7.59	2.80
44	17.85	0.04	0.06	2.79	1.28	0.41	0.33	61.18	3.34	0.07	0.09	4.36	1.06
45	6.46	0.26	1.23	4.00	0.83	1.46	2.37	86.41	8.00	0.08	0.29	1.20	1.61
46	1.39	0.02	0.07	1.91	1.31	0.89	1.90	5.09	1.47	0.00	0.01	3.12	1.36
47	2.80	0.33	0.48	9.56	4.15	1.47	0.26	9.96	2.29	0.20	0.26	11.70	2.36
48	2.07	0.03	0.03	14.41	3.86	0.86	0.22	86.41	2.00	-0.02	-0.02	9.29	2.52
49	1.36	0.10	0.46	1.54	1.00	0.83	1.89	5.33	1.46	0.12	0.35	2.83	1.29
50	0.80	0.02	0.05	1.20	9.80	0.33	0.09	2.25	0.49	0.03	0.04	16.91	0.89
51	8.96	-0.12	-0.14	10.42	1.62	0.88	0.23	4.79	3.18	-0.06	-0.08	5.56	2.92
52	1.79	0.02	0.03	7.10	2.04	0.87	0.49	2.35	1.56	0.02	0.03	7.76	2.72
53	2.54	0.00	0.02	0.76	1.22	1.06	1.84	16.19	2.04	0.01	0.03	1.92	1.77
54	3.50	0.01	0.01	12.61	1.88	0.23	0.10	0.35	1.52	0.00	0.00	14.72	1.18
55	3.34	0.03	0.05	2.67	1.08	1.05	0.42	6.36	3.63	0.02	0.03	3.88	2.43
56	2.03	0.28	0.37	12.80	4.84	1.36	0.27	44.11	2.36	0.20	0.30	11.11	3.80
57	0.63	0.10	0.28	4.16	1.42	0.51	1.71	2.11	0.69	0.09	0.25	4.65	1.36
58	3.02	0.28	0.41	8.33	3.90	1.00	0.26	18.87	1.57	0.15	0.19	10.45	3.69
59	1.58	0.11	0.15	8.11	5.05	0.66	0.19	3.46	1.54	0.07	0.08	11.42	2.19
60	4.14	0.05	0.18	2.51	0.62	1.94	2.25	2.84	4.60	0.03	0.08	2.84	0.89
61	4.32	0.28	0.86	5.84	2.83	2.50	1.26	86.41	4.80	0.05	0.12	9.64	3.44
62	2.54	0.06	0.95	12.42	1.24	1.46	1.13	2.65	2.76	0.03	0.67	7.66	1.45
63	4.44	0.01	0.01	9.39	2.68	1.11	0.32	184.95	3.67	0.03	0.04	8.39	3.28
64	11.52	0.04	0.06	6.69	0.49	0.61	0.37	1.32	5.01	0.04	0.06	5.90	0.90
65	1.96	0.03	0.11	1.80	0.72	0.69	1.52	1.55	1.97	0.06	0.15	2.98	0.77
66	2.30	0.03	0.04	5.10	2.28	0.49	0.30	1.90	2.63	0.01	0.01	6.31	1.41
67	0.45	0.00	0.00	11.44	0.96	0.33	2.30	86.41	0.49	0.04	0.13	0.83	0.89
68	0.84	0.32	0.58	6.13	0.96	0.33	2.30	86.41	0.49	0.04	0.13	0.83	0.89
69	3.49	0.05	0.05	18.15	4.42	0.52	0.28	8.49	1.68	0.00	0.00	9.36	3.77
70	1.80	0.00	0.01	4.95	1.62	0.93	0.46	4.39	1.86	0.00	0.00	5.66	1.77
71	0.36	0.00	0.00	4.35	1.25	0.19	1.75	0.73	0.27	0.00	0.01	3.67	1.46
72	5.90	0.02	0.03	3.66	1.66	0.32	0.30	49.12	17.58	-0.02	-0.03	4.18	2.94
73	2.32	0.09	0.11	8.28	4.79	0.93	0.18	3.79	1.78	0.02	0.02	10.99	1.93

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID
74	2.38	0.15	0.91	1.93	1.24	1.67	3.61	64.14	3.31	0.03	0.13	3.91	1.43
75	3.99	0.10	0.19	6.26	2.11	1.21	1.34	8.60	3.05	0.07	0.17	5.58	2.87
76	2.46	0.24	0.46	6.43	2.43	0.70	0.59	21.56	1.50	0.11	0.19	7.45	3.48
77	3.57	0.15	0.39	4.02	0.88	1.28	1.14	2.57	2.84	0.02	0.04	4.02	1.24
78	3.28	-0.02	-0.03	6.21	2.31	0.89	0.23	4.45	3.35	0.04	0.05	8.34	2.48
79	0.99	0.06	0.34	1.89	1.37	1.22	2.42	411.09	1.41	0.21	0.71	4.42	1.55
80	2.58	0.08	0.25	2.71	1.67	1.32	0.95	12.34	1.71	0.21	0.41	6.24	1.96
81	1.80	0.15	0.19	7.95	3.96	0.55	0.13	3.74	2.62	0.01	0.01	11.68	4.68
82	2.46	0.01	0.03	0.92	1.15	1.20	0.76	32.45	2.51	0.04	0.07	2.73	2.37
83	1.89	0.01	0.02	6.73	3.68	1.13	0.35	6.55	2.20	0.02	0.02	7.62	2.15
84	2.07	0.03	0.07	4.31	5.30	0.83	0.69	1.28	1.70	0.10	0.17	6.49	4.35
85	0.01	-0.04	-0.49	-0.38	1.80	0.19	0.14	1.19	0.94	-0.04	-0.05	4.68	2.28
86	2.43	0.12	0.18	6.38	3.03	0.90	0.59	26.57	2.47	0.12	0.19	7.17	3.59
87	1.85	0.02	0.05	4.29	1.45	1.14	1.59	34.62	1.36	0.04	0.10	3.72	1.34
88	4.64	0.05	0.06	7.55	5.95	0.33	0.13	75.40	3.73	0.06	0.07	11.95	2.10
89	1.08	0.00	0.00	3.87	1.74	0.47	0.42	36.95	1.17	0.10	0.13	4.68	2.07
90	2.69	0.11	1.00	-0.44	0.84	0.66	2.47	22.04	1.17	0.05	0.16	0.39	0.98
91	2.68	0.36	0.53	11.38	3.16	0.70	0.44	7.76	2.11	0.14	0.21	9.98	5.05
92	2.76	0.02	0.03	4.48	1.61	1.00	0.82	2.60	3.05	0.03	0.05	5.44	1.30
93	1.83	0.03	0.04	2.63	0.85	0.34	0.27	5.00	2.86	0.02	0.03	4.26	1.18
94	1.87	0.11	0.26	5.39	2.01	0.93	0.87	1.69	2.20	0.06	0.11	6.42	2.60
95	1.80	0.07	0.19	3.51	1.59	0.75	1.01	12.48	1.03	0.02	0.03	5.02	1.74
96	1.26	0.02	0.02	5.17	4.66	0.75	0.28	86.41	1.41	0.05	0.06	6.89	1.80
97	2.36	0.00	0.01	1.25	1.30	0.74	0.92	2.29	2.24	0.00	0.00	3.83	1.51
98	3.73	-0.04	-0.05	4.84	1.91	0.29	0.13	1.43	2.04	-0.02	-0.02	9.47	2.07
99	3.05	0.20	0.31	5.26	1.51	0.63	0.25	1.43	2.85	0.12	0.15	8.50	2.41
100	1.29	0.03	0.03	12.99	3.05	0.73	0.27	2.59	1.23	0.05	0.06	10.28	2.58
101	2.88	0.31	1.03	3.70	1.50	0.96	1.36	86.41	1.54	0.12	0.29	4.11	1.34
102	2.41	0.25	0.43	7.80	2.95	1.01	0.43	4.63	2.11	0.18	0.26	9.01	2.88
103	2.16	0.33	0.82	5.47	1.55	1.17	1.46	20.75	2.33	0.03	0.64	5.46	1.79
104	2.12	-0.07	-0.14	0.31	0.79	1.17	-1.90	5.35	1.53	-0.08	0.14	-1.21	1.31
105	2.03	0.10	0.21	3.87	1.64	1.04	0.84	8.28	1.88	0.11	0.21	5.02	1.65
106	2.91	0.04	0.05	9.73	1.75	0.59	0.33	86.41	2.52	0.06	0.08	5.21	1.17
107	1.63	0.03	0.04	3.50	1.71	0.65	0.29	62.06	2.46	0.06	0.07	5.23	1.68
108	4.57	0.24	0.37	4.15	1.38	0.66	0.77	128.95	5.37	0.12	0.21	3.22	2.35
109					1.21	0.70	0.06	6.90	1.91	0.00	0.00	2.14	0.65
110	10.91	0.33	0.03	1.39	0.89	1.74	1.87	196.24	4.93	0.05	0.13	4.26	1.05

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID
111	3.41	0.12	0.20	5.45	1.90	0.94	0.42	2.93	3.75	0.10	0.14	7.15	2.19
112	4.28	0.41	0.52	11.29	1.81	1.24	0.84	6.33	2.57	0.02	0.04	5.95	2.24
113	1.35	0.13	0.18	6.75	1.46	0.42	0.28	2.68	1.40	0.02	0.03	6.31	1.38
114	2.25	0.02	0.02	25.61	3.99	0.26	0.07	1.37	1.67	-0.01	-0.01	18.09	3.92
115	2.04	0.07	0.09	7.03	1.49	0.58	0.36	2.05	1.51	0.04	0.05	5.63	1.57
116	2.29	0.19	0.34	6.66	2.99	1.30	0.59	7.69	2.34	0.15	0.24	8.57	2.06
117	1.99	0.18	0.71	3.64	1.11	1.28	2.18	5.04	1.88	0.14	0.46	3.56	1.14
118	11.41	0.00	0.00	4.72	2.10	1.83	0.37	7.21	5.67	0.08	0.10	7.14	2.43
119	2.10	0.19	0.53	4.31	1.51	1.57	1.64	13.96	1.89	0.18	0.48	4.88	1.73
120	2.86	0.06	0.15	3.52	1.64	0.95	1.23	15.12	2.25	0.06	0.15	3.27	2.11
121	1.35	0.00	0.00	4.08	1.81	0.19	0.34	0.59	0.83	0.00	0.00	6.54	2.63
122	0.40	0.01	0.11	1.56	0.85	0.41	5.95	0.84	0.75	-0.04	-0.03	1.91	0.91
123	2.63	0.06	0.09	5.56	1.73	1.15	0.90	3.58	2.58	0.05	0.09	5.37	2.10
124	1.32	0.04	0.05	7.40	2.60	0.32	0.21	2.05	0.85	0.03	0.04	7.96	3.52
125	5.50	0.05	0.10	2.31	0.52	1.11	1.68	2.05	4.45	0.00	0.00	1.66	0.76
126	2.05	0.06	0.09	9.24	2.31	1.57	0.57	7.18	1.98	0.02	0.03	6.59	1.93
127	3.08	0.14	0.20	6.79	2.06	0.68	0.29	2.23	2.13	0.10	0.13	8.27	1.96
128	1.12	0.05	0.10	4.83	1.76	0.79	1.21	18.79	1.59	0.09	0.19	4.30	2.13
129	2.41	0.24	0.35	8.54	1.69	0.67	0.50	1.12	2.90	0.16	0.25	7.59	2.80
130	17.85	0.04	0.06	2.79	1.28	0.41	0.33	61.18	3.34	0.07	0.09	4.36	1.06
131	6.46	0.26	1.23	4.00	0.83	1.46	2.37	86.41	8.00	0.08	0.29	1.20	1.61
132	1.39	0.02	0.07	1.91	1.31	0.89	1.90	5.09	1.47	0.00	0.01	3.12	1.36
133	2.80	0.33	0.48	9.56	4.15	1.47	0.26	9.96	2.29	0.20	0.26	11.70	2.36
134	2.07	0.03	0.03	14.41	3.86	0.86	0.22	86.41	2.00	-0.02	-0.02	9.29	2.52
135	1.36	0.10	0.46	1.54	1.00	0.83	1.89	5.33	1.46	0.12	0.35	2.83	1.29
136	0.80	0.02	0.05	1.20	9.80	0.33	0.09	2.25	0.49	0.03	0.04	16.91	0.89
137	8.96	-0.12	-0.14	10.42	1.62	0.88	0.23	4.79	3.18	-0.06	-0.08	5.56	2.92
138	1.79	0.02	0.03	7.10	2.04	0.87	0.49	2.35	1.56	0.02	0.03	7.76	2.72
139	2.54	0.00	0.02	0.76	1.22	1.06	1.84	16.19	2.04	0.01	0.03	1.92	1.77
140	3.50	0.01	0.01	12.61	1.88	0.23	0.10	0.35	1.52	0.00	0.00	14.72	1.18
141	3.34	0.03	0.05	2.67	1.08	1.05	0.42	6.36	3.63	0.02	0.03	3.88	2.43
142	2.03	0.28	0.37	12.80	4.84	1.36	0.27	44.11	2.36	0.20	0.30	11.11	3.80
143	0.63	0.10	0.28	4.16	1.42	0.51	1.71	2.11	0.69	0.09	0.25	4.65	1.36
144	3.02	0.28	0.41	8.33	3.90	1.00	0.26	18.87	1.57	0.15	0.19	10.45	3.69
145	1.58	0.11	0.15	8.11	5.05	0.66	0.19	3.46	1.54	0.07	0.08	11.42	2.19
146	4.14	0.05	0.18	2.51	0.62	1.94	2.25	2.84	4.60	0.03	0.08	2.84	0.89
147	4.32	0.28	0.86	5.84	2.83	2.50	1.26	86.41	4.80	0.05	0.12	9.64	3.44

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID
148	2.54	0.06	0.95	12.42	1.24	1.46	1.13	2.65	2.76	0.03	0.67	7.66	1.45
149	4.44	0.01	0.01	9.39	2.68	1.11	0.32	184.95	3.67	0.03	0.04	8.39	3.28
150	11.52	0.04	0.06	6.69	0.49	0.61	0.37	1.32	5.01	0.04	0.06	5.90	0.90
151	1.96	0.03	0.11	1.80	0.72	0.69	1.52	1.55	1.97	0.06	0.15	2.98	0.77
152	2.30	0.03	0.04	5.10	2.28	0.49	0.30	1.90	2.63	0.01	0.01	6.31	1.41
153	0.45	0.00	0.00	11.44	0.96	0.33	2.30	86.41	0.49	0.04	0.13	0.83	0.89
154	0.84	0.32	0.58	6.13	0.96	0.33	2.30	86.41	0.49	0.04	0.13	0.83	0.89
155	3.49	0.05	0.05	18.15	4.42	0.52	0.28	8.49	1.68	0.00	0.00	9.36	3.77
156	1.80	0.00	0.01	4.95	1.62	0.93	0.46	4.39	1.86	0.00	0.00	5.66	1.77
157	0.36	0.00	0.00	4.35	1.25	0.19	1.75	0.73	0.27	0.00	0.01	3.67	1.46
158	5.90	0.02	0.03	3.66	1.66	0.32	0.30	49.12	17.58	-0.02	-0.03	4.18	2.94
159	2.32	0.09	0.11	8.28	4.79	0.93	0.18	3.79	1.78	0.02	0.02	10.99	1.93
160	2.38	0.15	0.91	1.93	1.24	1.67	3.61	64.14	3.31	0.03	0.13	3.91	1.43
161	3.99	0.10	0.19	6.26	2.11	1.21	1.34	8.60	3.05	0.07	0.17	5.58	2.87
162	2.46	0.24	0.46	6.43	2.43	0.70	0.59	21.56	1.50	0.11	0.19	7.45	3.48
163	3.57	0.15	0.39	4.02	0.88	1.28	1.14	2.57	2.84	0.02	0.04	4.02	1.24
164	3.28	-0.02	-0.03	6.21	2.31	0.89	0.23	4.45	3.35	0.04	0.05	8.34	2.48
165	0.99	0.06	0.34	1.89	1.37	1.22	2.42	411.09	1.41	0.21	0.71	4.42	1.55
166	2.58	0.08	0.25	2.71	1.67	1.32	0.95	12.34	1.71	0.21	0.41	6.24	1.96
167	1.80	0.15	0.19	7.95	3.96	0.55	0.13	3.74	2.62	0.01	0.01	11.68	4.68
168	2.46	0.01	0.03	0.92	1.15	1.20	0.76	32.45	2.51	0.04	0.07	2.73	2.37
169	1.89	0.01	0.02	6.73	3.68	1.13	0.35	6.55	2.20	0.02	0.02	7.62	2.15
170	2.07	0.03	0.07	4.31	5.30	0.83	0.69	1.28	1.70	0.10	0.17	6.49	4.35
171	0.01	-0.04	-0.49	-0.38	1.80	0.19	0.14	1.19	0.94	-0.04	-0.05	4.68	2.28
172	2.43	0.12	0.18	6.38	3.03	0.90	0.59	26.57	2.47	0.12	0.19	7.17	3.59
173	1.62	0.03	0.05	5.42	1.62	0.46	0.39	1.38	3.44	0.03	0.04	6.37	1.20
174	3.07	0.03	0.03	9.12	2.30	0.44	0.28	3.15	2.34	0.08	0.10	6.44	3.87
175	2.28	0.03	0.04	3.90	0.65	0.01	0.37	109.07	0.10	-0.03	-0.05	2.64	1.15
176	2.87	0.23	0.31	10.94	3.81	1.70	0.25	22.06	3.27	0.19	0.23	11.74	4.29
177	4.73	0.09	0.23	4.66	1.03	1.41	0.95	2.92	4.43	0.06	0.12	5.82	1.31
178	2.36	0.08	0.13	5.94	3.72	0.89	0.29	2.85	1.91	0.06	0.08	9.16	5.14
179	2.97	0.18	0.26	7.85	2.34	0.83	0.39	3.16	2.19	0.11	0.15	8.63	2.83
180	2.14	0.01	0.01	4.92	1.25	0.41	0.04	1.85	3.19	0.01	0.01	3.45	0.87
181	3.84	0.12	0.13	18.67	1.97	0.52	0.12	1.33	3.48	0.06	0.06	13.55	2.93
182	1.95	0.16	0.22	9.02	4.54	0.65	0.18	2.64	1.88	0.05	0.06	12.14	4.96
183	3.07	0.35	0.48	10.35	8.90	0.93	0.10	3.92	2.04	0.18	0.20	19.44	3.30
184	4.34	0.10	0.11	9.84	3.06	0.63	0.10	1.98	2.91	0.02	0.02	14.28	2.01

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID
185	3.29	0.05	0.07	14.10	2.79	0.38	0.14	585.54	2.69	0.21	0.24	17.98	1.65
186	3.92	0.01	0.02	-0.70	0.60	0.46	2.65	5.56	3.15	0.02	0.07	0.28	0.52
187	3.23	0.02	0.22	2.71	1.27	2.92	6.68	19.53	4.03	0.04	0.29	2.77	1.30
188	2.01	0.01	0.05	1.46	0.76	0.78	5.24	2.22	2.03	0.01	0.05	1.77	0.76
189	9.88	0.00	0.01	1.26	0.53	2.19	3.51	6.25	11.01	-0.08	-0.04	0.48	0.33
190	1.90	0.00	0.01	-0.62	0.33	0.46	4.12	1.47	1.99	-0.02	-0.09	-1.51	0.42
191	2.55	-0.01	-0.03	1.67	0.51	0.63	1.65	2.59	2.33	-0.07	-0.02	0.27	0.52
192	1.71	0.01	0.02	2.36	1.12	0.42	0.52	2.71	1.50	0.00	0.01	2.86	1.08
193	1.68	0.10	0.32	3.89	1.91	0.99	2.10	6.79	1.93	0.07	0.21	3.80	1.52
194	5.66	0.07	0.44	-0.92	0.64	1.03	5.84	8.16	2.79	0.03	0.23	-0.53	0.43
195	1.26	0.01	0.02	2.05	1.39	0.66	1.57	10.58	1.43	0.00	0.00	2.70	1.53
196	8.85	-0.03	0.32	-5.40	0.62	3.41	4.36	20.38	9.16	-0.02	-0.09	-2.21	0.88
197	2.00	0.03	0.06	3.40	0.98	1.02	0.86	25.90	2.82	0.02	0.03	1.89	0.68
198	2.90	0.12	0.17	6.84	3.29	0.70	0.24	19.96	2.44	0.06	0.08	8.38	3.95
199	2.07	0.07	0.27	3.83	0.81	1.09	2.48	3.44	2.10	0.08	0.29	2.49	1.32
200	1.70	0.01	0.21	1.01	1.80	0.69	14.80	6.29	1.26	0.00	-0.05	2.54	1.62
201	4.12	0.18	0.50	4.64	0.79	1.75	1.32	2.08	4.03	0.18	0.41	4.98	0.76
202	6.85	0.13	0.34	3.32	1.05	1.84	1.81	69.31	6.90	0.03	0.10	3.57	0.98
203	3.82	0.04	0.12	1.14	0.36	0.42	1.97	19.96	3.51	-0.02	-0.06	-0.55	0.38
204	1.58	0.11	0.23	6.10	1.17	0.73	1.43	2.68	1.29	0.01	0.02	4.13	1.39
205	2.41	0.00	0.01	3.72	1.01	0.78	1.02	6.08	1.87	0.00	0.00	1.68	1.06
206	1.85	0.09	0.24	4.28	1.08	1.08	1.53	4.03	1.70	0.06	0.16	4.00	1.19
207	3.89	0.01	0.02	1.94	0.78	0.83	1.23	15.18	2.48	-0.02	-0.04	-0.60	0.50
208	2.99	0.18	0.64	1.85	1.06	0.62	2.13	21.66	5.63	0.03	0.10	4.06	1.15
209	1.77	0.01	0.05	1.87	0.63	0.43	2.42	1.22	1.23	0.00	0.01	1.39	0.72
210	3.71	0.15	0.28	3.89	1.62	0.62	1.00	4.13	2.76	0.09	0.18	4.47	
211	1.20	0.01	0.02	2.61	1.03	0.62	0.73	1.32	1.83	0.02	0.03	4.66	1.92
212	13.62	0.09	0.18	3.38	0.60	2.26	0.89	7.16	14.43	0.05	0.09	3.25	0.87
213	1.21	0.02	0.11	2.41	1.22	1.18	3.92	14.70	1.51	0.05	0.26	2.67	1.42
214	0.87	0.00	0.00	4.61	2.21	0.39	0.71	7.76	0.72	0.01	0.01	3.88	1.77
215	2.24	0.00	0.01	2.70	1.71	0.40	0.57	7.18	2.17	-0.03	-0.05	3.08	2.10
216	1.70	0.08	0.12	5.68	1.53	0.59	0.43	4.69	1.45	0.05	0.07	6.14	1.74
217	1.45	0.05	0.13	5.83	1.66	0.93	1.44	3.25	1.33	0.04	0.09	5.45	1.88
218	1.66	0.21	0.36	7.63	1.87	0.55	0.83	1.70	1.67	0.18	0.32	7.17	2.25
219	1.74	0.14	0.27	5.16	1.86	1.15	0.60	5.38	1.76	0.14	0.24	6.13	1.98
220	2.22	0.04	0.22	0.55	0.53	0.51	1.93	3.52	2.45	0.07	0.21	1.27	0.46
221	2.54	0.18	0.38	4.59	1.30	1.07	1.08	5.54	1.93	0.19	0.40	4.61	1.74

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID
222	4.67	0.26	0.42	7.07	0.98	1.31	0.68	3.34	4.10	0.19	0.32	6.14	1.22
223	2.66	0.01	0.02	3.06	1.31	0.84	0.77	3.54	2.12	0.01	0.02	4.07	1.20
224	3.04	0.03	0.03	2.24	1.57	0.53	0.33	7.95	2.22	0.19	0.26	7.64	1.44
225	2.25	0.10	0.17	4.12	1.45	0.96	0.63	2.35	2.38	0.16	0.26	5.90	1.68
226	3.11	0.04	0.06	6.81	1.85	1.25	0.33	2.63	3.21	0.02	0.03	7.41	2.09
227	0.53	0.13	0.21	8.10	2.70	0.41	0.46	19.96	0.51	0.10	0.14	8.33	2.69
228	10.44	0.05	0.34	1.90	1.54	1.69	1.62	19.96	5.77	0.03	0.09	4.79	1.21
229	1.96	0.25	0.37	7.26	2.19	0.92	0.45	4.92	1.74	0.03	0.38	7.43	2.60
230					3.33	0.56	0.22	0.87	1.80	0.04	0.05	11.23	2.39
231	2.88	0.25	0.55	6.64	0.80	0.87	1.73	1.73	2.05	0.03	0.08	3.78	0.87
232	2.13	0.04	1.20	4.76	1.05	1.64	6.83	19.96	2.10	0.03	0.02	2.54	1.33
233	1.80	0.08	0.14	5.38	3.72	0.56	0.40	2.39	1.48	0.05	0.07	7.62	0.83
234	1.10	0.03	0.62	8.21	3.30	0.87	0.39	19.96	1.31	0.03	0.41	10.45	1.79
235	7.66	0.08	0.11	2.75	0.73	0.68	0.30	8.55	6.18	0.09	0.11	4.01	1.04
236	1.45	-0.02	-0.03	4.89	1.08	0.44	0.52	1.82	1.26	-0.05	-0.07	3.38	1.08
237	2.49	0.19	0.29	8.14	2.66	0.62	0.55	1.57	2.12	0.08	0.13	7.70	1.51
238	3.67	0.07	0.11	5.90	1.65	1.73	0.43	5.98	3.80	0.09	0.13	6.52	2.10
239					0.52	2.90	0.21	13.39	4.35	0.11	0.16	12.65	4.42
240	1.90	0.06	0.17	3.16	1.44	1.37	1.69	35.77	1.98	0.12	0.32	3.93	1.55
241	2.30	0.00	0.00	7.63	1.87	0.81	0.70	2.68	1.79	0.03	0.05	6.99	1.43
242	2.23	0.04	0.07	3.28	3.28	0.55	0.43	2.89	1.58	-0.01	-0.01	5.00	4.15
243	3.05	0.08	0.11	6.98	2.75	1.14	0.26	9.25	2.59	-0.07	-0.09	7.21	2.81
244	2.69	0.21	0.32	7.39	2.19	0.61	0.49	24.58	1.96	0.03	0.38	6.40	2.18
245	7.18	0.10	0.12	8.37	4.30	0.42	0.06	54.60	5.15	0.11	0.11	2.00	0.61
246	6.32	0.11	0.19	5.37	0.67	1.40	0.69	2.31	5.57	0.10	0.17	5.71	0.61
247	1.49	0.00	0.01	2.07	1.15	0.83	1.85	2.65	1.57	-0.02	-0.06	2.86	1.31
248	2.99	0.10	0.38	4.66	2.45	1.00	3.17	16.70	2.03	0.03	0.14	4.04	2.54
249	2.58	0.13	0.23	5.95	2.94	0.67	0.66	7.43	2.13	0.13	0.22	7.13	4.05
250	2.05	0.07	0.09	7.38	2.61	0.90	0.30	7.52	2.52	0.05	0.07	7.90	3.16
251	4.42	0.05	0.06	8.92	2.79	1.08	0.15	3.03	4.28	0.05	0.05	11.08	2.12
252	5.13	-0.05	-0.06	8.31	1.83	0.17	0.12	162.25	7.83	-0.05	-0.06	6.92	1.67
253	2.66	0.04	0.10	5.34	1.75	0.83	1.05	1.78	2.83	0.04	0.09	6.10	1.05
254	2.57	0.05	0.06	12.09	1.22	0.87	0.43	1.37	3.06	0.04	0.06	7.00	1.38
255	2.40	0.03	0.04	14.78	4.30	1.06	0.19	9.43	2.34	0.03	0.03	9.97	4.47
256	1.62	0.17	0.21	12.82	3.25	0.92	0.38	38.22	1.40	0.21	0.29	10.61	5.12
257	2.35	0.08	0.19	4.51	1.35	1.42	0.98	3.47	2.64	0.07	0.14	5.17	1.32
258	3.83	0.20	0.35	8.86	0.65	1.23	0.50	16.07	2.67	0.03	0.42	10.38	3.34

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID
259	2.37	0.05	0.10	4.27	1.33	1.16	0.71	4.58	2.18	0.05	0.08	5.32	1.32
260	2.98	0.23	0.36	8.55	1.46	1.04	0.51	1.54	3.03	0.17	0.26	8.39	1.64
261	2.33	0.19	0.33	6.94	1.51	1.50	1.00	4.99	2.29	0.16	0.32	6.41	1.64
262	1.72	0.20	0.36	6.85	0.55	0.67	0.49	16.72	1.00	0.01	0.01	7.84	2.79
263	1.81	0.22	0.67	4.45	1.55	1.24	1.28	30.69	2.18	0.15	0.34	4.92	2.02
264	2.34	0.03	0.06	2.65	0.76	0.29	0.94	1.07	1.37	0.03	0.05	2.24	1.55
265	1.54	0.10	0.21	4.61	1.18	0.41	1.12	1.29	1.49	0.04	0.07	3.61	1.16
266	2.16	0.20	0.28	7.37	3.10	0.56	0.18	3.22	2.64	0.08	0.09	11.10	2.26
267	4.12	0.16	0.27	4.03	2.02	1.16	0.39	68.45	7.04	0.06	0.08	5.94	1.76
268	3.58	0.25	0.62	6.32	1.33	1.06	1.02	2.32	2.55	0.13	0.27	6.57	1.95
269	2.65	0.05	0.08	3.42	1.23	0.52	0.46	4.54	2.19	0.04	0.05	4.97	1.28
270	1.37	0.04	0.08	3.58	2.71	0.51	0.53	8.15	1.41	0.05	0.07	5.51	4.00
271	3.07	0.07	0.15	3.87	1.39	0.82	0.75	2.83	3.69	0.06	0.12	4.36	2.18
272	2.13	0.20	0.84	2.99	1.04	1.61	1.97	8.25	2.37	0.20	0.61	3.48	1.04
273	1.20	0.01	0.02	2.61	1.03	0.62	0.73	1.32	1.83	0.02	0.03	4.66	1.92
274	13.62	0.09	0.18	3.38	0.60	2.26	0.89	7.16	14.43	0.05	0.09	3.25	0.87
275	1.21	0.02	0.11	2.41	1.22	1.18	3.92	14.70	1.51	0.05	0.26	2.67	1.42
276	0.87	0.00	0.00	4.61	2.21	0.39	0.71	7.76	0.72	0.01	0.01	3.88	1.77
277	2.24	0.00	0.01	2.70	1.71	0.40	0.57	7.18	2.17	-0.03	-0.05	3.08	2.10
278	1.70	0.08	0.12	5.68	1.53	0.59	0.43	4.69	1.45	0.05	0.07	6.14	1.74
279	1.45	0.05	0.13	5.83	1.66	0.93	1.44	3.25	1.33	0.04	0.09	5.45	1.88
280	1.66	0.21	0.36	7.63	1.87	0.55	0.83	1.70	1.67	0.18	0.32	7.17	2.25
281	1.74	0.14	0.27	5.16	1.86	1.15	0.60	5.38	1.76	0.14	0.24	6.13	1.98
282	2.22	0.04	0.22	0.55	0.53	0.51	1.93	3.52	2.45	0.07	0.21	1.27	0.46
283	2.54	0.18	0.38	4.59	1.30	1.07	1.08	5.54	1.93	0.19	0.40	4.61	1.74
284	4.67	0.26	0.42	7.07	0.98	1.31	0.68	3.34	4.10	0.19	0.32	6.14	1.22
285	2.66	0.01	0.02	3.06	1.31	0.84	0.77	3.54	2.12	0.01	0.02	4.07	1.20
286	3.04	0.03	0.03	2.24	1.57	0.53	0.33	7.95	2.22	0.19	0.26	7.64	1.44
287	2.25	0.10	0.17	4.12	1.45	0.96	0.63	2.35	2.38	0.16	0.26	5.90	1.68
288	3.11	0.04	0.06	6.81	1.85	1.25	0.33	2.63	3.21	0.02	0.03	7.41	2.09
289	0.53	0.13	0.21	8.10	2.70	0.41	0.46	19.96	0.51	0.10	0.14	8.33	2.69
290	10.44	0.05	0.34	1.90	1.54	1.69	1.62	19.96	5.77	0.03	0.09	4.79	1.21
291	1.96	0.25	0.37	7.26	2.19	0.92	0.45	4.92	1.74	0.03	0.38	7.43	2.60
292					3.33	0.56	0.22	0.87	1.80	0.04	0.05	11.23	2.39
293	2.88	0.25	0.55	6.64	0.80	0.87	1.73	1.73	2.05	0.03	0.08	3.78	0.87
294	2.13	0.04	1.20	4.76	1.05	1.64	6.83	19.96	2.10	0.03	0.02	2.54	1.33
295	1.80	0.08	0.14	5.38	3.72	0.56	0.40	2.39	1.48	0.05	0.07	7.62	0.83

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID
296	1.10	0.03	0.62	8.21	3.30	0.87	0.39	19.96	1.31	0.03	0.41	10.45	1.79
297	7.66	0.08	0.11	2.75	0.73	0.68	0.30	8.55	6.18	0.09	0.11	4.01	1.04
298	1.45	-0.02	-0.03	4.89	1.08	0.44	0.52	1.82	1.26	-0.05	-0.07	3.38	1.08
299	2.49	0.19	0.29	8.14	2.66	0.62	0.55	1.57	2.12	0.08	0.13	7.70	1.51
300	3.67	0.07	0.11	5.90	1.65	1.73	0.43	5.98	3.80	0.09	0.13	6.52	2.10
301					0.52	2.90	0.21	13.39	4.35	0.11	0.16	12.65	4.42
302	1.90	0.06	0.17	3.16	1.44	1.37	1.69	35.77	1.98	0.12	0.32	3.93	1.55
303	2.30	0.00	0.00	7.63	1.87	0.81	0.70	2.68	1.79	0.03	0.05	6.99	1.43
304	2.23	0.04	0.07	3.28	3.28	0.55	0.43	2.89	1.58	-0.01	-0.01	5.00	4.15
305	3.05	0.08	0.11	6.98	2.75	1.14	0.26	9.25	2.59	-0.07	-0.09	7.21	2.81
306	1.33	0.03	0.06	5.51	2.03	0.74	0.60	1.98	1.29	0.03	0.05	6.31	1.69
307	2.57	0.19	0.39	5.40	2.08	1.48	0.50	6.63	2.63	0.21	0.31	8.83	2.57
308	2.92	0.04	0.48	11.46	3.72	0.78	0.16	2.62	2.57	0.17	0.20	13.63	4.83
309	3.01	0.02	0.02	10.79	1.94	0.59	0.23	4.23	2.23	0.01	0.02	7.05	2.43
310	1.67	0.08	0.12	2.92	1.45	0.38	0.39	3.42	1.28	0.04	0.06	5.29	1.67
311	1.38	0.14	0.18	10.82	0.76	0.65	0.21	13.56	0.94	0.14	0.17	12.90	1.15
312	2.29	0.18	0.61	4.41	1.65	1.95	0.99	6.13	2.99	0.20	0.40	6.77	2.47
313	1.37	0.03	0.07	2.97	1.65	0.68	0.53	1.93	1.30	0.05	0.07	6.09	2.21
314	1.33	0.03	0.06	5.51	2.03	0.74	0.60	1.98	1.29	0.03	0.05	6.31	1.69
315	2.57	0.19	0.39	5.40	2.08	1.48	0.50	6.63	2.63	0.21	0.31	8.83	2.57
316	2.92	0.04	0.48	11.46	3.72	0.78	0.16	2.62	2.57	0.17	0.20	13.63	4.83
317	3.01	0.02	0.02	10.79	1.94	0.59	0.23	4.23	2.23	0.01	0.02	7.05	2.43
318	1.67	0.08	0.12	2.92	1.45	0.38	0.39	3.42	1.28	0.04	0.06	5.29	1.67
319	1.38	0.14	0.18	10.82	0.76	0.65	0.21	13.56	0.94	0.14	0.17	12.90	1.15
320	2.29	0.18	0.61	4.41	1.65	1.95	0.99	6.13	2.99	0.20	0.40	6.77	2.47
321	1.37	0.03	0.07	2.97	1.65	0.68	0.53	1.93	1.30	0.05	0.07	6.09	2.21
322	2.12	0.01	0.06	3.12	1.24	1.15	4.46	4.78	1.80	0.00	0.01	2.65	1.09
323	4.34	0.02	0.08	-0.26	0.74	1.06	1.89	10.47	2.60	0.01	0.03	0.39	0.54
324	1.34	0.06	0.16	2.23	0.90	0.56	1.54	2.07	1.25	0.06	0.15	2.54	0.78
325	2.89	-0.06	-0.16	-1.07	0.63	0.44	1.22	52.87	2.00	0.09	0.21	1.43	1.27
326	1.58	0.02	0.17	2.65	1.05	0.72	4.65	0.62	1.53	0.07	0.39	3.32	1.07
327	2.35	0.03	0.12	1.02	0.67	1.05	2.02	4.45	2.85	0.05	0.15	1.62	0.63
328	0.54	0.11	0.90	2.35	1.04	0.36	6.50	1.39	0.46	0.07	0.53	2.24	1.04
329	1.97	0.03	0.05	5.30	1.13	0.66	0.71	11.41	1.96	0.03	0.05	3.72	0.95
330	2.52	0.02	0.13	2.34	1.15	1.46	4.96	7.97	2.37	0.02	0.10	2.30	1.24
331	7.90	0.10	0.25	0.54	0.73	0.65	1.00	41.78	8.61	0.04	0.09	0.95	0.37
332	4.44	0.19	0.17	2.18	1.11	3.80	6.21	21.54	4.61	0.15	0.11	2.13	1.08

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID
333	2.42	-0.17	-0.30	4.98	2.61	1.36	0.54	14.56	1.98	0.01	0.02	5.60	2.26
334	5.92	0.00	0.01	1.44	0.92	1.15	1.14	8.96	3.78	0.00	0.01	1.78	1.01
335	3.31	-0.04	-0.06	3.20	0.67	0.29	0.52	33.77	5.11	-0.06	-0.09	1.68	0.20
336	0.40	0.00	0.01	8.23	1.91	0.48	0.76	6.17	0.63	0.01	0.02	5.93	2.16
337	1.92	0.21	0.34	7.24	3.48	1.39	0.39	9.95	1.54	0.02	0.28	8.25	4.73
338	2.60	0.31	0.48	7.38	1.09	0.93	0.65	1.93	2.40	0.10	0.16	6.44	1.13
339	2.63	0.19	0.26	9.62	2.91	1.08	0.20	2.08	2.42	0.05	0.07	11.30	3.41
340	1.84	0.09	0.29	2.33	1.04	0.92	2.07	4.08	1.48	0.05	0.15	2.14	1.68
341	7.15	0.08	0.12	3.86	0.64	1.07	0.63	5.26	8.31	0.07	0.11	2.84	0.29
342	1.69	0.10	0.16	7.71	2.33	1.13	0.48	5.04	1.50	0.08	0.12	8.22	2.17
343	2.93	0.25	0.45	6.93	1.45	1.68	0.79	8.20	2.86	0.03	0.57	6.86	1.31
344	6.87	0.13	0.32	3.95	0.53	1.51	1.03	2.84	8.03	0.11	0.23	4.87	0.55
345	5.83	0.11	0.19	4.24	1.17	1.54	0.79	4.46	3.84	0.15	0.28	4.79	1.70
346	5.08	0.11	0.17	5.36	1.88	0.83	0.30	2.61	6.29	0.01	0.15	8.21	1.93
347	2.64	0.15	0.50	3.98	1.31	1.65	1.76	7.21	2.17	0.00	0.01	3.80	1.16
348	1.10	0.03	0.06	3.35	1.18	0.60	0.89	3.38	1.19	0.05	0.09	3.90	1.44
349	3.36	0.22	0.28	11.20	3.46	0.92	0.16	3.57	3.40	0.16	0.18	13.08	2.91
350	1.73	0.09	0.23	4.12	1.35	1.08	1.60	6.87	1.40	0.11	0.29	3.71	1.46
351	3.56	0.07	0.13	5.50	0.80	1.25	1.00	2.57	3.50	0.08	0.16	3.97	0.88
352	5.70	0.14	0.17	11.82	1.25	0.60	0.66	2.12	7.84	0.14	0.24	5.49	2.39
353	2.64	0.18	0.30	6.26	1.28	0.93	0.65	4.16	2.26	0.14	0.23	5.53	1.83
354	4.38	0.05	0.11	3.84	1.07	0.99	1.44	6.39	3.09	0.08	0.19	3.61	1.15
355	2.35	0.21	0.55	5.22	1.11	1.02	1.22	3.33	1.89	0.04	0.08	4.25	1.40
356	10.74	0.09	0.21	2.70	0.94	3.12	0.78	11.86	2.19	0.08	0.15	3.88	1.28
357	2.76	0.35	0.65	7.79	1.71	0.96	1.04	12.04	2.55	0.03	0.06	6.33	3.51
358	4.86	0.02	0.05	1.04	0.53	0.40	2.09	0.89	3.64	0.03	0.10	1.24	0.96
359	2.73	0.26	0.31	11.40	1.05	0.55	0.43	0.96	2.76	0.17	0.25	6.49	1.46
360	4.08	0.18	0.31	5.53	1.20	0.79	0.72	7.90	3.98	0.14	0.24	4.89	1.46
361	6.70	0.04	0.15	2.10	1.08	3.58	1.39	11.43	10.71	0.00	0.01	3.32	0.99
362	5.02	0.10	0.13	11.99	3.09	1.65	0.23	4.92	4.26	0.07	0.09	11.35	3.37
363	5.06	0.09	0.12	8.47	3.76	0.91	0.23	1.91	4.61	0.03	0.04	9.55	1.36
364	3.33	0.09	0.13	7.89	3.95	0.70	0.38	4.20	3.18	0.07	0.10	8.55	0.48
365	2.73	0.01	0.01	8.79	3.50	0.66	0.09	7.04	3.14	0.01	0.01	13.45	4.30
366	3.29	0.07	0.08	7.39	2.49	1.05	0.26	10.82	3.25	0.03	0.04	6.99	2.58
367	1.45	0.19	0.26	6.92	2.64	0.53	0.22	5.79	1.56	0.01	0.02	8.19	2.32
368	6.99	0.09	0.36	2.51	1.05	1.62	3.45	7.08	7.56	0.09	0.40	2.69	1.13
369	2.24	0.12	0.18	7.81	0.59	0.74	0.42	4.02	2.22	0.07	0.10	7.97	0.58

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID
370	2.47	0.24	0.34	6.73	2.16	1.08	0.34	13.74	2.47	0.02	0.31	8.19	2.05
371	5.96	0.24	0.37	5.58	1.81	1.08	0.36	9.40	9.35	0.13	0.18	7.24	1.67
372	4.89	-0.10	-0.13	3.96	2.61	1.48	0.25	6.36	3.69	-0.06	-0.07	5.71	1.27
373	3.14	0.00	0.00	10.61	1.08	0.30	0.23	0.61	2.32	-0.10	-0.12	7.55	1.41
374	1.70	0.01	0.01	6.14	2.42	0.85	0.35	4.02	1.75	0.04	0.06	6.80	2.27
375	3.17	-0.11	-0.14	-0.62	1.16	1.28	0.70	5.63	2.90	-0.05	-0.08	2.30	1.26
376	6.06	0.25	0.37	8.08	4.77	2.83	0.18	63.85	6.84	0.02	0.24	13.34	1.96
377	2.29	0.00	0.01	2.76	0.84	0.57	1.25	1.24	2.16	0.01	0.02	3.76	0.81
378	2.16	0.17	0.26	6.86	1.05	0.70	0.60	2.04	1.94	0.10	0.16	5.26	1.11
379	2.25	0.09	0.15	1.52	2.58	0.40	0.90	3.77	1.94	0.02	0.03	3.85	2.62
380	6.21	0.03	0.03	14.23	4.49	0.47	0.07	48.26	5.35	-0.05	-0.05	1.68	1.66
381	7.78	0.03	0.06	1.14	1.41	2.05	0.44	1.29	2.43	0.06	0.08	3.79	1.09
382	1.56	0.11	0.13	12.48	0.78	0.48	0.14	1.72	1.38	0.05	0.06	14.84	0.69
383	1.92	0.10	0.12	12.89	4.21	0.58	0.11	5.74	1.59	0.09	0.10	15.55	0.50
384	4.16	0.17	0.24	9.07	3.11	0.87	0.20	2.71	4.46	0.10	0.13	11.37	3.92
385	1.11	-0.02	-0.56	0.45	0.89	0.68	22.09	3.55	0.90	0.03	0.07	0.68	0.79
386	2.20	0.08	0.14	5.67	2.25	1.16	0.47	9.81	2.08	0.12	0.18	7.71	2.05
387	1.87	0.03	0.03	16.51	2.01	0.24	0.07	21.54	1.97	0.01	0.01	16.43	1.80
388	1.91	-0.03	-0.03	12.08	1.06	0.48	0.05	4.43	1.76	-0.02	-0.02	2.73	1.15
389	1.61	0.14	0.17	11.08	1.36	0.76	0.63	2.31	1.57	0.13	0.22	5.37	1.70
390	7.78	0.03	0.06	1.14	1.41	2.05	0.44	1.29	2.43	0.06	0.08	3.79	1.09
391	3.08	0.10	0.20	6.13	1.74	1.02	0.98	4.08	3.01	0.06	0.13	6.48	1.82
392													

	2010							2011						
Questinnaire No.	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID	ASTURN	D_E	INV_TURN	REC_TURN	ROA	ROE
1	0.87	7.43	5.61	1.70	0.01	0.05	2.45	1.27	0.97	7.83	4.78	1.76	-0.02	-0.16
2	1.07	21.69	4.84	2.41	-0.03	-0.62	-5.11	0.73	0.59	2.72	2.67	1.15	-0.05	-0.19
3	1.07	0.51	51.71	2.14	0.12	0.18	5.84	2.54	1.39	0.29	79.22	3.18	0.03	0.42
4	0.45	1.48	1.69	1.32	-0.07	-0.18	1.93	1.11	0.62	1.67	2.80	1.93	0.00	0.01
5	0.46	0.37	7.66	3.34	0.07	0.09	3.89	2.15	0.50	0.30	62.38	1.09	0.21	0.27
6	0.93	1.60	3.09	6.40	0.02	0.05	-0.03	0.32	0.89	1.83	4.36	4.45	0.01	0.03
7	0.94	9.22	75.29	15.54	-0.01	-0.07	0.51	1.17	1.11	2.85	201.85	17.28	0.17	0.65
8	0.25	5.36	25.81	0.29	0.06	0.36	1.78	1.16	0.26	5.90	21.96	0.27	0.08	0.56
9	0.65	1.77	4.98	1.31	0.01	0.03	1.03	0.79	0.63	1.61	3.72	1.45	-0.02	-0.05
10	1.68	1.51	99.37	2.38	0.17	0.43	5.47	1.62	1.72	1.80	139.58	2.63	0.14	0.39
11	1.48	1.74	9.45	2.57	0.04	0.12	4.29	1.39	1.18	2.57	10.30	2.58	0.02	0.07
12	1.00	2.60	22.24	1.57	0.05	0.18	3.51	1.51	0.85	2.37	16.00	1.38	0.00	0.00
13	0.48	1.45	2.40	0.66	0.01	0.02	3.99	1.57	0.43	1.21	2.12	0.56	0.00	0.01
14	1.15	7.22	4.16	1.72	0.01	0.06	0.67	0.85	1.10	6.73	5.06	1.54	0.01	0.06
15	1.55	2.92	6.51	2.38	0.00	0.02	1.34	1.08	1.58	2.79	7.35	2.07	0.01	0.03
16	0.81	1.37	26.11	0.99	0.11	0.25	4.41	1.57	0.76	1.94	38.69	0.93	0.04	0.13
17	1.21	0.74	65.38	2.24	0.10	0.17	4.36	1.34	1.14	0.56	123.28	2.47	0.04	0.07
18	1.07	5.47	12.69	1.31	-0.06	-0.37	0.71	1.00	0.96	4.77	7.93	1.21	0.00	0.02
19	2.00	1.45	25.81	2.74	0.13	0.32	5.64	1.96	1.78	1.44	21.96	2.32	0.09	0.23
20	0.54	1.86	0.67	2.73	0.00	0.00	2.59	0.77	0.49	1.85	0.56	2.66	0.00	0.00
21	0.55	0.52	1.42	3.87	0.01	0.01	3.47	0.63	0.52	0.71	1.03	3.18	0.01	0.01
22	0.70	2.17	2.85	2.04	0.00	0.01	-0.17	0.47	0.49	1.00	2.66	2.81	-0.06	-0.13
23	0.54	4.69	0.82	1.94	0.01	0.07	4.12	1.07	0.56	4.59	0.94	2.59	0.00	0.02
24	0.10	2.93	25.81	0.32	-0.04	-0.16	-2.96	0.56	0.38	1.91	21.96	1.13	0.05	0.15
25	1.42	0.96	47.51	3.84	0.02	0.04	6.95	1.84	1.40	1.81	21.96	1.69	0.00	0.01
26	0.39	0.46	4.07	1.65	0.00	0.01	4.27	1.23	0.37	0.48	1.41	1.48	0.01	0.02
27	1.09	3.47	2.69	1.78	0.03	0.14	2.05	1.00	1.34	3.11	4.86	2.09	0.07	0.28
28	1.67	2.35	8.55	2.94	0.02	0.07	2.79	1.18	1.65	2.36	10.21	2.56	0.04	0.15
29	0.89	0.46	10.95	2.82	0.00	0.00	3.85	1.18	0.92	0.48	4.78	2.85	0.00	0.00
30	1.62	2.13	3.30	2.80	0.05	0.18	5.82	1.31	1.23	0.91	1.76	2.53	0.03	0.51
31	3.05	1.61	16.05	10.50	-0.02	-0.05	2.23	0.68	2.64	2.10	10.42	10.57	-0.10	-0.30
32	0.57	1.89	9.44	1.79	0.00	0.01	1.76	0.87	0.34	2.57	1.90	1.30	0.00	0.01
33	0.44	0.71	20.52	2.36	-0.06	-0.10	5.15	6.85	0.23	0.82	25.33	1.63	-0.11	-0.20
34	2.17	0.52	128.02	5.77	0.23	0.35	9.04	2.15	0.89	0.85	96.58	1.57	0.11	0.20
35	0.10	0.69	0.34	0.55	-0.06	-0.10	1.22	0.73	0.11	0.43	0.32	0.75	-0.11	-0.16
36	0.29	5.64	0.81	0.44	0.03	0.22	1.78	0.97	0.33	4.21	0.91	0.50	0.07	0.34

Questinnaire No.	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
37	1.33	0.63	5.84	2.32	0.06	0.09	6.19
38	0.21	0.20	1.46	0.57	0.02	0.02	8.41
39	1.58	1.22	3.22	5.38	0.11	0.24	3.26
40	1.45	0.77	7.02	1.81	0.05	0.10	5.91
41	0.58	0.36	2.09	2.09	0.05	0.07	7.34
42	0.88	0.85	18.45	1.35	0.12	0.22	5.88
43	0.55	0.23	0.98	2.97	0.14	0.17	10.84
44	0.46	0.27	79.80	2.87	0.08	0.10	5.17
45	1.63	1.45	25.81	4.66	0.09	0.23	4.00
46	0.92	1.99	11.39	1.19	0.00	0.00	2.79
47	1.21	0.57	8.70	2.23	0.02	0.02	6.19
48	0.95	0.43	25.81	1.74	-0.03	-0.41	5.18
49	0.75	0.99	4.43	1.40	0.17	0.33	4.94
50	0.45	0.20	2.02	0.67	0.04	0.04	9.84
51	1.34	0.13	7.43	4.57	-0.02	-0.02	9.56
52	0.76	0.53	2.25	1.34	0.01	0.02	7.95
53	1.16	0.82	12.59	2.29	0.08	0.14	4.68
54	0.51	0.54	1.35	1.27	0.00	0.01	4.53
55	1.89	0.16	10.96	10.25	0.06	0.07	9.55
56	0.93	0.34	20.51	1.46	0.22	0.31	10.59
57	0.50	1.60	2.45	0.74	0.01	0.02	4.04
58	0.87	0.29	25.81	1.76	0.03	0.36	10.97
59	0.38	0.04	1.73	0.96	-0.02	-0.02	3.44
60	2.20	1.59	3.99	4.09	0.03	0.07	3.60
61	1.49	0.62	25.81	2.53	0.04	0.76	11.15
62	1.26	1.79	10.55	1.54	0.02	0.72	5.84
63	0.71	0.25	26.08	3.42	0.08	0.11	9.13
64	0.62	0.20	1.43	4.36	0.06	0.08	9.01
65	0.64	1.29	1.40	1.73	0.10	0.22	3.61
66	0.51	0.36	2.12	2.42	-0.04	-0.05	5.00
67	1.42	21.89	6.96	2.41	0.02	0.42	0.53
68	1.42	21.89	6.96	2.41	0.02	0.42	0.53
69	0.60	0.22	7.21	1.45	-0.02	-0.22	8.25
70	0.95	0.46	7.51	1.84	0.00	0.00	5.51
71	0.27	1.72	3.58	0.34	0.00	0.00	3.73
72	0.30	0.24	44.12	14.79	-0.03	-0.03	5.77
73	0.68	0.31	1.34	1.85	0.00	0.00	7.97

ACID	ASTURN	D_E	INV_TURN	REC_TURN	ROA	ROE
2.50	1.34	0.47	7.57	2.26	0.10	0.15
3.82	0.16	0.17	1.61	0.37	0.01	0.02
2.23	1.64	0.46	5.68	2.90	0.03	0.48
1.83	1.75	0.67	4.86	2.52	0.06	0.11
3.75	0.64	0.14	2.26	2.90	0.05	0.06
2.46	0.71	0.51	14.85	1.06	0.03	0.04
4.21	0.44	0.14	1.47	2.73	0.09	0.10
1.25	0.53	0.23	82.10	2.67	0.11	0.13
1.88	1.06	1.23	21.96	2.68	0.12	0.28
1.15	0.55	1.91	2.55	0.86	-0.03	-0.10
1.83	0.95	0.89	7.80	1.39	-0.02	-0.40
4.54	0.96	0.23	21.96	1.64	0.05	0.06
1.62	0.71	0.57	3.10	1.37	0.13	0.20
3.20	0.64	0.31	2.67	0.90	0.06	0.07
2.30	1.29	0.23	5.56	3.66	0.06	0.07
3.76	0.87	0.47	2.64	1.56	0.00	0.01
3.59	1.20	0.28	8.08	1.82	0.10	0.12
1.30	0.14	0.53	0.30	0.33	-0.03	-0.04
1.94	2.08	0.27	14.77	6.49	0.05	0.07
4.65	0.84	0.27	21.26	1.59	0.20	0.27
1.49	0.46	1.36	1.73	0.66	-0.01	-0.03
7.69	0.37	0.11	10.85	0.87	0.03	0.03
1.12	0.37	0.08	1.57	1.06	0.04	0.04
1.15	1.80	1.18	3.89	3.54	0.02	0.04
4.26	1.02	0.41	21.96	1.82	0.23	0.34
2.19	1.40	0.61	4.25	2.31	0.03	0.51
4.44	0.61	0.17	19.47	3.70	0.03	0.03
0.98	0.14	0.06	0.20	2.66	0.03	0.03
0.83	0.65	1.07	1.40	1.76	0.06	0.13
1.45	0.63	0.36	2.17	2.83	0.00	0.00
2.89	0.58	0.24	19.11	1.13	-0.02	-0.21
2.89	0.58	0.24	19.11	1.13	-0.02	-0.21
2.89	0.58	0.24	19.11	1.13	-0.02	-0.21
1.86	0.63	0.33	3.92	1.41	-0.01	-0.02
1.79	0.37	1.15	4.91	0.47	0.17	0.37
2.57	0.31	0.22	49.39	17.79	0.00	0.00
1.55	0.62	0.39	1.15	1.74	-0.03	-0.04

Questinnaire No.	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
74	1.84	2.12	55.94	2.80	0.03	0.79	5.00
75	1.11	0.74	7.37	3.33	0.07	0.12	7.01
76	0.42	0.31	16.85	0.88	-0.01	-0.01	8.75
77	1.66	1.05	3.45	2.67	0.16	0.33	5.96
78	0.75	0.23	4.34	2.44	0.02	0.03	8.23
79	1.25	1.68	43.86	1.61	0.20	0.56	5.35
80	1.17	0.67	9.47	1.63	0.14	0.24	6.63
81	0.46	0.09	1.96	2.48	0.00	0.00	15.07
82	1.50	0.40	33.10	2.52	0.07	0.10	6.57
83	1.03	0.53	5.36	2.00	0.01	0.01	5.67
84	0.40	0.81	25.81	1.57	-0.02	-0.03	4.65
85	0.40	0.16	1.87	1.48	-0.13	-0.15	6.24
86	1.03	0.47	26.33	2.20	0.08	0.12	8.29
87	1.15	1.94	19.01	1.41	0.03	0.09	3.25
88	0.31	0.12	76.58	9.73	0.01	0.02	10.77
89	0.51	0.39	61.31	1.00	0.15	0.20	6.11
90	0.55	1.80	15.87	0.88	0.06	0.16	1.43
91	0.54	0.24	7.20	2.07	0.04	0.05	12.22
92	0.97	1.18	2.95	3.20	0.02	0.04	4.20
93	0.53	0.27	5.68	2.59	0.03	0.04	4.83
94	0.89	0.68	1.72	2.83	0.03	0.04	7.03
95	0.70	1.26	20.23	0.86	0.08	0.17	4.96
96	0.82	0.75	25.81	1.35	0.14	0.24	4.48
97	1.08	0.82	2.66	3.17	-0.03	-0.05	4.31
98	0.28	0.11	1.11	1.64	-0.03	-0.04	10.60
99	0.54	0.14	1.62	2.32	0.02	0.03	11.22
100	0.63	0.40	2.74	1.06	-0.01	-0.01	8.08
101	0.73	1.74	25.81	1.03	0.01	0.03	2.74
102	1.06	0.39	4.51	2.30	0.11	0.15	8.81
103	1.23	0.74	4.84	2.26	0.17	0.30	6.35
104	0.85	1.38	2.42	1.20	0.01	0.03	2.93
105	1.09	0.76	7.48	1.82	0.13	0.22	5.60
106	0.56	0.40	25.81	1.79	0.00	0.01	3.36
107	0.74	0.55	16.77	1.40	0.07	0.10	4.12
108	0.66	0.30	156.21	4.40	0.10	0.13	5.99
109	0.65	0.13	4.71	1.47	-0.01	-0.01	12.88
110	1.35	2.04	124.86	4.20	0.13	0.41	2.51

ACID	ASTURN	D_E	INV_TURN	REC_TURN	ROA	ROE
1.59	1.98	1.60	4.66	2.79	0.14	0.37
3.57	1.05	0.41	8.60	3.78	0.07	0.10
3.60	0.28	0.22	3.41	0.62	-0.06	-0.07
1.41	1.70	0.91	3.98	2.58	0.17	0.33
4.03	0.77	0.12	4.48	3.43	0.02	0.02
2.02	1.24	0.88	404.97	1.56	0.15	0.28
2.42	1.18	0.43	5.58	1.72	0.16	0.22
2.20	0.41	0.22	0.98	2.62	-0.01	-0.01
2.12	1.31	0.48	15.22	2.07	0.11	0.17
2.05	1.01	0.83	6.04	1.99	0.05	0.08
1.35	0.16	0.66	21.96	2.35	-0.02	-0.37
4.94	0.44	0.10	1.70	1.77	-0.06	-0.07
3.75	1.01	0.34	8.43	2.09	0.05	0.06
1.64	1.35	1.24	102.26	1.61	0.02	0.56
1.41	0.34	0.12	103.42	9.69	0.04	0.04
2.16	0.46	0.32	62.15	1.01	0.15	0.19
1.05	0.24	1.16	1.07	0.46	0.01	0.03
4.37	0.50	0.29	9.83	2.47	0.00	0.00
1.07	1.19	0.72	3.23	3.99	0.05	0.09
1.25	0.46	0.26	3.82	1.89	0.02	0.02
3.06	0.74	0.54	1.59	2.33	0.07	0.11
1.77	0.54	0.97	8.76	0.68	0.04	0.08
2.55	1.02	0.47	21.96	1.65	0.03	0.49
4.76	1.15	0.77	3.18	3.69	-0.02	-0.28
2.25	0.29	0.10	1.09	1.42	-0.05	-0.05
3.43	0.56	0.10	1.59	3.50	0.01	0.01
4.80	0.62	0.20	3.51	1.22	-0.03	-0.04
1.53	0.68	1.03	21.96	1.04	0.01	0.02
3.48	0.95	0.29	4.00	2.07	0.10	0.14
1.77	1.52	0.49	4.58	3.31	0.08	0.12
0.76	0.48	1.17	-0.14	1.28	-0.03	-0.07
1.85	1.41	0.57	8.18	2.44	0.15	0.23
1.28	0.56	0.38	21.96	2.95	0.01	0.01
2.72	0.48	0.30	15.52	0.83	0.04	0.05
2.40	0.65	0.21	128.14	5.84	0.06	0.07
6.28	0.95	0.13	12.37	1.66	0.00	0.00
1.07	0.64	1.05	70.58	2.76	0.19	0.38

Questinnaire No.	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
111	0.91	0.45	3.98	2.30	0.11	0.16	7.44
112	1.38	0.50	24.19	2.78	0.06	0.09	6.72
113	0.38	0.25	1.71	1.42	0.02	0.03	7.05
114	0.22	0.06	1.12	1.50	-0.04	-0.04	19.60
115	0.52	0.28	1.80	1.55	0.00	0.00	6.19
116	1.23	0.62	7.74	2.04	0.10	0.17	7.35
117	1.50	1.87	5.92	2.39	0.11	0.31	3.44
118	2.12	0.34	8.43	4.97	0.18	0.24	8.76
119	1.71	1.12	17.09	2.01	0.18	0.39	5.52
120	0.78	0.82	13.73	1.62	0.05	0.11	4.30
121	0.29	0.24	1.04	1.69	-0.01	-0.01	7.53
122	0.29	5.64	0.81	0.44	0.03	0.22	1.78
123	1.33	0.63	5.84	2.32	0.06	0.09	6.19
124	0.21	0.20	1.46	0.57	0.02	0.02	8.41
125	1.58	1.22	3.22	5.38	0.11	0.24	3.26
126	1.45	0.77	7.02	1.81	0.05	0.10	5.91
127	0.58	0.36	2.09	2.09	0.05	0.07	7.34
128	0.88	0.85	18.45	1.35	0.12	0.22	5.88
129	0.55	0.23	0.98	2.97	0.14	0.17	10.84
130	0.46	0.27	79.80	2.87	0.08	0.10	5.17
131	1.63	1.45	25.81	4.66	0.09	0.23	4.00
132	0.92	1.99	11.39	1.19	0.00	0.00	2.79
133	1.21	0.57	8.70	2.23	0.02	0.02	6.19
134	0.95	0.43	25.81	1.74	-0.03	-0.41	5.18
135	0.75	0.99	4.43	1.40	0.17	0.33	4.94
136	0.45	0.20	2.02	0.67	0.04	0.04	9.84
137	1.34	0.13	7.43	4.57	-0.02	-0.02	9.56
138	0.76	0.53	2.25	1.34	0.01	0.02	7.95
139	1.16	0.82	12.59	2.29	0.08	0.14	4.68
140	0.51	0.54	1.35	1.27	0.00	0.01	4.53
141	1.89	0.16	10.96	10.25	0.06	0.07	9.55
142	0.93	0.34	20.51	1.46	0.22	0.31	10.59
143	0.50	1.60	2.45	0.74	0.01	0.02	4.04
144	0.87	0.29	25.81	1.76	0.03	0.36	10.97
145	0.38	0.04	1.73	0.96	-0.02	-0.02	3.44
146	2.20	1.59	3.99	4.09	0.03	0.07	3.60
147	1.49	0.62	25.81	2.53	0.04	0.76	11.15

ACID	ASTURN	D_E	INV_TURN	REC_TURN	ROA	ROE
4.52	0.85	0.16	3.14	3.51	0.06	0.07
2.44	1.50	0.42	12.29	2.80	0.15	0.22
1.39	0.36	0.25	1.60	1.34	0.02	0.02
3.38	0.27	0.06	1.24	1.81	-0.04	-0.05
1.92	0.41	0.23	1.56	1.15	-0.06	-0.07
1.73	1.34	0.62	6.56	2.13	0.12	0.20
1.39	1.49	1.17	6.35	2.15	0.07	0.17
2.05	2.96	0.32	6.53	6.66	0.04	0.54
2.41	1.52	0.60	16.20	1.75	0.13	0.21
2.48	0.84	0.64	14.54	1.90	0.07	0.11
1.71	0.23	0.29	0.79	1.19	0.00	0.00
0.97	0.33	4.21	0.91	0.50	0.07	0.34
2.50	1.34	0.47	7.57	2.26	0.10	0.15
3.82	0.16	0.17	1.61	0.37	0.01	0.02
2.23	1.64	0.46	5.68	2.90	0.03	0.48
1.83	1.75	0.67	4.86	2.52	0.06	0.11
3.75	0.64	0.14	2.26	2.90	0.05	0.06
2.46	0.71	0.51	14.85	1.06	0.03	0.04
4.21	0.44	0.14	1.47	2.73	0.09	0.10
1.25	0.53	0.23	82.10	2.67	0.11	0.13
1.88	1.06	1.23	21.96	2.68	0.12	0.28
1.15	0.55	1.91	2.55	0.86	-0.03	-0.10
1.83	0.95	0.89	7.80	1.39	-0.02	-0.40
4.54	0.96	0.23	21.96	1.64	0.05	0.06
1.62	0.71	0.57	3.10	1.37	0.13	0.20
3.20	0.64	0.31	2.67	0.90	0.06	0.07
2.30	1.29	0.23	5.56	3.66	0.06	0.07
3.76	0.87	0.47	2.64	1.56	0.00	0.01
3.59	1.20	0.28	8.08	1.82	0.10	0.12
1.30	0.14	0.53	0.30	0.33	-0.03	-0.04
1.94	2.08	0.27	14.77	6.49	0.05	0.07
4.65	0.84	0.27	21.26	1.59	0.20	0.27
1.49	0.46	1.36	1.73	0.66	-0.01	-0.03
7.69	0.37	0.11	10.85	0.87	0.03	0.03
1.12	0.37	0.08	1.57	1.06	0.04	0.04
1.15	1.80	1.18	3.89	3.54	0.02	0.04
4.26	1.02	0.41	21.96	1.82	0.23	0.34

Questinnaire No.	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
148	1.26	1.79	10.55	1.54	0.02	0.72	5.84
149	0.71	0.25	26.08	3.42	0.08	0.11	9.13
150	0.62	0.20	1.43	4.36	0.06	0.08	9.01
151	0.64	1.29	1.40	1.73	0.10	0.22	3.61
152	0.51	0.36	2.12	2.42	-0.04	-0.05	5.00
153	1.42	21.89	6.96	2.41	0.02	0.42	0.53
154	1.42	21.89	6.96	2.41	0.02	0.42	0.53
155	0.60	0.22	7.21	1.45	-0.02	-0.22	8.25
156	0.95	0.46	7.51	1.84	0.00	0.00	5.51
157	0.27	1.72	3.58	0.34	0.00	0.00	3.73
158	0.30	0.24	44.12	14.79	-0.03	-0.03	5.77
159	0.68	0.31	1.34	1.85	0.00	0.00	7.97
160	1.84	2.12	55.94	2.80	0.03	0.79	5.00
161	1.11	0.74	7.37	3.33	0.07	0.12	7.01
162	0.42	0.31	16.85	0.88	-0.01	-0.01	8.75
163	1.66	1.05	3.45	2.67	0.16	0.33	5.96
164	0.75	0.23	4.34	2.44	0.02	0.03	8.23
165	1.25	1.68	43.86	1.61	0.20	0.56	5.35
166	1.17	0.67	9.47	1.63	0.14	0.24	6.63
167	0.46	0.09	1.96	2.48	0.00	0.00	15.07
168	1.50	0.40	33.10	2.52	0.07	0.10	6.57
169	1.03	0.53	5.36	2.00	0.01	0.01	5.67
170	0.40	0.81	25.81	1.57	-0.02	-0.03	4.65
171	0.40	0.16	1.87	1.48	-0.13	-0.15	6.24
172	1.03	0.47	26.33	2.20	0.08	0.12	8.29
173	0.64	0.51	1.81	2.93	0.00	0.00	5.08
174	0.37	0.20	2.95	2.77	0.01	0.01	8.06
175	0.07	0.23	95.50	1.49	-0.01	-0.01	4.85
176	1.65	0.22	17.22	2.92	0.12	0.14	12.27
177	1.44	0.75	3.42	5.64	0.05	0.10	6.67
178	0.93	0.16	2.40	2.47	0.02	0.03	12.12
179	0.64	0.32	2.85	1.90	0.04	0.06	9.21
180	0.40	0.02	1.75	3.46	0.00	0.00	7.03
181	0.54	0.07	1.59	3.58	-0.02	-0.02	20.15
182	0.74	0.17	3.42	1.92	0.04	0.05	12.71
183	1.41	0.37	12.85	4.06	0.16	0.22	10.33
184	0.91	0.28	4.33	3.63	0.21	0.27	8.81

ACID	ASTURN	D_E	INV_TURN	REC_TURN	ROA	ROE
2.19	1.40	0.61	4.25	2.31	0.03	0.51
4.44	0.61	0.17	19.47	3.70	0.03	0.03
0.98	0.14	0.06	0.20	2.66	0.03	0.03
0.83	0.65	1.07	1.40	1.76	0.06	0.13
1.45	0.63	0.36	2.17	2.83	0.00	0.00
2.89	0.58	0.24	19.11	1.13	-0.02	-0.21
2.89	0.58	0.24	19.11	1.13	-0.02	-0.21
2.89	0.58	0.24	19.11	1.13	-0.02	-0.21
1.86	0.63	0.33	3.92	1.41	-0.01	-0.02
1.79	0.37	1.15	4.91	0.47	0.17	0.37
2.57	0.31	0.22	49.39	17.79	0.00	0.00
1.55	0.62	0.39	1.15	1.74	-0.03	-0.04
1.59	1.98	1.60	4.66	2.79	0.14	0.37
3.57	1.05	0.41	8.60	3.78	0.07	0.10
3.60	0.28	0.22	3.41	0.62	-0.06	-0.07
1.41	1.70	0.91	3.98	2.58	0.17	0.33
4.03	0.77	0.12	4.48	3.43	0.02	0.02
2.02	1.24	0.88	404.97	1.56	0.15	0.28
2.42	1.18	0.43	5.58	1.72	0.16	0.22
2.20	0.41	0.22	0.98	2.62	-0.01	-0.01
2.12	1.31	0.48	15.22	2.07	0.11	0.17
2.05	1.01	0.83	6.04	1.99	0.05	0.08
1.35	0.16	0.66	21.96	2.35	-0.02	-0.37
4.94	0.44	0.10	1.70	1.77	-0.06	-0.07
3.75	1.01	0.34	8.43	2.09	0.05	0.06
2.36	0.71	0.12	2.82	4.94	-0.03	-0.03
6.92	0.36	0.15	3.32	2.15	0.02	0.02
2.76	0.21	0.16	148.03	8.26	0.05	0.05
4.71	1.81	0.17	34.29	3.86	0.10	0.11
1.59	1.17	0.57	3.03	11.88	0.06	0.09
4.49	1.02	0.12	2.24	2.84	0.02	0.03
2.85	0.58	0.24	2.95	1.72	0.04	0.05
7.14	0.45	0.03	2.70	5.35	0.01	0.01
3.98	0.43	0.07	1.07	3.10	0.01	0.01
4.05	0.74	0.20	2.95	2.10	0.07	0.09
5.32	1.26	0.19	6.49	3.64	0.10	0.12
3.29	0.49	0.09	1.95	1.96	-0.05	-0.06

Questinnaire No.	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
185	0.38	0.12	64.03	2.12	0.02	0.03	17.77
186	0.47	2.61	5.17	2.79	0.01	0.04	-0.03
187	2.76	4.55	17.50	3.87	0.08	0.43	3.06
188	0.88	6.08	3.14	1.99	0.01	0.04	0.85
189	1.29	7.07	3.38	0.92	-0.02	-0.15	-1.54
190	0.35	2.52	1.15	1.57	-0.01	-0.03	-0.90
191	0.53	2.14	2.16	1.84	-0.02	-0.07	0.17
192	0.57	0.59	3.10	2.00	-0.01	-0.11	2.26
193	1.06	2.50	8.64	1.82	0.05	0.16	3.10
194	0.61	8.07	4.43	2.28	-0.01	-0.06	-2.44
195	0.68	1.57	26.36	1.35	0.00	-0.01	2.75
196	0.43	2.75	34.60	1.13	0.04	0.16	3.23
197	0.85	0.86	14.58	3.11	0.01	0.03	1.19
198	0.52	0.22	12.51	1.86	0.09	0.12	9.30
199	1.07	2.28	3.08	2.15	0.07	0.22	4.15
200	0.49	12.84	2.98	0.94	0.01	0.16	2.40
201	1.69	1.58	2.09	3.86	0.14	0.36	4.51
202	2.16	1.17	32.66	7.86	0.12	0.28	2.63
203	0.42	1.44	12.51	3.72	0.06	0.15	0.14
204	0.78	1.17	3.64	1.33	0.01	0.02	4.70
205	0.94	0.94	6.47	2.01	-0.01	-0.02	2.22
206	1.09	1.42	4.69	1.57	0.08	0.19	4.32
207	0.64	1.47	10.65	2.54	-0.02	-0.05	-2.43
208	0.86	1.03	32.49	6.96	0.02	0.48	4.80
209	0.37	2.12	1.15	0.97	-0.02	-0.06	1.59
210							
211	0.60	0.28	1.26	1.89	0.00	0.00	8.06
212	1.76	0.46	4.87	0.96	0.07	0.11	5.88
213	0.92	2.19	8.58	1.31	0.04	0.11	3.56
214	0.49	0.65	6.69	0.77	-0.01	-0.09	3.90
215	0.58	0.44	7.03	2.87	0.00	0.00	4.03
216	0.62	0.37	6.29	1.44	0.05	0.07	6.81
217	0.88	1.02	3.37	1.38	0.03	0.06	6.22
218	0.64	0.55	1.83	1.89	0.19	0.29	8.62
219	1.01	0.60	5.21	1.63	0.13	0.21	6.40
220	0.38	1.53	2.47	1.67	0.08	0.21	0.73
221	1.06	0.74	5.53	1.99	0.21	0.38	6.57

ACID	ASTURN	D_E	INV_TURN	REC_TURN	ROA	ROE
3.63	0.39	0.07	14.19	1.86	0.04	0.04
0.43	0.42	2.94	4.69	2.69	-0.01	-0.05
0.98	2.89	4.18	19.01	3.85	0.02	0.10
0.72	1.04	7.26	3.39	2.22	0.00	-0.04
0.29	1.18	8.63	3.04	7.49	-0.20	-0.19
0.32	0.30	4.78	0.93	1.34	-0.09	-0.55
0.68	0.78	1.83	4.02	2.39	-0.04	-0.13
1.41	0.51	0.58	4.38	1.73	-0.07	-0.11
1.29	1.15	2.64	7.57	1.80	0.03	0.13
0.45	0.50	8.42	2.95	1.57	0.00	0.01
1.75	0.82	1.43	39.84	1.54	-0.01	-0.03
1.25	5.31	1.22	33.38	1.18	0.02	0.46
0.71	0.76	0.70	11.94	3.33	0.01	0.02
2.58	0.50	0.38	14.58	1.54	-0.11	-0.16
1.27	1.18	1.57	3.04	2.37	0.12	0.32
1.66	0.46	10.14	2.13	0.84	0.03	0.35
0.90	1.54	1.32	2.08	3.34	0.13	0.29
1.14	1.68	1.10	50.82	6.70	0.09	0.19
0.29	0.39	1.54	14.58	4.06	-0.03	-0.08
1.05	0.78	1.53	2.40	1.42	0.00	0.00
1.32	0.96	1.05	10.86	1.43	0.10	0.20
1.17	0.98	1.79	4.38	1.34	0.08	0.23
0.46	0.58	2.39	7.22	2.08	-0.14	-0.51
0.86	0.19	1.12	8.22	0.92	0.01	0.02
0.81	0.39	1.95	1.06	1.05	-0.02	-0.05
1.80	0.52	0.73	2.77	2.40	0.01	0.01
2.15	0.57	0.23	1.21	1.65	0.01	0.01
1.56	1.30	0.25	4.28	7.47	0.02	0.02
1.51	0.90	2.08	8.78	1.27	0.01	0.05
1.90	0.47	0.61	6.36	0.68	-0.02	-0.03
2.05	0.59	0.35	6.74	1.90	-0.01	-0.01
1.75	0.53	0.37	5.61	1.20	0.04	0.05
2.45	0.90	0.54	3.17	1.36	0.02	0.03
2.65	0.66	0.35	1.65	1.91	0.02	0.22
2.00	1.00	0.62	5.09	1.51	0.11	0.19
0.92	0.79	2.74	2.05	1.40	0.13	0.48
2.01	0.93	0.53	3.64	1.87	0.14	0.22

Questinnaire No.	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
222	1.23	0.74	4.17	2.83	0.09	0.15	5.59
223	0.86	0.69	3.25	2.17	0.00	0.00	3.99
224	0.78	0.50	13.54	2.03	0.19	0.29	6.29
225	0.97	0.55	2.11	2.26	0.18	0.28	7.17
226	1.25	0.30	2.78	2.89	0.02	0.03	8.02
227	0.31	0.52	14.99	0.36	0.13	0.20	8.57
228	1.30	1.35	12.51	3.43	0.03	0.08	2.72
229	0.82	0.32	3.33	1.46	0.11	0.14	7.72
230	0.51	0.26	0.80	1.63	0.00	0.00	10.00
231	0.96	2.41	3.01	2.05	0.02	0.07	2.64
232	1.82	2.11	12.51	2.19	0.03	0.93	4.85
233	0.58	0.27	3.03	1.39	-0.03	-0.05	8.96
234	0.84	1.07	12.51	1.18	0.03	0.59	6.51
235	0.64	0.14	7.26	5.96	-0.03	-0.03	7.94
236	0.45	0.68	3.39	1.18	-0.01	-0.20	1.54
237	0.66	0.45	1.58	2.29	0.10	0.14	7.57
238	1.84	0.30	6.48	3.99	0.05	0.07	7.73
239	2.32	0.22	8.08	3.85	-0.04	-0.06	11.03
240	1.07	1.52	22.08	1.26	0.08	0.19	4.02
241	0.84	0.72	2.96	1.88	0.03	0.06	5.78
242	0.56	0.30	3.30	1.56	-0.04	-0.05	6.40
243	1.19	0.30	11.70	2.45	0.07	0.09	7.82
244	0.49	0.46	16.09	1.30	-0.03	-0.05	6.24
245	0.36	0.05	64.82	1.37	0.08	0.09	2.52
246	1.27	0.84	2.09	5.32	0.10	0.18	5.17
247	0.73	1.20	2.49	1.37	-0.02	-0.04	3.35
248	1.14	3.42	21.11	1.96	0.14	0.64	4.59
249	0.50	0.39	5.59	2.24	0.00	0.00	7.74
250	0.82	0.19	4.37	3.42	0.04	0.05	10.34
251	1.11	0.26	2.80	4.30	0.04	0.06	8.36
252	0.18	0.12	12.07	6.35	-0.02	-0.02	6.97
253	0.96	1.04	1.84	2.52	0.05	0.10	5.29
254	0.76	0.45	1.28	2.46	0.06	0.09	7.07
255	1.13	0.17	5.94	2.19	0.03	0.04	10.78
256	0.76	0.21	12.57	1.56	0.15	0.18	13.43
257	0.99	0.90	3.04	1.66	-0.02	-0.03	2.71
258	1.65	0.57	25.58	2.72	0.00	-0.07	6.68

ACID	ASTURN	D_E	INV_TURN	REC_TURN	ROA	ROE
1.58	1.21	0.45	3.69	2.67	0.08	0.12
1.27	0.99	0.65	3.47	2.37	0.01	0.01
2.16	0.84	0.27	16.57	2.83	0.02	0.24
4.08	0.76	0.26	1.95	2.19	0.02	0.24
3.03	1.20	0.20	3.16	2.73	0.05	0.06
2.89	0.24	0.45	36.83	0.53	0.06	0.09
1.78	0.80	0.72	14.58	1.55	0.09	0.16
2.49	0.89	0.26	2.47	1.99	0.12	0.16
2.98	0.42	0.18	0.62	1.52	-0.03	-0.04
0.86	0.91	2.06	2.35	1.94	0.05	0.16
2.06	1.80	0.77	14.58	2.12	0.03	0.50
4.43	0.51	0.33	2.95	1.37	-0.09	-0.12
4.77	0.93	0.27	14.58	1.32	0.04	0.50
1.32	0.63	0.10	8.34	6.52	-0.04	-0.04
1.20	0.42	0.63	2.62	1.14	0.01	0.02
2.02	0.67	0.29	1.56	2.80	0.09	0.11
2.53	1.87	0.29	7.62	4.56	0.11	0.15
6.93	1.89	0.12	5.75	3.40	-0.05	-0.07
1.90	0.78	1.08	24.60	1.00	0.07	0.14
1.52	0.94	0.62	3.22	1.98	0.04	0.06
3.08	0.59	0.28	3.01	1.49	-0.03	-0.03
3.24	1.24	0.22	9.65	3.20	-0.07	-0.09
1.56	0.54	0.75	8.32	1.75	0.04	0.07
3.00	0.36	0.10	50.61	1.37	0.05	0.05
0.67	1.38	0.68	2.24	6.12	0.07	0.11
1.26	0.87	1.71	6.06	1.20	0.00	0.01
4.29	0.99	2.25	25.24	1.44	0.11	0.36
1.04	0.35	0.13	4.16	1.79	-0.06	-0.06
4.52	0.95	0.13	5.37	3.24	0.06	0.07
3.97	1.17	0.13	2.79	3.61	0.05	0.06
2.25	0.21	0.11	122.63	5.45	-0.04	-0.05
0.74	0.96	1.24	1.53	2.78	0.06	0.13
2.18	0.69	0.25	1.20	2.46	0.07	0.09
4.80	1.34	0.15	5.80	2.51	0.01	0.01
6.12	0.62	0.17	10.68	1.34	0.08	0.09
1.33	0.94	0.70	1.82	2.04	0.01	0.02
6.08	1.56	0.27	32.83	2.83	-0.04	-0.05

Questinnaire No.	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
259	1.14	0.74	4.05	2.25	0.07	0.13	5.51
260	0.96	0.45	1.55	3.07	0.15	0.22	8.59
261	1.31	0.69	3.22	2.31	0.11	0.19	7.28
262	0.73	0.70	11.06	1.22	0.03	0.05	6.84
263	1.02	0.72	22.56	2.04	0.12	0.21	6.59
264	0.96	0.95	10.15	1.66	0.16	0.30	4.83
265	0.40	0.79	1.23	1.65	0.03	0.06	3.99
266	0.52	0.32	4.24	1.56	0.13	0.18	8.34
267	0.60	0.29	2.09	2.72	0.05	0.06	7.56
268	0.75	0.60	2.19	1.66	0.03	0.06	7.86
269	0.52	0.51	4.16	1.95	0.03	0.04	4.65
270	0.58	0.41	16.19	1.26	0.05	0.08	6.37
271	1.30	0.57	6.73	3.79	0.18	0.30	6.54
272	1.59	1.65	7.81	2.50	0.18	0.49	3.44
273	0.60	0.28	1.26	1.89	0.00	0.00	8.06
274	1.76	0.46	4.87	0.96	0.07	0.11	5.88
275	0.92	2.19	8.58	1.31	0.04	0.11	3.56
276	0.49	0.65	6.69	0.77	-0.01	-0.09	3.90
277	0.58	0.44	7.03	2.87	0.00	0.00	4.03
278	0.62	0.37	6.29	1.44	0.05	0.07	6.81
279	0.88	1.02	3.37	1.38	0.03	0.06	6.22
280	0.64	0.55	1.83	1.89	0.19	0.29	8.62
281	1.01	0.60	5.21	1.63	0.13	0.21	6.40
282	0.38	1.53	2.47	1.67	0.08	0.21	0.73
283	1.06	0.74	5.53	1.99	0.21	0.38	6.57
284	1.23	0.74	4.17	2.83	0.09	0.15	5.59
285	0.86	0.69	3.25	2.17	0.00	0.00	3.99
286	0.78	0.50	13.54	2.03	0.19	0.29	6.29
287	0.97	0.55	2.11	2.26	0.18	0.28	7.17
288	1.25	0.30	2.78	2.89	0.02	0.03	8.02
289	0.31	0.52	14.99	0.36	0.13	0.20	8.57
290	1.30	1.35	12.51	3.43	0.03	0.08	2.72
291	0.82	0.32	3.33	1.46	0.11	0.14	7.72
292	0.51	0.26	0.80	1.63	0.00	0.00	10.00
293	0.96	2.41	3.01	2.05	0.02	0.07	2.64
294	1.82	2.11	12.51	2.19	0.03	0.93	4.85
295	0.58	0.27	3.03	1.39	-0.03	-0.05	8.96

ACID	ASTURN	D_E	INV_TURN	REC_TURN	ROA	ROE
1.19	1.02	0.88	3.19	2.42	0.04	0.08
1.84	0.89	0.28	1.17	2.78	0.09	0.12
2.15	1.35	0.45	3.49	2.34	0.15	0.21
2.85	0.46	0.66	11.49	0.57	-0.15	-0.25
3.29	0.99	0.35	18.94	3.59	0.02	0.32
3.01	0.73	0.52	4.99	1.27	0.02	0.34
1.84	0.41	0.48	1.23	1.88	0.02	0.03
2.43	0.61	0.33	3.51	1.93	0.02	0.27
1.94	0.73	0.43	9.60	3.46	0.05	0.08
2.61	0.50	0.42	1.72	1.05	-0.01	-0.01
1.67	0.51	0.47	3.83	1.50	0.03	0.05
3.73	0.62	0.43	14.74	1.27	0.05	0.08
3.26	1.15	0.24	4.60	4.16	0.02	0.23
0.90	1.13	1.65	3.78	2.07	0.06	0.15
2.15	0.57	0.23	1.21	1.65	0.01	0.01
1.56	1.30	0.25	4.28	7.47	0.02	0.02
1.51	0.90	2.08	8.78	1.27	0.01	0.05
1.90	0.47	0.61	6.36	0.68	-0.02	-0.03
2.05	0.59	0.35	6.74	1.90	-0.01	-0.01
1.75	0.53	0.37	5.61	1.20	0.04	0.05
2.45	0.90	0.54	3.17	1.36	0.02	0.03
2.65	0.66	0.35	1.65	1.91	0.02	0.22
2.00	1.00	0.62	5.09	1.51	0.11	0.19
0.92	0.79	2.74	2.05	1.40	0.13	0.48
2.01	0.93	0.53	3.64	1.87	0.14	0.22
1.58	1.21	0.45	3.69	2.67	0.08	0.12
1.27	0.99	0.65	3.47	2.37	0.01	0.01
2.16	0.84	0.27	16.57	2.83	0.02	0.24
4.08	0.76	0.26	1.95	2.19	0.02	0.24
3.03	1.20	0.20	3.16	2.73	0.05	0.06
2.89	0.24	0.45	36.83	0.53	0.06	0.09
1.78	0.80	0.72	14.58	1.55	0.09	0.16
2.49	0.89	0.26	2.47	1.99	0.12	0.16
2.98	0.42	0.18	0.62	1.52	-0.03	-0.04
0.86	0.91	2.06	2.35	1.94	0.05	0.16
2.06	1.80	0.77	14.58	2.12	0.03	0.50
4.43	0.51	0.33	2.95	1.37	-0.09	-0.12

Questinnaire No.	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
296	0.84	1.07	12.51	1.18	0.03	0.59	6.51
297	0.64	0.14	7.26	5.96	-0.03	-0.03	7.94
298	0.45	0.68	3.39	1.18	-0.01	-0.20	1.54
299	0.66	0.45	1.58	2.29	0.10	0.14	7.57
300	1.84	0.30	6.48	3.99	0.05	0.07	7.73
301	2.32	0.22	8.08	3.85	-0.04	-0.06	11.03
302	1.07	1.52	22.08	1.26	0.08	0.19	4.02
303	0.84	0.72	2.96	1.88	0.03	0.06	5.78
304	0.56	0.30	3.30	1.56	-0.04	-0.05	6.40
305	1.19	0.30	11.70	2.45	0.07	0.09	7.82
306	0.76	0.64	1.74	1.42	0.03	0.05	6.12
307	1.27	0.36	4.55	2.88	0.03	0.39	10.66
308	0.64	0.12	2.05	2.05	0.13	0.15	1.59
309	0.61	0.16	3.48	2.23	0.01	0.01	9.17
310	0.32	0.27	2.16	1.10	0.01	0.01	6.06
311	0.69	0.12	10.84	1.10	0.10	0.11	1.66
312	1.87	0.54	7.65	2.69	0.20	0.31	9.10
313	0.70	0.32	1.88	1.40	0.04	0.05	7.97
314	0.76	0.64	1.74	1.42	0.03	0.05	6.12
315	1.27	0.36	4.55	2.88	0.03	0.39	10.66
316	0.64	0.12	2.05	2.05	0.13	0.15	1.59
317	0.61	0.16	3.48	2.23	0.01	0.01	9.17
318	0.32	0.27	2.16	1.10	0.01	0.01	6.06
319	0.69	0.12	10.84	1.10	0.10	0.11	1.66
320	1.87	0.54	7.65	2.69	0.20	0.31	9.10
321	0.70	0.32	1.88	1.40	0.04	0.05	7.97
322	0.99	5.65	3.86	1.77	-0.04	-0.29	1.54
323	1.22	1.92	8.12	4.05	0.00	-0.01	-0.38
324	0.57	1.23	1.55	2.32	0.03	0.07	2.44
325	0.49	0.96	61.68	1.13	0.12	0.24	3.64
326	0.71	3.88	0.66	1.47	0.04	0.22	3.05
327	0.72	2.03	3.01	1.92	0.01	0.02	0.88
328	0.27	6.61	1.15	0.63	0.00	0.04	1.90
329	0.72	0.84	12.97	2.06	0.01	0.01	2.83
330	1.42	3.46	6.92	2.46	0.03	0.15	2.87
331	0.66	0.75	43.66	12.03	0.05	0.10	0.69
332	2.45	9.74	19.78	2.83	0.02	0.18	1.79

ACID	ASTURN	D_E	INV_TURN	REC_TURN	ROA	ROE
4.77	0.93	0.27	14.58	1.32	0.04	0.50
1.32	0.63	0.10	8.34	6.52	-0.04	-0.04
1.20	0.42	0.63	2.62	1.14	0.01	0.02
2.02	0.67	0.29	1.56	2.80	0.09	0.11
2.53	1.87	0.29	7.62	4.56	0.11	0.15
6.93	1.89	0.12	5.75	3.40	-0.05	-0.07
1.90	0.78	1.08	24.60	1.00	0.07	0.14
1.52	0.94	0.62	3.22	1.98	0.04	0.06
3.08	0.59	0.28	3.01	1.49	-0.03	-0.03
3.24	1.24	0.22	9.65	3.20	-0.07	-0.09
1.68	0.67	0.51	1.47	1.29	0.03	0.04
3.69	1.05	0.22	3.70	1.87	0.13	0.16
6.07	0.62	0.09	1.73	1.98	0.13	0.14
2.28	0.65	0.25	4.79	1.47	0.01	0.02
2.32	0.54	0.23	4.44	1.45	0.03	0.04
1.12	0.65	0.09	7.56	0.98	0.09	0.09
2.97	1.36	0.42	4.85	2.12	0.02	0.25
3.95	0.56	0.15	1.44	1.16	0.03	0.03
1.68	0.67	0.51	1.47	1.29	0.03	0.04
3.69	1.05	0.22	3.70	1.87	0.13	0.16
6.07	0.62	0.09	1.73	1.98	0.13	0.14
2.28	0.65	0.25	4.79	1.47	0.01	0.02
2.32	0.54	0.23	4.44	1.45	0.03	0.04
1.12	0.65	0.09	7.56	0.98	0.09	0.09
2.97	1.36	0.42	4.85	2.12	0.02	0.25
3.95	0.56	0.15	1.44	1.16	0.03	0.03
1.02	0.77	7.06	2.79	1.37	-0.04	-0.29
0.51	1.42	8.21	16.01	4.29	-0.06	-0.88
0.86	0.61	1.25	1.82	1.93	0.03	0.06
1.22	0.41	0.86	64.84	1.02	0.11	0.20
0.99	0.68	4.00	0.71	1.54	0.03	0.15
0.56	0.50	2.09	2.10	1.40	-0.04	-0.12
1.00	0.20	11.33	0.89	0.48	-0.04	-0.64
1.03	0.79	0.84	14.15	2.02	0.02	0.04
1.27	1.38	2.67	6.49	2.57	0.06	0.19
0.38	0.63	0.61	42.74	10.80	0.02	0.04
1.11	2.19	7.80	18.46	2.48	0.07	0.79

Questinnaire No.	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
333	1.01	0.65	15.61	1.69	0.02	0.03	5.49
334	1.44	1.34	11.16	4.33	0.00	0.01	2.06
335	0.27	0.66	33.93	7.67	-0.08	-0.13	-0.02
336	0.42	0.72	15.74	0.49	-0.03	-0.06	5.71
337	1.40	0.25	7.03	1.61	0.07	0.09	9.30
338	1.06	0.54	2.29	2.84	0.01	0.02	6.69
339	1.08	0.14	1.95	2.93	0.00	0.00	13.27
340	0.92	2.09	3.86	1.46	0.04	0.13	3.74
341	1.09	0.61	3.50	2.38	0.05	0.08	2.81
342	0.97	0.53	4.30	1.32	0.08	0.12	7.85
343	1.56	0.94	8.23	2.78	0.02	0.47	5.95
344	1.28	1.06	2.51	5.79	0.02	0.32	4.77
345	1.62	0.58	5.51	3.60	0.16	0.27	6.33
346	0.79	0.31	2.92	3.03	0.02	0.02	7.47
347	1.68	2.07	5.76	2.34	-0.06	-0.18	3.03
348	0.62	0.78	4.01	1.05	0.07	0.13	4.87
349	0.71	0.22	6.52	1.62	0.12	0.15	10.42
350	0.99	1.37	7.19	1.25	0.09	0.21	3.93
351	1.05	0.72	2.01	3.09	0.07	0.12	4.68
352	0.71	0.18	2.11	5.31	0.12	0.14	11.09
353	0.88	0.47	3.87	1.97	0.14	0.21	7.07
354	0.94	1.35	5.61	2.72	0.09	0.21	4.15
355	0.94	0.87	3.48	1.87	0.13	0.24	5.93
356	2.03	0.66	11.50	9.46	-0.01	-0.01	3.66
357	0.94	0.45	9.82	2.53	0.02	0.31	8.70
358	0.60	0.93	1.32	5.63	0.02	0.34	4.43
359	0.56	0.24	0.92	2.40	0.14	0.17	9.33
360	0.72	0.60	8.95	2.86	0.11	0.17	5.64
361	2.14	1.98	9.10	6.60	-0.02	-0.83	0.45
362	1.56	0.21	5.44	4.05	0.01	0.01	11.28
363	0.87	0.24	1.90	4.62	0.00	0.00	8.48
364	0.75	0.16	5.54	2.91	0.04	0.05	12.50
365	0.72	0.12	18.77	2.37	0.04	0.04	11.75
366	1.11	0.29	11.00	2.97	0.05	0.07	7.00
367	0.55	0.25	5.45	1.63	0.02	0.02	7.54
368	1.66	2.62	7.02	6.53	0.09	0.32	3.28
369	0.71	0.33	2.95	1.88	0.09	0.12	9.08

ACID	ASTURN	D_E	INV_TURN	REC_TURN	ROA	ROE
2.95	1.11	0.49	18.27	1.69	0.02	0.02
0.98	1.49	1.43	10.88	4.86	0.01	0.02
0.54	0.24	0.58	31.99	6.29	-0.01	-0.17
2.35	0.27	0.62	83.11	0.32	-0.03	-0.05
5.52	1.42	0.23	1.96	1.61	0.00	0.01
1.63	1.00	0.39	2.31	3.41	0.00	0.00
5.06	1.00	0.11	1.85	2.93	-0.03	-0.03
2.32	0.85	1.17	3.13	1.52	0.02	0.06
1.23	1.00	0.39	3.77	13.46	0.05	0.07
2.76	0.92	0.40	3.91	1.26	0.06	0.09
1.83	1.57	0.63	7.92	2.90	0.19	0.32
0.76	1.31	0.80	2.91	5.06	0.15	0.27
1.87	1.60	0.45	5.25	4.65	0.14	0.22
1.74	0.83	0.33	3.28	2.85	0.03	0.04
2.01	1.51	1.24	5.59	2.30	-0.04	-0.11
1.63	0.64	0.65	4.09	1.19	0.05	0.10
2.39	0.78	0.28	4.69	2.03	0.08	0.10
1.82	0.91	0.99	6.75	1.17	0.07	0.14
0.97	1.01	0.55	1.83	3.39	0.03	0.06
4.06	0.70	0.14	2.06	5.47	0.12	0.13
2.01	0.79	0.39	3.36	1.99	0.11	0.15
1.32	1.04	1.04	5.95	2.62	0.10	0.20
1.28	0.99	0.82	3.89	2.55	0.07	0.13
1.49	1.66	0.47	8.65	9.17	-0.02	-0.03
4.11	0.84	0.43	8.50	2.26	0.08	0.13
1.08	0.55	0.68	1.50	3.63	0.14	0.25
2.06	0.61	0.18	0.98	2.51	0.16	0.18
1.61	0.74	0.56	7.16	2.82	0.09	0.14
1.07	1.73	1.50	8.02	4.71	-0.02	-0.18
3.78	1.47	0.16	4.99	4.03	-0.05	-0.06
1.20	0.79	0.19	1.60	8.53	-0.02	-0.03
5.22	0.73	0.16	6.02	2.63	0.07	0.08
3.17	0.73	0.19	11.56	2.07	0.03	0.03
2.64	1.16	0.30	9.99	3.19	0.08	0.11
2.91	0.48	0.20	4.69	1.42	0.01	0.02
1.25	1.92	1.83	6.67	7.81	0.13	0.33
5.27	0.80	0.27	3.22	1.99	0.07	0.09

Questinnaire No.	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
370	0.75	0.36	15.47	2.03	0.06	0.09	6.32
371	0.91	0.56	19.57	7.87	0.02	0.32	6.13
372	1.66	0.51	8.58	4.23	-0.02	-0.03	2.05
373	0.32	0.23	0.61	2.46	-0.08	-0.10	7.74
374	0.82	0.38	3.71	1.52	0.03	0.04	6.50
375	1.19	0.71	5.07	2.42	0.05	0.08	3.41
376	2.21	0.46	9.34	3.61	0.10	0.14	7.62
377	0.71	1.00	1.48	3.07	0.00	0.01	4.04
378	0.64	0.55	1.72	1.78	0.09	0.14	5.69
379	0.67	0.70	4.34	4.54	-0.03	-0.05	3.74
380	0.41	0.13	48.48	5.56	-0.02	-0.21	7.03
381	1.80	0.37	41.45	2.21	0.01	0.01	3.29
382	0.42	0.14	1.62	1.37	0.05	0.06	14.58
383	0.51	0.09	4.96	1.56	0.03	0.03	16.72
384	0.84	0.10	1.84	2.82	0.05	0.06	16.74
385	0.65	-13.98	3.67	0.84	-0.12	0.02	-0.95
386	1.01	0.48	4.71	1.99	0.05	0.08	7.19
387	0.27	0.08	19.78	2.26	0.00	0.00	14.23
388	0.45	0.04	4.26	1.90	-0.08	-0.08	2.85
389	0.68	0.50	2.42	1.39	0.09	0.13	6.21
390	1.80	0.37	41.45	2.21	0.01	0.01	3.29
391	0.93	0.36	5.69	2.57	0.05	0.10	6.55
392							

ACID	ASTURN	D_E	INV_TURN	REC_TURN	ROA	ROE
2.19	0.75	0.29	14.72	1.96	0.06	0.07
2.13	0.82	0.41	12.39	5.92	0.19	0.28
2.70	1.90	0.34	11.32	5.18	-0.01	-0.01
1.49	0.29	0.33	0.54	2.08	-0.05	-0.07
2.74	0.83	0.31	3.53	1.55	-0.01	-0.01
1.34	1.21	0.70	5.25	2.33	0.07	0.12
2.62	2.25	0.44	27.09	3.33	0.15	0.22
0.84	0.66	0.69	1.38	3.43	0.00	0.00
1.34	0.64	0.44	1.89	1.85	0.08	0.11
4.01	0.62	0.49	3.74	7.92	-0.03	-0.05
2.22	0.51	0.12	53.02	4.10	-0.02	-0.02
1.35	2.15	0.34	29.92	2.61	0.02	0.03
5.30	0.33	0.18	1.20	1.06	-0.05	-0.07
0.76	0.48	0.07	4.62	1.44	0.02	0.03
0.75	0.75	0.07	1.78	3.24	0.01	0.02
4.38	0.58	-6.94	4.26	0.79	-0.01	-0.07
4.58	0.67	0.29	6.52	1.38	0.01	0.02
1.57	0.22	0.07	18.46	2.27	0.00	0.01
1.11	0.36	0.04	2.81	1.69	-0.01	-0.12
3.50	0.68	0.30	2.30	1.49	0.07	0.09
1.35	2.15	0.34	29.92	2.61	0.02	0.03
2.44	0.91	0.58	5.28	2.76	0.03	0.06

Questinnaire No.	Z_SCORE	2012								201			
		ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN
1	1.81	0.99	0.90	7.58	3.75	1.97	-0.06	-0.48	0.85	0.92	0.92	11.59	3.99
2	-0.87	1.13	0.50	0.70	2.76	1.13	-0.11	-0.18	1.87	1.02	0.43	0.91	3.41
3	9.49	3.42	0.94	0.23	76.08	1.60	0.11	0.14	9.81	2.72	0.87	0.33	44.10
4	1.61	1.10	0.60	1.41	2.45	1.63	0.01	0.03	1.83	1.07	0.66	1.57	2.67
5	6.99	1.27	0.77	0.54	13.34	2.22	0.42	0.65	5.17	1.08	0.56	0.67	1.01
6	-1.23	0.30	0.81	1.76	3.71	5.49	0.01	0.02	-0.88	0.29	0.93	1.71	4.42
7	3.51	1.38	1.27	1.33	279.48	2.39	0.07	0.16	4.25	2.74	0.68	0.40	125.91
8	2.14	1.32	0.22	3.86	29.60	0.23	0.08	0.41	2.98	1.42	0.27	2.64	28.47
9	0.97	0.78	0.69	1.26	4.24	1.78	-0.01	-0.03	1.14	0.71	0.71	1.07	4.57
10	4.70	1.88	1.88	1.14	298.49	2.46	0.18	0.38	6.10	1.62	1.73	1.52	594.48
11	2.73	1.00	1.12	3.12	7.66	2.22	0.01	0.04	1.72	1.22	1.17	1.43	6.06
12	3.41	1.34	0.57	3.57	4.28	0.79	-0.19	-0.85	1.59	1.20	0.76	6.95	12.95
13	4.53	1.65	0.36	1.20	2.48	0.45	0.00	0.00	4.52	1.57	0.38	1.30	2.22
14	0.74	0.81	1.20	7.10	4.85	1.74	-0.03	-0.26	0.62	0.93	1.39	12.93	568.34
15	1.35	1.13	1.32	2.92	8.78	1.67	0.00	0.01	1.29	1.16	1.17	3.42	14.52
16	3.62	2.59	0.78	1.00	31.22	0.93	0.10	0.28	6.12	2.87	0.48	0.95	7.47
17	3.98	1.32	1.15	0.74	65.42	2.12	0.12	0.21	4.23	1.59	1.05	0.36	163.43
18	1.42	1.02	0.85	4.79	6.48	1.04	-0.01	-0.04	1.54	1.03	0.96	4.62	6.39
19	4.83	1.97	1.71	0.98	29.60	2.14	0.05	0.10	5.01	1.98	1.78	0.86	28.47
20	3.08	0.76	0.48	1.90	0.66	2.67	-0.02	-0.05	2.84	0.66	0.35	2.38	0.48
21	2.80	0.36	0.56	0.87	1.01	4.81	0.00	0.01	2.13	0.15	0.62	0.85	1.09
22	-0.19	0.20	0.43	0.27	1.76	10.95	-0.17	-0.21	2.16	0.16	0.41	0.43	1.70
23	4.00	0.83	0.30	7.45	0.49	1.65	-0.09	-0.77	2.66	0.75	0.35	13.72	0.63
24	-0.45	0.77	0.34	1.56	29.60	0.76	-0.02	-0.06	-0.68	0.61	0.46	1.76	28.47
25	4.47	1.71	1.03	1.62	29.60	1.45	0.01	0.02	4.29	1.61	0.26	1.81	0.80
26	4.25	1.58	0.42	0.29	1.40	2.52	0.01	0.02	6.26	2.26	0.48	0.31	6.19
27	2.68	1.14	1.65	1.91	5.59	2.72	0.09	0.26	3.84	1.12	1.80	1.86	6.08
28	2.70	1.21	1.58	1.67	7.72	2.57	0.13	0.35	4.08	1.45	2.30	1.01	9.85
29	3.69	0.90	1.05	0.53	3.60	3.59	0.00	0.00	3.38	1.25	1.02	0.61	4.90
30	7.94	1.52	0.94	0.88	1.98	2.20	0.02	0.03	6.42	1.72	0.82	0.79	1.90
31	0.60	0.54	2.33	2.49	7.71	9.95	-0.03	-0.10	0.62	0.48	1.85	3.93	6.98
32	1.65	1.02	0.45	2.65	2.10	1.35	0.00	0.01	2.26	1.55	0.31	4.46	3.22
33	4.06	6.33	0.21	0.93	8.65	1.75	-0.02	-0.04	4.44	5.55	0.16	1.01	8.29
34	6.51	1.98	0.94	0.95	129.79	2.63	0.07	0.14	5.83	1.78	1.25	1.09	405.92
35	2.06	0.61	0.08	0.49	0.22	0.58	-0.13	-0.20	0.99	0.68	0.12	0.50	0.27
36	2.53	1.14	0.41	2.61	1.41	0.56	0.09	0.31	3.65	11.86	0.40	1.87	1.10

Questinnaire No.	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN
37	7.59	3.39	1.14	0.34	8.32	1.86	0.10	0.13	9.27	4.31	0.98	0.25	6.67
38	9.20	4.17	0.21	0.15	1.94	0.48	0.01	0.01	10.42	4.83	0.28	0.12	5.59
39	8.82	1.65	0.86	0.62	2.34	1.74	0.06	0.10	5.74	2.02	0.83	0.46	2.89
40	6.81	2.76	1.84	0.41	6.67	2.42	0.10	0.14	8.56	2.97	1.83	0.35	5.32
41	12.50	4.16	0.69	0.13	1.75	3.49	0.10	0.11	14.34	11.04	0.54	0.04	1.30
42	6.36	2.73	0.56	0.44	7.90	0.81	0.01	0.02	7.12	2.13	1.28	0.61	17.96
43	13.63	7.45	0.37	0.07	1.40	3.09	0.05	0.06	21.73	4.36	0.37	0.14	1.80
44	6.53	2.28	0.42	0.14	95.14	16.98	0.11	0.12	10.00	1.92	0.45	0.13	93.87
45	5.09	3.09	1.53	0.25	29.60	6.95	0.26	0.34	10.99	1.60	1.55	0.65	28.47
46	2.56	1.66	0.41	0.83	1.92	0.63	0.00	0.01	4.35	2.28	0.66	0.48	2.29
47	2.65	2.34	1.31	0.64	16.37	1.99	0.10	0.16	6.16	3.32	1.34	0.38	17.12
48	11.92	6.27	0.55	0.19	29.60	1.01	0.12	0.15	14.05	9.43	0.61	0.12	28.47
49	6.45	1.68	0.77	0.52	2.90	1.53	0.08	0.13	6.78	2.23	0.71	0.36	3.19
50	7.96	5.38	0.51	0.17	2.24	0.69	0.02	0.02	11.84	6.70	0.42	0.14	2.08
51	7.47	3.54	1.63	0.15	6.35	3.88	0.07	0.08	11.55	3.20	1.43	0.18	3.60
52	8.67	3.06	0.85	0.43	2.53	1.74	-0.01	-0.01	8.21	4.57	0.78	0.40	2.43
53	9.11	3.49	1.15	0.35	36.50	1.43	0.01	0.01	8.38	3.45	1.09	0.37	36.93
54	4.47	1.26	0.08	0.52	0.20	0.22	-0.05	-0.08	4.20	2.11	0.13	0.21	0.31
55	6.62	2.59	1.95	0.33	9.65	6.71	0.02	0.03	6.34	2.55	1.63	0.30	7.30
56	11.87	7.81	0.55	0.14	7.34	1.58	0.15	0.18	16.45	5.98	0.51	0.18	4.02
57	4.50	1.87	0.43	0.88	3.42	0.56	0.01	0.02	6.01	2.34	0.47	0.58	2.87
58	15.84	6.41	0.51	0.14	11.79	1.67	0.08	0.09	14.52	4.99	0.59	0.20	232.36
59	20.09	2.92	0.30	0.03	2.03	1.35	0.00	0.00	4.11	8.01	0.41	0.12	2.63
60	4.35	1.32	1.26	0.72	2.14	2.78	0.01	0.02	5.71	1.51	1.28	0.61	2.51
61	10.96	4.12	0.99	0.39	29.60	1.62	0.09	0.13	10.25	3.00	0.99	0.53	28.47
62	10.24	3.35	1.55	0.39	9.33	1.80	0.43	0.61	12.70	2.08	1.86	0.60	4.81
63	11.20	5.97	0.38	0.12	8.05	2.37	0.01	0.01	13.98	4.54	0.37	0.17	7.31
64	21.21	0.80	0.09	0.07	0.18	1.73	-0.01	-0.01	18.30	0.76	0.98	0.56	2.79
65	4.20	1.05	0.69	0.81	1.65	1.79	0.05	0.09	5.13	1.56	0.68	0.40	1.51
66	5.50	2.67	0.60	0.22	2.06	2.45	0.01	0.01	8.22	2.41	0.59	0.21	1.52
67	7.28	1.82	0.08	0.95	0.63	0.33	-0.07	-0.13	2.16	2.39	0.81	0.26	5.22
68	7.28	1.82	0.08	0.95	0.63	0.33	-0.07	-0.13	2.16	2.39	0.81	0.26	5.22
69	7.28	6.36	0.49	0.10	5.65	0.88	0.02	0.02	16.37	5.00	0.42	0.12	3.30
70	6.40	1.80	0.50	0.32	2.03	1.16	0.00	0.00	6.72	2.39	0.81	0.26	5.22
71	6.29	2.32	0.31	0.69	3.89	0.41	0.12	0.20	7.56	3.68	0.27	0.34	3.92
72	6.23	2.84	0.27	0.16	43.51	13.72	-0.01	-0.01	7.97	3.70	0.31	0.12	53.14
73	6.95	1.50	0.49	0.37	0.82	1.37	-0.05	-0.07	6.97	2.34	0.72	0.35	1.27

Questinnaire No.	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN
74	5.00	1.59	1.87	1.57	498.12	3.14	0.16	0.41	5.64	1.86	1.95	1.08	588.74
75	8.80	3.92	0.98	0.29	14.68	3.34	0.09	0.11	10.40	3.05	0.92	0.42	28.08
76	9.76	1.80	0.79	0.60	9.74	1.61	0.02	0.03	5.85	1.97	0.86	0.48	7.75
77	6.57	1.38	1.74	0.88	3.81	2.73	0.11	0.22	6.31	1.45	1.88	0.86	4.41
78	12.66	5.18	0.60	0.09	3.30	3.97	0.02	0.03	15.94	3.52	0.58	0.14	3.19
79	6.92	2.71	1.14	0.54	209.15	1.62	0.06	0.09	8.28	2.62	1.01	0.56	290.29
80	8.42	3.30	1.05	0.27	3.73	1.79	0.17	0.21	11.02	2.65	1.14	0.31	3.24
81	8.40	4.30	0.56	0.11	1.42	3.35	0.01	0.01	14.06	4.53	0.65	0.12	1.80
82	6.52	2.98	1.26	0.36	15.53	2.17	0.14	0.20	8.66	2.89	1.03	0.43	26.71
83	5.20	5.86	1.16	0.33	7.01	2.34	0.02	0.02	8.13	3.78	1.11	0.42	8.41
84	2.88	3.07	0.69	0.68	29.60	3.87	0.25	0.42	6.80	2.85	0.77	0.38	28.47
85	12.30	3.50	0.58	0.16	2.31	2.17	-0.04	-0.04	8.16	4.33	0.56	0.15	3.16
86	9.26	5.29	1.10	0.20	32.79	2.63	0.13	0.16	12.82	3.42	1.11	0.34	41.54
87	6.19	2.09	0.52	0.73	19.81	0.67	0.01	0.01	6.35	1.51	0.41	1.18	2.16
88	10.99	1.74	0.32	0.08	101.31	6.80	0.03	0.03	15.49	1.41	0.37	0.14	13.09
89	6.88	2.25	0.31	0.33	50.28	0.62	0.07	0.09	6.55	2.43	0.34	0.40	57.49
90	2.72	1.66	0.69	0.63	5.49	1.50	0.09	0.14	5.31	1.75	1.06	0.49	3.20
91	10.86	5.30	0.51	0.24	11.32	2.20	0.03	0.04	12.17	3.90	0.49	0.34	7.89
92	4.74	1.28	1.16	0.60	4.82	3.12	0.08	0.13	5.18	1.45	1.34	0.42	4.48
93	5.10	2.98	0.39	0.09	4.01	2.38	0.01	0.01	13.50	9.59	0.31	0.03	2.56
94	7.63	3.30	0.45	0.49	0.88	1.66	-0.04	-0.06	7.08	2.69	0.69	0.57	1.15
95	5.21	1.84	0.53	0.85	6.69	0.65	0.07	0.13	5.61	2.39	0.64	0.54	6.88
96	8.27	3.06	0.43	0.36	29.60	0.72	0.02	0.03	7.41	3.35	0.39	0.33	28.47
97	4.64	1.25	1.32	0.44	3.07	3.90	-0.11	-0.16	3.68	1.50	1.19	0.40	2.34
98	11.38	2.32	0.23	0.09	0.83	1.30	-0.06	-0.07	12.37	2.04	0.23	0.13	0.69
99	14.53	5.31	0.51	0.07	1.62	3.60	0.00	0.00	18.90				
100	11.29	5.28	0.71	0.16	5.20	1.31	-0.06	-0.07	12.05	5.75	0.62	0.13	4.23
101	3.87	1.37	0.66	1.26	29.60	1.43	0.02	0.04	3.33	1.57	0.66	0.97	28.47
102	10.13	3.79	1.00	0.23	4.54	2.12	0.13	0.16	11.55	3.92	1.17	0.24	6.59
103	7.03	2.13	1.36	0.40	4.99	2.99	0.07	0.11	7.70	1.65	1.28	0.71	4.92
104	2.03	2.92	0.97	0.32	2.16	1.75	-0.13	-0.18	4.70	6.73	1.29	0.15	5.01
105	6.88	2.90	1.42	0.24	5.86	2.88	0.13	0.17	10.73	3.99	1.11	0.16	4.35
106	3.79	1.73	0.55	0.17	29.60	2.68	-0.04	-0.05	7.49	3.59	0.57	0.09	28.47
107	6.62	2.95	0.27	0.18	0.67	0.71	0.02	0.03	9.10	2.26	0.72	0.35	6.17
108	7.20	2.30	0.31	0.10	176.25	3.83	-0.16	-0.18	9.68	2.72	0.34	0.07	114.81
109	12.39	1.03	1.03	0.07	15.57	2.53	0.00	0.00	20.06	6.06	1.15	0.12	14.57
110	3.57	1.27	0.61	0.84	27.11	1.95	0.23	0.42	5.01	2.88	0.55	0.23	8.87

Questinnaire No.	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN
111	12.60	2.32	1.12	0.36	3.18	4.27	0.19	0.25	8.98	2.32	1.25	0.34	3.30
112	8.68	3.23	1.44	0.27	9.30	3.47	0.13	0.16	10.68	1.45	1.25	0.51	9.83
113	6.97	1.61	0.41	0.27	2.27	1.29	0.02	0.03	6.91	2.06	0.39	0.21	2.34
114	18.44	2.73	0.20	0.07	0.99	1.59	-0.06	-0.07	16.65	2.41	0.15	0.09	0.69
115	6.70	0.95	0.48	0.25	1.42	3.22	-0.03	-0.39	4.76	1.13	0.53	0.22	1.69
116	7.61	2.32	1.50	0.40	6.19	2.63	0.19	0.27	9.90	2.91	1.63	0.30	5.91
117	4.53	2.39	1.61	0.45	6.82	2.79	0.00	0.01	7.43	3.01	1.22	0.32	4.87
118	11.86	1.65	2.86	0.23	4.46	13.66	0.16	0.19	12.05	1.04	2.07	0.65	3.93
119	7.16	3.84	1.62	0.29	10.28	2.79	0.13	0.17	10.40	2.81	1.78	0.40	7.71
120	5.46	2.74	0.81	0.53	5.05	1.94	0.09	0.15	7.04	5.07	1.10	0.32	23.32
121	6.71	1.39	0.20	0.21	0.66	1.81	0.00	0.00	7.91	1.43	0.21	0.18	0.85
122	2.53	1.14	0.41	2.61	1.41	0.56	0.09	0.31	3.65	11.86	0.40	1.87	1.10
123	7.59	3.39	1.14	0.34	8.32	1.86	0.10	0.13	9.27	4.31	0.98	0.25	6.67
124	9.20	4.17	0.21	0.15	1.94	0.48	0.01	0.01	10.42	4.83	0.28	0.12	5.59
125	8.82	1.65	0.86	0.62	2.34	1.74	0.06	0.10	5.74	2.02	0.83	0.46	2.89
126	6.81	2.76	1.84	0.41	6.67	2.42	0.10	0.14	8.56	2.97	1.83	0.35	5.32
127	12.50	4.16	0.69	0.13	1.75	3.49	0.10	0.11	14.34	11.04	0.54	0.04	1.30
128	6.36	2.73	0.56	0.44	7.90	0.81	0.01	0.02	7.12	2.13	1.28	0.61	17.96
129	13.63	7.45	0.37	0.07	1.40	3.09	0.05	0.06	21.73	4.36	0.37	0.14	1.80
130	6.53	2.28	0.42	0.14	95.14	16.98	0.11	0.12	10.00	1.92	0.45	0.13	93.87
131	5.09	3.09	1.53	0.25	29.60	6.95	0.26	0.34	10.99	1.60	1.55	0.65	28.47
132	2.56	1.66	0.41	0.83	1.92	0.63	0.00	0.01	4.35	2.28	0.66	0.48	2.29
133	2.65	2.34	1.31	0.64	16.37	1.99	0.10	0.16	6.16	3.32	1.34	0.38	17.12
134	11.92	6.27	0.55	0.19	29.60	1.01	0.12	0.15	14.05	9.43	0.61	0.12	28.47
135	6.45	1.68	0.77	0.52	2.90	1.53	0.08	0.13	6.78	2.23	0.71	0.36	3.19
136	7.96	5.38	0.51	0.17	2.24	0.69	0.02	0.02	11.84	6.70	0.42	0.14	2.08
137	7.47	3.54	1.63	0.15	6.35	3.88	0.07	0.08	11.55	3.20	1.43	0.18	3.60
138	8.67	3.06	0.85	0.43	2.53	1.74	-0.01	-0.01	8.21	4.57	0.78	0.40	2.43
139	9.11	3.49	1.15	0.35	36.50	1.43	0.01	0.01	8.38	3.45	1.09	0.37	36.93
140	4.47	1.26	0.08	0.52	0.20	0.22	-0.05	-0.08	4.20	2.11	0.13	0.21	0.31
141	6.62	2.59	1.95	0.33	9.65	6.71	0.02	0.03	6.34	2.55	1.63	0.30	7.30
142	11.87	7.81	0.55	0.14	7.34	1.58	0.15	0.18	16.45	5.98	0.51	0.18	4.02
143	4.50	1.87	0.43	0.88	3.42	0.56	0.01	0.02	6.01	2.34	0.47	0.58	2.87
144	15.84	6.41	0.51	0.14	11.79	1.67	0.08	0.09	14.52	4.99	0.59	0.20	232.36
145	20.09	2.92	0.30	0.03	2.03	1.35	0.00	0.00	4.11	8.01	0.41	0.12	2.63
146	4.35	1.32	1.26	0.72	2.14	2.78	0.01	0.02	5.71	1.51	1.28	0.61	2.51
147	10.96	4.12	0.99	0.39	29.60	1.62	0.09	0.13	10.25	3.00	0.99	0.53	28.47

Questinnaire No.	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN
148	10.24	3.35	1.55	0.39	9.33	1.80	0.43	0.61	12.70	2.08	1.86	0.60	4.81
149	11.20	5.97	0.38	0.12	8.05	2.37	0.01	0.01	13.98	4.54	0.37	0.17	7.31
150	21.21	0.80	0.09	0.07	0.18	1.73	-0.01	-0.01	18.30	0.76	0.98	0.56	2.79
151	4.20	1.05	0.69	0.81	1.65	1.79	0.05	0.09	5.13	1.56	0.68	0.40	1.51
152	5.50	2.67	0.60	0.22	2.06	2.45	0.01	0.01	8.22	2.41	0.59	0.21	1.52
153	7.28	1.82	0.08	0.95	0.63	0.33	-0.07	-0.13	2.16	2.39	0.81	0.26	5.22
154	7.28	1.82	0.08	0.95	0.63	0.33	-0.07	-0.13	2.16	2.39	0.81	0.26	5.22
155	7.28	6.36	0.49	0.10	5.65	0.88	0.02	0.02	16.37	5.00	0.42	0.12	3.30
156	6.40	1.80	0.50	0.32	2.03	1.16	0.00	0.00	6.72	2.39	0.81	0.26	5.22
157	6.29	2.32	0.31	0.69	3.89	0.41	0.12	0.20	7.56	3.68	0.27	0.34	3.92
158	6.23	2.84	0.27	0.16	43.51	13.72	-0.01	-0.01	7.97	3.70	0.31	0.12	53.14
159	6.95	1.50	0.49	0.37	0.82	1.37	-0.05	-0.07	6.97	2.34	0.72	0.35	1.27
160	5.00	1.59	1.87	1.57	498.12	3.14	0.16	0.41	5.64	1.86	1.95	1.08	588.74
161	8.80	3.92	0.98	0.29	14.68	3.34	0.09	0.11	10.40	3.05	0.92	0.42	28.08
162	9.76	1.80	0.79	0.60	9.74	1.61	0.02	0.03	5.85	1.97	0.86	0.48	7.75
163	6.57	1.38	1.74	0.88	3.81	2.73	0.11	0.22	6.31	1.45	1.88	0.86	4.41
164	12.66	5.18	0.60	0.09	3.30	3.97	0.02	0.03	15.94	3.52	0.58	0.14	3.19
165	6.92	2.71	1.14	0.54	209.15	1.62	0.06	0.09	8.28	2.62	1.01	0.56	290.29
166	8.42	3.30	1.05	0.27	3.73	1.79	0.17	0.21	11.02	2.65	1.14	0.31	3.24
167	8.40	4.30	0.56	0.11	1.42	3.35	0.01	0.01	14.06	4.53	0.65	0.12	1.80
168	6.52	2.98	1.26	0.36	15.53	2.17	0.14	0.20	8.66	2.89	1.03	0.43	26.71
169	5.20	5.86	1.16	0.33	7.01	2.34	0.02	0.02	8.13	3.78	1.11	0.42	8.41
170	2.88	3.07	0.69	0.68	29.60	3.87	0.25	0.42	6.80	2.85	0.77	0.38	28.47
171	12.30	3.50	0.58	0.16	2.31	2.17	-0.04	-0.04	8.16	4.33	0.56	0.15	3.16
172	9.26	5.29	1.10	0.20	32.79	2.63	0.13	0.16	12.82	3.42	1.11	0.34	41.54
173	11.80	1.56	0.21	0.21	0.66	0.91	-0.03	-0.04	7.48	2.09	0.21	0.08	0.60
174	10.43	1.96	0.28	0.08	3.54	1.50	0.00	0.00	15.78	4.87	0.31	0.16	2.67
175	8.11	3.94	0.16	0.13	79.82	8.61	0.01	0.01	9.72	2.84	0.25	0.15	171.14
176	13.17	4.50	1.97	0.15	18.34	6.46	0.09	0.11	13.69	5.16	1.78	0.12	11.60
177	7.67	3.93	1.31	0.14	2.55	13.12	0.04	0.04	15.69	2.54	1.01	0.32	2.51
178	14.63	2.87	0.97	0.18	2.25	2.79	0.00	0.00	11.17	4.60	0.79	0.09	1.86
179	9.82	4.98	0.52	0.14	2.76	1.58	0.16	0.18	14.24	5.24	0.51	0.14	2.88
180	3.65	6.89	0.28	0.03	1.18	3.27	0.02	0.02	4.37	5.10	0.40	0.06	3.25
181	19.12	5.08	0.31	0.05	0.75	3.17	-0.02	-0.02	25.43	2.10	0.31	0.08	0.76
182	11.21	7.00	0.67	0.12	2.73	1.94	0.05	0.06	15.17	11.17	0.64	0.07	3.05
183	14.23	1.12	0.93	0.08	7.03	2.83	0.05	0.05	21.56	5.40	0.73	0.18	5.87
184	14.91	1.65	0.42	0.14	0.94	3.89	-0.05	-0.05	10.94	2.69	0.60	0.10	2.40

Questinnaire No.	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN
185	23.76	4.16	0.42	0.06	4.74	2.66	0.02	0.02	25.57	0.05	0.36	0.06	3.80
186	-0.58	0.41	0.51	3.34	5.55	3.12	-0.01	-0.06	-0.72	0.46	0.60	3.23	6.25
187	1.74	1.33	2.89	1.59	15.04	4.88	0.03	0.07	3.79	1.50	2.83	1.27	16.69
188	0.83	0.72	0.93	7.09	2.88	2.03	0.00	0.02	0.94	0.71	0.91	7.73	2.71
189	-2.59	0.23	0.47	11.20	1.29	3.39	-0.12	-1.44	-2.96	0.14	0.46	-18.24	1.42
190	-2.17	0.27	0.26	10.35	0.87	1.21	-0.08	-0.96	-3.21	0.27	0.21	15.26	1.10
191	0.73	0.74	0.75	2.08	3.29	2.06	-0.02	-0.08	1.03	0.75	0.67	1.13	4.62
192	2.43	1.50	0.53	0.74	1.94	2.03	-0.03	-0.05	3.02	2.33	0.50	0.52	2.02
193	2.68	1.08	1.60	2.48	26.30	3.34	0.06	0.23	1.85	1.15	1.17	1.81	18.53
194	-1.90	0.30	0.34	8.18	1.59	1.51	-0.03	-0.32	-2.69	0.19	0.26	-9.47	2.67
195	3.20	2.20	1.00	1.03	35.65	2.07	0.00	0.00	4.41	2.85	0.81	0.94	34.21
196	4.24	1.21	3.51	3.12	49.40	10.34	0.07	0.30	6.78	1.34	2.54	2.48	39.95
197	1.83	0.66	0.65	0.67	48.79	2.79	0.01	0.02	1.42	0.67	0.59	0.56	63.83
198	5.29	1.48	0.61	0.91	100.40	1.99	-0.02	-0.03	2.76	1.10	0.58	2.63	28.95
199	5.31	1.35	1.30	0.96	2.80	3.35	0.10	0.19	6.22	1.11	1.24	0.98	2.63
200	3.14	2.19	0.47	7.61	3.03	0.82	0.04	0.33	3.27	3.34	0.34	7.77	2.13
201	4.98	0.93	1.63	0.85	1.87	4.33	0.12	0.22	6.42	0.90	1.67	0.93	1.98
202	2.84	1.37	1.34	1.09	54.33	5.32	0.08	0.17	3.37	1.86	1.26	0.70	105.54
203	-0.56	0.39	0.28	1.69	100.40	3.29	-0.04	-0.11	-0.39	0.45	0.28	1.49	28.95
204	3.92	1.42	0.95	0.84	3.64	1.69	-0.04	-0.06	5.34	1.30	0.88	0.92	3.47
205	3.59	1.29	0.97	0.91	6.20	1.58	0.02	0.04	3.52	1.63	0.97	0.65	10.43
206	4.12	1.55	1.12	0.91	4.85	1.60	0.11	0.21	6.37	1.24	1.15	1.39	4.08
207	-3.58	0.31	0.56	3.53	7.83	2.87	-0.09	-0.48	-4.57	0.31	0.58	2.93	12.85
208	2.42	0.45	0.40	0.98	2.71	5.25	0.07	0.13	2.18	0.31	0.31	0.62	4.65
209	2.35	0.70	0.27	1.46	0.86	0.79	-0.04	-0.09	1.86	1.18	0.42	1.45	1.26
210	4.93	1.79	0.47	0.56	2.69	2.10	0.00	0.00	5.17	1.87	0.55	0.46	3.38
211	9.06	1.81	0.64	0.26	1.12	2.37	0.01	0.02	8.48	1.49	0.60	0.30	1.01
212	8.47	2.83	0.80	0.15	5.11	5.30	-0.06	-0.07	10.85	2.98	0.73	0.12	4.97
213	3.59	1.79	1.23	0.96	8.43	2.06	0.07	0.13	5.60	1.67	1.33	0.88	11.10
214	4.55	2.07	0.44	0.57	7.33	0.60	-0.01	-0.02	4.90	2.56	0.44	0.42	6.67
215	4.89	2.36	0.62	0.28	4.63	1.88	-0.01	-0.01	6.21	3.93	0.63	0.17	5.28
216	6.78	2.24	0.55	0.36	4.51	1.21	0.05	0.07	7.60	2.71	0.55	0.29	4.36
217	8.15	7.35	0.80	0.14	2.13	1.66	0.00	0.01	15.39	4.39	0.65	0.20	2.10
218	10.29	2.90	0.50	0.28	1.27	1.47	0.14	0.18	11.27	2.73	0.69	0.35	2.44
219	6.50	2.56	0.96	0.43	6.03	1.57	0.11	0.16	7.97	2.15	0.92	0.58	7.25
220	2.80	1.34	0.89	1.07	1.92	1.53	0.03	0.55	6.39	1.15	0.77	1.10	1.23
221	7.36	1.91	0.83	0.49	3.41	2.15	0.05	0.07	6.63	2.12	0.97	0.40	4.10

Questinnaire No.	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN
222	7.49	1.70	1.06	0.45	3.36	2.30	0.05	0.07	7.49	3.04	1.15	0.23	3.87
223	4.41	1.41	0.97	0.73	4.12	2.78	0.02	0.04	4.48	1.71	0.90	0.57	4.16
224	9.22	2.71	0.73	0.23	16.78	2.40	0.16	0.20	10.32	1.59	0.48	0.48	8.92
225	11.55	2.73	0.85	0.35	1.98	2.62	0.12	0.16	9.44	2.23	0.72	0.33	1.49
226	10.16	2.35	1.34	0.31	3.67	2.56	0.14	0.18	8.93	2.83	1.15	0.24	3.20
227	8.87	3.63	0.19	0.33	156.30	0.35	0.09	0.11	10.20	4.31	0.28	0.25	28.95
228	5.13	3.11	0.92	0.39	100.40	1.85	0.10	0.14	7.83	2.35	1.16	0.65	28.95
229	8.86	1.58	0.95	0.03	2.93	2.36	0.03	0.04	4.25	4.20	0.85	0.12	2.84
230	11.91	1.66	0.35	0.26	0.56	1.35	-0.07	-0.09	9.36	2.50	0.40	0.19	0.57
231	3.15	1.10	1.46	1.04	3.48	3.47	0.13	0.26	5.84	1.38	1.72	0.69	4.32
232	7.84	2.83	1.68	0.47	100.40	1.94	0.12	0.18	8.70	3.04	1.49	0.42	28.95
233	7.57	4.40	0.55	0.30	2.92	1.43	-0.08	-0.11	8.04	4.18	0.65	0.27	2.89
234	13.14	7.47	0.66	0.16	100.40	0.97	0.02	0.30	15.79	2.77	0.66	0.54	28.95
235	11.00	1.29	0.50	0.08	10.12	5.54	-0.06	-0.06	12.45	0.95	0.42	0.15	6.82
236	2.76	1.12	0.93	0.49	100.40	2.69	-0.03	-0.05	2.98	1.45	0.56	0.39	2.44
237	9.66	2.45	0.66	0.21	1.54	3.30	0.07	0.08	11.28	3.52	0.68	0.12	1.42
238	8.76	3.72	1.74	0.18	7.07	5.71	0.11	0.14	11.57	3.93	1.48	0.17	5.13
239	15.40	7.13	1.90	0.14	6.13	2.96	-0.23	-0.32	13.25	3.60	2.03	0.35	7.06
240	5.20	2.30	0.63	0.75	31.45	0.79	0.04	0.08	6.19	2.48	0.62	0.71	36.92
241	6.30	1.57	0.86	0.61	3.18	1.75	0.02	0.03	6.30	1.71	0.85	0.53	2.97
242	6.62	3.37	0.54	0.20	2.00	1.48	-0.07	-0.09	7.84	4.63	0.37	0.16	1.98
243	8.17	2.64	1.34	0.24	10.43	3.11	-0.11	-0.14	6.67	3.08	1.20	0.20	8.65
244	4.92	1.65	0.45	0.48	11.21	1.73	-0.06	-0.09	5.01	1.88	0.70	0.40	13.27
245	12.04	4.33	0.37	0.06	79.36	5.45	0.04	0.04	18.92	2.27	0.46	0.14	75.95
246	5.95	0.85	1.40	0.48	2.21	6.92	0.06	0.09	7.43	1.62	1.60	0.38	3.02
247	2.47	1.50	1.24	1.02	5.96	1.88	0.20	0.40	5.64	2.55	0.93	0.37	3.83
248	6.04	3.49	0.70	2.00	38.62	0.95	0.11	0.36	6.03	4.91	0.91	0.54	31.49
249	13.49	7.02	0.27	0.10	1.77	1.50	-0.04	-0.04	15.72	5.99	0.41	0.10	2.17
250	14.12	5.44	0.95	0.11	5.57	4.58	0.04	0.04	15.69	2.17	1.14	0.33	5.73
251	13.33	5.67	1.09	0.10	2.87	4.12	-0.01	-0.01	15.74	4.28	1.45	0.13	3.71
252	7.97	2.47	0.20	0.10	171.65	5.76	-0.04	-0.04	8.71	2.72	0.26	0.09	171.45
253	4.81	1.07	1.28	0.81	2.23	3.85	0.14	0.26	6.77	0.92	1.01	1.12	1.86
254	9.88	1.87	0.58	0.30	0.99	2.16	0.05	0.07	8.99	4.04	0.71	0.16	1.60
255	11.47	6.80	1.40	0.12	9.00	2.37	0.01	0.02	14.18	7.22	1.37	0.11	7.67
256	14.48	3.41	0.69	0.32	26.73	1.54	0.10	0.13	10.16	6.81	0.39	0.12	4.90
257	4.82	2.82	1.03	0.20	1.47	2.63	0.06	0.07	10.58	3.55	0.95	0.14	1.43
258	9.81	3.44	1.70	0.38	31.21	3.60	0.04	0.06	8.57	2.54	2.14	0.56	27.47

Questinnaire No.	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN
259	4.99	1.75	1.33	0.36	4.12	3.00	0.00	0.01	7.60	1.81	1.23	0.42	4.28
260	10.56	2.21	0.91	0.22	1.21	3.33	0.06	0.07	11.85	2.25	0.90	0.23	1.33
261	9.24	2.17	1.46	0.42	3.60	2.86	0.17	0.24	9.78	2.29	1.22	0.39	2.91
262	5.76	4.40	0.50	0.46	10.99	0.61	0.04	0.06	8.85	4.17	0.98	0.39	18.25
263	10.55	4.19	0.83	0.26	12.88	4.11	0.20	0.26	12.05	5.32	0.54	0.20	9.72
264	7.82	8.85	0.32	0.12	2.62	0.54	0.05	0.51	18.70	3.86	0.23	0.28	2.75
265	5.64	1.89	0.47	0.37	1.20	2.46	0.03	0.04	6.54	1.55	0.47	0.33	1.09
266	9.26	3.02	0.42	0.23	3.07	1.77	0.06	0.08	9.82	2.55	0.51	0.32	4.03
267	6.22	2.58	0.92	0.39	60.11	6.50	0.12	0.17	7.84	2.02	0.61	0.47	3.78
268	9.15	6.47	0.42	0.25	1.59	0.84	-0.01	-0.01	12.31	5.25	0.59	0.25	2.43
269	5.42	1.89	0.53	0.44	3.67	1.45	0.03	0.05	6.04	2.09	0.52	0.43	3.80
270	6.82	3.50	0.70	0.47	14.95	1.38	0.08	0.12	7.01	3.82	0.72	0.42	7.59
271	10.03	2.54	1.06	0.29	5.12	2.85	0.13	0.17	9.02	3.83	1.08	0.19	5.63
272	2.36	7.14	0.93	0.10	5.30	1.98	0.04	0.05	15.80	8.86	0.77	0.06	2.41
273	9.06	1.81	0.64	0.26	1.12	2.37	0.01	0.02	8.48	1.49	0.60	0.30	1.01
274	8.47	2.83	0.80	0.15	5.11	5.30	-0.06	-0.07	10.85	2.98	0.73	0.12	4.97
275	3.59	1.79	1.23	0.96	8.43	2.06	0.07	0.13	5.60	1.67	1.33	0.88	11.10
276	4.55	2.07	0.44	0.57	7.33	0.60	-0.01	-0.02	4.90	2.56	0.44	0.42	6.67
277	4.89	2.36	0.62	0.28	4.63	1.88	-0.01	-0.01	6.21	3.93	0.63	0.17	5.28
278	6.78	2.24	0.55	0.36	4.51	1.21	0.05	0.07	7.60	2.71	0.55	0.29	4.36
279	8.15	7.35	0.80	0.14	2.13	1.66	0.00	0.01	15.39	4.39	0.65	0.20	2.10
280	10.29	2.90	0.50	0.28	1.27	1.47	0.14	0.18	11.27	2.73	0.69	0.35	2.44
281	6.50	2.56	0.96	0.43	6.03	1.57	0.11	0.16	7.97	2.15	0.92	0.58	7.25
282	2.80	1.34	0.89	1.07	1.92	1.53	0.03	0.55	6.39	1.15	0.77	1.10	1.23
283	7.36	1.91	0.83	0.49	3.41	2.15	0.05	0.07	6.63	2.12	0.97	0.40	4.10
284	7.49	1.70	1.06	0.45	3.36	2.30	0.05	0.07	7.49	3.04	1.15	0.23	3.87
285	4.41	1.41	0.97	0.73	4.12	2.78	0.02	0.04	4.48	1.71	0.90	0.57	4.16
286	9.22	2.71	0.73	0.23	16.78	2.40	0.16	0.20	10.32	1.59	0.48	0.48	8.92
287	11.55	2.73	0.85	0.35	1.98	2.62	0.12	0.16	9.44	2.23	0.72	0.33	1.49
288	10.16	2.35	1.34	0.31	3.67	2.56	0.14	0.18	8.93	2.83	1.15	0.24	3.20
289	8.87	3.63	0.19	0.33	156.30	0.35	0.09	0.11	10.20	4.31	0.28	0.25	28.95
290	5.13	3.11	0.92	0.39	100.40	1.85	0.10	0.14	7.83	2.35	1.16	0.65	28.95
291	8.86	1.58	0.95	0.03	2.93	2.36	0.03	0.04	4.25	4.20	0.85	0.12	2.84
292	11.91	1.66	0.35	0.26	0.56	1.35	-0.07	-0.09	9.36	2.50	0.40	0.19	0.57
293	3.15	1.10	1.46	1.04	3.48	3.47	0.13	0.26	5.84	1.38	1.72	0.69	4.32
294	7.84	2.83	1.68	0.47	100.40	1.94	0.12	0.18	8.70	3.04	1.49	0.42	28.95
295	7.57	4.40	0.55	0.30	2.92	1.43	-0.08	-0.11	8.04	4.18	0.65	0.27	2.89

Questinnaire No.	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN
296	13.14	7.47	0.66	0.16	100.40	0.97	0.02	0.30	15.79	2.77	0.66	0.54	28.95
297	11.00	1.29	0.50	0.08	10.12	5.54	-0.06	-0.06	12.45	0.95	0.42	0.15	6.82
298	2.76	1.12	0.93	0.49	100.40	2.69	-0.03	-0.05	2.98	1.45	0.56	0.39	2.44
299	9.66	2.45	0.66	0.21	1.54	3.30	0.07	0.08	11.28	3.52	0.68	0.12	1.42
300	8.76	3.72	1.74	0.18	7.07	5.71	0.11	0.14	11.57	3.93	1.48	0.17	5.13
301	15.40	7.13	1.90	0.14	6.13	2.96	-0.23	-0.32	13.25	3.60	2.03	0.35	7.06
302	5.20	2.30	0.63	0.75	31.45	0.79	0.04	0.08	6.19	2.48	0.62	0.71	36.92
303	6.30	1.57	0.86	0.61	3.18	1.75	0.02	0.03	6.30	1.71	0.85	0.53	2.97
304	6.62	3.37	0.54	0.20	2.00	1.48	-0.07	-0.09	7.84	4.63	0.37	0.16	1.98
305	8.17	2.64	1.34	0.24	10.43	3.11	-0.11	-0.14	6.67	3.08	1.20	0.20	8.65
306	6.55	1.82	0.73	0.32	1.20	1.87	0.03	0.04	8.53	5.37	0.92	0.11	1.76
307	12.34	9.17	0.83	0.08	2.72	2.20	0.07	0.07	21.45	7.95	0.55	0.09	2.03
308	19.04	4.75	0.47	0.14	1.78	1.58	0.04	0.05	14.52	4.62	0.50	0.17	2.48
309	7.19	7.76	0.81	0.07	12.41	1.82	0.02	0.02	19.59	5.26	0.66	0.11	7.59
310	7.51	2.26	0.47	0.18	1.10	1.41	0.10	0.12	10.44	1.56	0.45	0.02	1.19
311	19.35	1.22	0.65	0.07	8.04	1.19	0.08	0.09	22.79	11.31	0.52	0.07	5.90
312	10.11	4.65	1.16	0.24	3.53	2.01	0.15	0.18	13.01	6.16	0.93	0.17	2.72
313	12.25	7.73	0.62	0.08	1.81	1.51	0.06	0.06	19.34	7.61	0.64	0.09	2.28
314	6.55	1.82	0.73	0.32	1.20	1.87	0.03	0.04	8.53	5.37	0.92	0.11	1.76
315	12.34	9.17	0.83	0.08	2.72	2.20	0.07	0.07	21.45	7.95	0.55	0.09	2.03
316	19.04	4.75	0.47	0.14	1.78	1.58	0.04	0.05	14.52	4.62	0.50	0.17	2.48
317	7.19	7.76	0.81	0.07	12.41	1.82	0.02	0.02	19.59	5.26	0.66	0.11	7.59
318	7.51	2.26	0.47	0.18	1.10	1.41	0.10	0.12	10.44	1.56	0.45	0.02	1.19
319	19.35	1.22	0.65	0.07	8.04	1.19	0.08	0.09	22.79	11.31	0.52	0.07	5.90
320	10.11	4.65	1.16	0.24	3.53	2.01	0.15	0.18	13.01	6.16	0.93	0.17	2.72
321	12.25	7.73	0.62	0.08	1.81	1.51	0.06	0.06	19.34	7.61	0.64	0.09	2.28
322	1.45	0.95	0.55	8.46	1.72	0.97	-0.03	-0.29	1.36	1.14	0.56	8.73	3.13
323	-2.42	0.48	1.63	14.49	23.90	4.52	-0.11	-1.75	-4.46	0.37	2.09	6.27	15.60
324	2.61	0.93	0.65	1.27	2.09	1.55	0.02	0.05	2.79	1.00	0.81	1.50	3.81
325	3.70	1.17	0.33	0.76	68.00	0.91	0.10	0.17	3.76	0.94	0.36	0.71	105.23
326	2.78	0.91	0.64	4.11	0.76	1.61	0.02	0.09	2.51	0.68	0.59	4.35	0.71
327	0.20	0.49	0.27	2.14	1.19	0.87	-0.08	-0.25	-0.47	0.49	0.40	2.44	1.54
328	1.31	0.97	0.12	16.05	0.62	0.32	-0.08	-1.32	0.73	1.17	0.19	0.68	1.56
329	3.26	1.12	0.85	0.83	15.33	1.98	0.04	0.07	3.69	1.09	0.91	0.91	13.31
330	3.34	1.31	1.34	1.87	6.06	2.68	0.08	0.24	3.82	1.29	1.50	2.00	6.31
331	0.89	0.38	0.59	0.48	41.83	9.57	-0.02	-0.03	1.09	0.34	0.66	0.42	39.65
332	1.52	1.14	1.93	5.86	17.22	2.12	-0.03	-0.18	1.24	1.24	2.60	3.53	14.26

Questinnaire No.	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN
333	6.78	3.65	1.20	0.33	20.93	1.70	0.01	0.02	8.06	3.02	1.46	0.46	41.99
334	1.95	0.96	1.53	1.53	10.60	5.39	0.01	0.03	1.84	0.98	1.61	1.42	9.35
335	0.44	0.88	0.20	0.49	30.05	4.91	-0.13	-0.20	0.89	0.85	0.24	0.61	41.74
336	6.16	2.54	0.12	0.51	8.82	0.15	-0.03	-0.05	6.61	3.69	0.09	0.29	14.26
337	9.42	6.30	1.45	0.20	3.86	1.62	-0.06	-0.08	9.53	6.94	1.50	0.17	14.26
338	8.36	2.12	0.95	0.24	2.33	3.97	-0.01	-0.01	10.03	2.22	0.84	0.22	2.00
339	16.97	6.71	0.92	0.07	1.76	2.94	-0.06	-0.07	2.07	8.83	0.90	0.06	1.71
340	6.05	2.96	0.78	0.24	2.40	1.57	0.00	0.00	8.36	3.06	0.80	0.22	2.26
341	6.24	2.16	0.91	0.17	4.05	3.10	0.05	0.06	9.68	1.70	0.82	0.17	2.76
342	9.16	3.35	0.87	0.28	3.51	1.20	0.04	0.05	10.47	2.51	0.82	0.40	3.02
343	7.68	2.36	1.58	0.31	7.62	3.01	0.01	0.17	9.41	2.15	1.41	0.37	7.94
344	5.89	0.97	1.33	0.54	3.31	4.34	0.01	0.22	7.02	1.29	1.43	0.34	2.82
345	7.33	2.04	1.58	0.33	5.00	5.69	0.01	0.17	8.32	2.78	1.46	0.29	5.90
346	7.05	1.55	0.86	0.36	3.64	2.68	0.04	0.05	6.64	2.69	1.02	0.23	5.19
347	5.15	2.86	1.34	0.40	5.43	2.27	-0.03	-0.04	7.28	3.41	1.30	0.29	4.49
348	5.56	1.82	0.66	0.52	4.17	1.33	0.04	0.06	6.24	2.73	0.66	0.24	4.21
349	9.41	1.87	0.85	0.34	2.86	2.45	0.03	0.04	8.40	2.10	0.90	0.30	3.02
350	4.80	2.17	0.83	0.61	6.30	1.10	0.04	0.07	5.66	2.99	0.97	0.34	5.05
351	5.56	1.06	0.97	0.38	1.66	3.69	0.00	0.00	6.43	1.23	0.97	0.34	1.57
352	14.66	5.73	0.69	0.09	2.01	5.62	0.11	0.12	18.23	1.67	0.58	0.48	1.67
353	7.76	2.19	0.71	0.31	2.86	2.01	0.08	0.10	8.46	2.02	0.70	0.35	2.87
354	5.21	1.48	1.14	0.73	6.29	2.53	0.11	0.19	6.27	1.88	1.16	0.54	7.49
355	5.20	1.17	1.05	0.76	4.29	3.23	0.02	0.03	4.47	1.96	0.74	0.42	3.13
356	4.85	1.69	1.28	0.28	5.80	8.87	-0.04	-0.05	6.05	1.43	1.37	0.32	6.37
357	8.00	4.71	0.75	0.41	7.17	1.98	-0.04	-0.06	7.30	4.41	0.70	0.45	7.07
358	5.17	1.20	0.51	0.43	1.69	1.63	0.11	0.16	5.92	1.55	0.42	0.23	1.22
359	12.06	2.67	0.67	0.13	1.04	2.62	0.02	0.20	14.78	3.60	0.61	0.11	0.99
360	6.00	1.75	0.75	0.53	5.37	2.78	0.07	0.11	6.36	2.18	0.86	0.39	5.16
361	1.69	1.16	1.32	1.01	6.94	2.83	0.02	0.47	2.94	2.83	1.26	0.28	5.88
362	12.64	4.19	1.39	0.12	4.55	4.01	-0.11	-0.13	14.00	4.16	1.39	0.10	4.12
363	9.95	1.04	0.71	0.14	1.31	12.45	-0.05	-0.06	11.42	0.64	0.77	0.18	1.29
364	13.21	5.64	0.70	0.16	6.49	2.34	0.09	0.10	13.93	4.26	0.68	0.22	6.23
365	9.19	2.03	0.74	0.27	4.35	1.78	0.01	0.02	6.63	3.05	0.84	0.22	11.08
366	7.41	2.70	1.21	0.31	8.98	3.42	0.01	0.15	7.82	3.60	1.28	0.22	8.94
367	9.04	3.49	0.42	0.15	3.93	1.20	0.01	0.01	10.53	7.45	0.46	0.07	4.60
368	4.73	1.37	2.18	1.05	6.32	9.09	0.02	0.35	6.18	1.22	2.18	0.82	6.05
369	10.22	4.76	0.89	0.20	3.49	2.09	0.06	0.07	11.37	3.51	0.86	0.23	3.17

Questinnaire No.	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN
370	7.36	2.33	0.75	0.22	13.97	1.89	0.05	0.06	8.39	2.95	0.74	0.19	55.17
371	7.80	2.59	0.73	0.26	5.21	3.97	0.02	0.23	9.47	4.50	0.70	0.15	6.07
372	5.34	4.13	2.14	0.18	14.06	6.12	0.01	0.01	8.62	5.16	1.27	0.12	6.86
373	6.93	1.57	0.27	0.42	0.46	1.70	-0.03	-0.04	6.13	1.74	0.30	0.40	0.42
374	7.29	3.22	0.84	0.25	3.35	1.57	-0.04	-0.06	8.09	3.08	0.82	0.25	2.79
375	3.94	1.43	1.22	0.70	5.43	2.24	0.08	0.15	4.47	1.86	1.35	0.46	5.72
376	9.20	3.29	2.29	0.41	44.84	3.05	0.02	0.30	10.78	5.14	1.79	0.21	24.28
377	5.06	0.87	0.61	0.39	1.28	3.78	0.00	0.00	6.08	0.85	0.58	0.35	1.38
378	6.74	1.56	0.65	0.32	2.06	1.93	0.06	0.09	7.79	1.34	0.61	0.42	1.99
379	5.08	5.40	0.58	0.28	3.15	11.30	-0.03	-0.04	6.41	5.72	0.60	0.15	2.61
380	9.72	2.77	0.60	0.11	57.55	2.64	0.02	0.17	12.42	2.29	0.31	0.08	43.35
381	4.58	1.60	2.51	0.31	18.39	3.02	0.04	0.05	5.86	4.18	3.73	0.08	23.25
382	12.61	3.73	0.24	0.22	0.78	0.76	-0.16	-0.21	10.65	5.36	0.18	0.12	0.56
383	22.90	1.02	0.44	0.05	4.29	1.31	0.02	0.02	2.91	1.25	0.39	0.04	3.43
384	27.03	1.10	0.66	0.03	1.71	3.65	-0.02	-0.02	3.73	4.61	0.60	0.09	1.55
385	6.61	7.96	0.51	0.10	4.85	0.73	-0.13	-0.15	14.18	9.02	0.46	0.09	4.24
386	11.64	7.12	0.33	0.10	8.33	0.76	-0.04	-0.05	16.10	8.59	0.10	0.08	2.16
387	15.75	1.35	0.18	0.06	17.22	2.28	0.01	0.01	17.26	1.57	0.17	0.05	14.26
388	3.06	1.07	0.28	0.04	1.35	1.48	-0.16	-0.16	3.28	6.79	0.24	0.04	1.18
389	10.81	5.30	0.67	0.11	2.17	1.59	0.04	0.05	15.41	3.98	0.61	0.12	2.21
390	4.58	1.60	2.51	0.31	18.39	3.02	0.04	0.05	5.86	4.18	3.73	0.08	23.25
391	8.48	3.06	0.90	0.61	9.76	2.80	0.02	0.03	9.45	3.41	0.89	0.18	0.15
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Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
1	2.06	-0.04	-0.50	0.52	0.83	0.92	18.82	3.80	1.98	-0.02	-0.42	0.20
2	0.90	-0.15	-0.29	0.15	0.67	0.27	2.10	1.87	0.60	-0.22	-0.67	-3.16
3	1.74	0.11	0.15	8.36	1.47	1.18	0.53	64.66	6.34	0.09	0.15	5.44
4	1.58	0.01	0.02	1.66	0.98	0.50	1.95	1.95	1.16	-0.14	-0.42	-0.29
5	2.03	0.11	0.19	4.55	2.12	3.08	0.44	65.53	4.96	0.07	0.09	5.45
6	6.05	0.01	0.03	-0.44	0.30	1.04	1.63	5.48	7.81	0.01	0.03	-0.45
7	11.20	-0.01	-0.02	7.13	1.88	4.48	0.77	68.90	10.78	0.03	0.06	5.30
8	0.29	0.07	0.28	4.01	1.44	0.17	2.53	26.77	0.18	0.04	0.13	3.38
9	2.17	-0.04	-0.08	0.80	0.76	0.79	1.19	6.85	2.14	-0.04	-0.09	0.38
10	3.86	0.22	0.54	5.38	1.71	1.83	1.34	40.26	3.67	0.21	0.50	5.71
11	2.63	0.00	0.00	2.84	1.09	1.21	1.96	7.01	2.23	0.01	0.03	2.27
12	0.96	-0.08	-0.62	1.06	1.03	0.74	-24.15	47.52	0.92	-0.18	-0.06	-1.25
13	0.49	0.00	0.01	4.35	1.58	0.34	1.23	1.74	0.44	0.01	0.02	4.55
14	1.68	-0.06	-0.90	-0.33	1.01	2.67	2.63	151.07	4.46	0.16	0.59	1.84
15	1.39	0.00	0.02	1.13	1.16	1.18	3.47	15.66	1.44	0.00	0.00	1.09
16	0.55	0.04	0.13	6.23	1.77	1.07	1.64	20.98	1.40	0.10	0.30	4.97
17	2.56	0.01	0.02	5.40	0.92	1.07	0.83	243.18	3.00	-0.01	-0.02	1.45
18	1.18	0.00	0.01	2.14	1.01	1.19	4.99	9.97	1.43	0.01	0.04	1.43
19	2.23	0.02	0.03	4.91	1.67	2.07	1.13	26.77	2.83	0.06	0.13	4.25
20	2.19	-0.06	-0.20	1.99	0.64	0.32	2.62	0.45	2.29	-0.06	-0.20	1.61
21	0.26	0.01	0.01	1.71	0.11	0.57	0.89	0.89	2.19	0.01	0.01	1.54
22	14.53	-0.03	-0.04	0.71	0.34	0.49	0.72	2.68	11.07	0.00	0.01	-0.24
23	1.39	-0.06	-0.88	2.34	0.68	0.43	-1.12	0.73	1.34	-0.07	-0.06	1.44
24	1.30	0.02	0.05	-0.61	0.74	0.55	1.90	26.77	1.52	0.03	0.08	0.12
25	0.43	0.00	0.00	5.00	1.37	0.63	2.27	26.77	0.68	0.01	0.02	2.99
26	2.90	0.03	0.05	5.89	2.19	0.34	0.31	3.23	1.92	0.02	0.03	5.94
27	2.96	0.09	0.26	3.87	1.08	1.80	1.82	5.67	3.11	0.08	0.23	3.70
28	3.88	0.09	0.19	5.57	1.21	1.89	1.36	11.26	4.42	0.07	0.17	3.85
29	3.43	0.01	0.02	3.83	1.55	1.10	0.59	8.39	3.07	0.03	0.05	4.30
30	1.92	0.07	0.12	7.11	0.94	0.86	5.60	2.26	2.25	0.08	0.55	2.38
31	8.76	-0.04	-0.20	-0.69	0.31	2.23	4.50	10.40	17.64	-0.07	-0.39	-2.48
32	0.76	-0.14	-0.79	1.27	1.73	0.14	8.13	1.71	0.33	-0.05	-0.47	1.50
33	1.33	-0.01	-0.01	4.34	4.59	0.08	1.31	2.22	0.84	-0.08	-0.19	3.19
34	2.83	0.34	0.72	7.26	1.46	1.21	1.78	101.79	2.23	0.33	0.93	5.80
35	0.97	-0.03	-0.05	1.52	1.72	0.11	0.52	0.25	1.28	-0.05	-0.07	2.25
36	0.64	0.08	0.24	8.37	3.67	0.36	1.54	1.12	0.63	0.06	0.16	8.68

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
37	1.72	0.14	0.18	11.16	3.45	0.84	0.32	4.60	1.60	0.11	0.15	9.94
38	0.63	0.04	0.04	11.94	3.04	0.15	0.24	3.67	0.34	0.06	0.08	7.51
39	1.32	0.12	0.17	7.34	2.34	0.83	0.37	3.40	1.57	0.12	0.16	8.11
40	2.60	0.10	0.15	9.50	2.56	1.75	0.42	5.23	2.45	0.14	0.22	8.72
41	1.99	0.10	0.10	3.06	4.90	0.55	0.01	1.90	1.69	0.06	0.06	10.07
42	2.03	0.11	0.18	6.54	2.90	1.33	0.33	16.56	2.39	0.03	0.04	7.74
43	6.66	0.07	0.08	13.57	4.04	0.53	0.17	4.76	6.81	0.11	0.12	12.23
44	11.90	0.15	0.17	10.70	3.73	0.44	0.09	83.07	11.21	0.13	0.14	14.91
45	4.22	0.34	0.59	7.21	1.99	1.74	0.43	26.77	4.13	0.36	0.54	8.87
46	0.94	0.04	0.05	7.05	3.21	0.68	0.21	0.85	1.85	-0.13	-0.15	11.86
47	1.94	0.21	0.29	9.28	2.74	1.34	0.51	16.61	2.01	0.16	0.24	7.81
48	1.07	0.27	0.31	19.03	5.99	0.41	0.18	159.66	1.40	0.11	0.13	13.69
49	1.33	0.10	0.13	8.31	1.93	0.78	0.39	2.33	1.73	0.07	0.10	8.55
50	0.60	0.00	0.00	13.74	4.97	0.38	0.18	2.06	0.55	0.00	0.00	11.04
51	4.42	0.12	0.14	11.64	3.53	1.29	0.18	4.49	3.47	0.07	0.08	11.07
52	1.64	0.00	0.01	9.06	3.57	0.66	0.44	2.13	1.36	0.02	0.02	8.66
53	1.63	0.05	0.07	8.08	3.03	1.02	0.43	13.59	1.77	0.03	0.04	7.44
54	0.39	-0.06	-0.08	7.58	2.40	0.17	0.21	0.42	0.47	-0.07	-0.08	7.41
55	5.74	0.01	0.01	6.55	3.85	1.07	0.17	5.45	5.79	-0.03	-0.04	8.82
56	1.05	0.14	0.19	13.47	4.03	0.63	0.31	7.74	1.10	0.22	0.31	11.33
57	0.64	0.01	0.02	7.51	2.99	0.53	0.58	1.75	0.84	-0.01	-0.01	7.86
58	2.24	0.11	0.13	12.40	4.44	0.36	0.23	314.84	1.49	0.04	0.05	11.16
59	1.73	0.04	0.04	15.09	7.98	0.19	0.12	1.35	0.70	0.01	0.02	14.60
60	2.63	0.01	0.02	6.38	1.99	2.19	0.44	4.89	4.53	0.06	0.09	7.86
61	1.51	0.12	0.19	9.04	2.84	1.25	0.63	26.77	2.03	0.26	0.46	9.16
62	3.41	0.28	0.45	9.83	1.93	2.10	0.61	4.35	3.77	0.19	0.31	9.09
63	2.66	0.01	0.01	11.21	3.94	0.52	0.18	6.34	3.01	0.01	0.01	10.55
64	5.49	0.15	0.24	4.88	1.03	0.67	0.29	1.22	12.92	0.21	0.28	8.38
65	2.06	0.04	0.06	7.64	1.70	0.64	0.31	1.27	1.87	0.07	0.09	8.82
66	2.75	0.03	0.04	8.67	2.32	0.73	0.22	1.78	3.08	0.05	0.06	8.87
67	1.73	0.02	0.03	8.11	2.94	0.26	0.46	4.06	0.37	0.10	0.14	8.89
68	1.73	0.02	0.03	8.11	2.94	0.26	0.46	4.06	0.37	0.10	0.14	8.89
69	0.83	-0.13	-0.15	13.25	3.21	0.48	0.20	3.24	0.89	-0.09	-0.10	9.30
70	1.73	0.02	0.03	8.11	2.76	1.03	0.23	9.39	2.08	0.00	0.00	8.48
71	0.34	0.09	0.13	10.18	2.94	0.26	0.46	4.06	0.37	0.10	0.14	8.89
72	8.81	0.03	0.03	10.40	2.10	0.31	0.17	49.23	6.15	0.08	0.09	8.13
73	1.76	0.01	0.01	8.23	2.83	0.67	0.45	1.31	1.40	0.02	0.02	7.90

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
74	3.94	0.19	0.40	6.56	2.26	2.09	0.75	61.66	4.48	0.26	0.45	8.60
75	2.97	0.17	0.24	9.48	2.77	0.90	0.45	13.13	3.42	0.10	0.14	8.65
76	1.97	0.01	0.02	6.70	2.74	1.28	0.35	118.66	2.83	-0.04	-0.06	9.19
77	2.86	0.17	0.32	6.77	2.34	1.95	0.43	5.21	2.79	0.33	0.47	10.46
78	2.72	0.05	0.06	11.64	4.09	0.53	0.12	3.13	3.17	0.05	0.06	12.93
79	1.52	0.09	0.14	8.25	2.56	0.96	0.59	264.28	1.46	0.05	0.08	7.79
80	2.09	0.12	0.16	10.05	1.92	1.41	0.50	4.41	2.37	0.11	0.17	8.16
81	5.00	0.00	0.00	13.83	2.63	1.19	0.36	8.18	5.95	0.11	0.15	7.68
82	1.64	0.22	0.33	8.91	2.99	1.02	0.43	20.26	2.35	0.27	0.39	9.98
83	2.26	0.00	0.00	7.14	11.76	1.05	0.42	6.26	2.23	-0.02	-0.03	7.77
84	3.92	0.37	0.50	9.68	3.53	0.73	0.28	26.77	3.18	0.29	0.37	10.61
85	1.44	0.03	0.04	9.94	4.46	0.67	0.16	5.28	1.96	0.10	0.11	10.21
86	2.86	0.17	0.23	10.13	3.13	1.20	0.36	23.31	3.16	0.27	0.37	10.79
87	0.60	0.03	0.06	4.90	2.20	0.79	0.71	84.02	1.13	0.18	0.31	7.73
88	7.17	0.10	0.11	10.10	1.47	0.40	0.12	11.80	6.90	0.11	0.12	11.41
89	0.58	0.05	0.08	6.80	3.17	0.38	0.31	50.47	0.62	0.05	0.08	8.04
90	2.47	0.12	0.18	7.09	3.03	1.03	0.31	8.21	2.69	0.14	0.18	9.11
91	1.85	0.03	0.04	10.49	3.03	0.58	0.49	12.45	1.69	0.09	0.15	8.79
92	4.23	0.07	0.09	6.55	2.11	1.26	0.43	5.71	3.12	0.11	0.15	7.41
93	2.29	0.01	0.01	0.37	4.58	0.50	0.08	5.85	1.72	0.02	0.03	15.32
94	2.71	0.09	0.14	7.79	2.25	0.87	0.57	1.36	5.12	0.07	0.11	7.54
95	0.80	0.02	0.04	7.04	3.05	0.74	0.40	25.94	0.88	0.03	0.05	8.06
96	0.71	0.03	0.04	7.74	4.56	0.44	0.24	26.77	0.77	0.05	0.06	9.98
97	4.08	0.03	0.04	5.61	2.25	1.04	0.26	2.38	3.22	0.05	0.07	7.80
98	1.05	-0.04	-0.04	9.45	2.15	0.30	0.13	1.17	1.23	-0.06	-0.06	8.83
99					1.61	0.37	0.13	0.97	3.47	-0.02	-0.02	11.40
100	1.39	-0.01	-0.01	14.17	5.07	0.47	0.12	3.27	1.07	-0.03	-0.03	14.41
101	1.07	0.04	0.08	4.36	2.33	0.73	0.44	26.77	1.70	0.06	0.09	7.39
102	2.36	0.18	0.22	11.86	3.89	1.10	0.24	6.27	2.45	0.17	0.21	11.88
103	2.68	0.27	0.46	7.32	2.59	1.24	0.47	4.54	2.31	0.04	0.67	10.89
104	1.91	0.00	0.00	10.22	4.10	1.29	0.26	4.56	2.05	0.04	0.06	7.49
105	2.87	0.11	0.13	13.15	4.86	0.87	0.14	3.56	2.38	0.07	0.08	14.45
106	2.89	0.05	0.06	14.12	2.05	0.50	0.15	26.77	3.18	0.02	0.02	8.80
107	2.38	0.05	0.07	6.31	2.64	0.72	0.29	8.73	1.84	0.06	0.08	7.31
108	3.79	-0.06	-0.06	14.76	3.58	0.77	0.10	26.77	7.74	0.14	0.15	12.88
109	2.50	0.00	0.00	12.87	3.59	1.24	0.23	16.11	2.54	0.01	0.01	8.47
110	3.18	0.14	0.18	8.65	3.68	0.54	0.20	11.36	1.51	0.12	0.15	9.73

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
111	4.47	0.21	0.28	9.25	3.23	1.59	0.18	3.71	5.40	0.22	0.26	12.78
112	5.07	0.10	0.15	5.73	1.78	1.14	0.37	8.17	4.55	0.20	0.27	7.67
113	1.13	0.02	0.03	8.42	1.26	0.25	0.21	1.00	1.27	0.01	0.01	7.92
114	1.01	-0.05	-0.05	13.52	2.49	0.09	0.08	0.45	0.81	-0.03	-0.04	14.90
115	2.93	0.02	0.02	6.84	1.22	0.61	0.20	1.97	3.89	0.03	0.04	7.59
116	2.88	0.19	0.26	11.39	3.88	1.70	0.22	6.66	2.92	0.20	0.27	13.00
117	2.17	0.02	0.03	8.62	2.93	1.25	0.32	4.32	2.76	0.09	0.13	9.27
118	12.34	0.05	0.07	6.37	1.11	1.87	0.56	3.07	6.95	0.21	0.33	8.04
119	3.22	0.17	0.24	9.34	2.75	1.72	0.40	6.80	3.37	0.21	0.29	9.89
120	2.19	0.14	0.19	10.12	2.23	0.99	0.47	7.09	2.59	0.21	0.31	8.19
121	2.08	0.00	0.00	8.14	1.17	0.27	0.14	0.95	3.03	0.00	0.00	9.32
122	0.64	0.08	0.24	8.37	3.67	0.36	1.54	1.12	0.63	0.06	0.16	8.68
123	1.72	0.14	0.18	11.16	3.45	0.84	0.32	4.60	1.60	0.11	0.15	9.94
124	0.63	0.04	0.04	11.94	3.04	0.15	0.24	3.67	0.34	0.06	0.08	7.51
125	1.32	0.12	0.17	7.34	2.34	0.83	0.37	3.40	1.57	0.12	0.16	8.11
126	2.60	0.10	0.15	9.50	2.56	1.75	0.42	5.23	2.45	0.14	0.22	8.72
127	1.99	0.10	0.10	3.06	4.90	0.55	0.01	1.90	1.69	0.06	0.06	10.07
128	2.03	0.11	0.18	6.54	2.90	1.33	0.33	16.56	2.39	0.03	0.04	7.74
129	6.66	0.07	0.08	13.57	4.04	0.53	0.17	4.76	6.81	0.11	0.12	12.23
130	11.90	0.15	0.17	10.70	3.73	0.44	0.09	83.07	11.21	0.13	0.14	14.91
131	4.22	0.34	0.59	7.21	1.99	1.74	0.43	26.77	4.13	0.36	0.54	8.87
132	0.94	0.04	0.05	7.05	3.21	0.68	0.21	0.85	1.85	-0.13	-0.15	11.86
133	1.94	0.21	0.29	9.28	2.74	1.34	0.51	16.61	2.01	0.16	0.24	7.81
134	1.07	0.27	0.31	19.03	5.99	0.41	0.18	159.66	1.40	0.11	0.13	13.69
135	1.33	0.10	0.13	8.31	1.93	0.78	0.39	2.33	1.73	0.07	0.10	8.55
136	0.60	0.00	0.00	13.74	4.97	0.38	0.18	2.06	0.55	0.00	0.00	11.04
137	4.42	0.12	0.14	11.64	3.53	1.29	0.18	4.49	3.47	0.07	0.08	11.07
138	1.64	0.00	0.01	9.06	3.57	0.66	0.44	2.13	1.36	0.02	0.02	8.66
139	1.63	0.05	0.07	8.08	3.03	1.02	0.43	13.59	1.77	0.03	0.04	7.44
140	0.39	-0.06	-0.08	7.58	2.40	0.17	0.21	0.42	0.47	-0.07	-0.08	7.41
141	5.74	0.01	0.01	6.55	3.85	1.07	0.17	5.45	5.79	-0.03	-0.04	8.82
142	1.05	0.14	0.19	13.47	4.03	0.63	0.31	7.74	1.10	0.22	0.31	11.33
143	0.64	0.01	0.02	7.51	2.99	0.53	0.58	1.75	0.84	-0.01	-0.01	7.86
144	2.24	0.11	0.13	12.40	4.44	0.36	0.23	314.84	1.49	0.04	0.05	11.16
145	1.73	0.04	0.04	15.09	7.98	0.19	0.12	1.35	0.70	0.01	0.02	14.60
146	2.63	0.01	0.02	6.38	1.99	2.19	0.44	4.89	4.53	0.06	0.09	7.86
147	1.51	0.12	0.19	9.04	2.84	1.25	0.63	26.77	2.03	0.26	0.46	9.16

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
148	3.41	0.28	0.45	9.83	1.93	2.10	0.61	4.35	3.77	0.19	0.31	9.09
149	2.66	0.01	0.01	11.21	3.94	0.52	0.18	6.34	3.01	0.01	0.01	10.55
150	5.49	0.15	0.24	4.88	1.03	0.67	0.29	1.22	12.92	0.21	0.28	8.38
151	2.06	0.04	0.06	7.64	1.70	0.64	0.31	1.27	1.87	0.07	0.09	8.82
152	2.75	0.03	0.04	8.67	2.32	0.73	0.22	1.78	3.08	0.05	0.06	8.87
153	1.73	0.02	0.03	8.11	2.94	0.26	0.46	4.06	0.37	0.10	0.14	8.89
154	1.73	0.02	0.03	8.11	2.94	0.26	0.46	4.06	0.37	0.10	0.14	8.89
155	0.83	-0.13	-0.15	13.25	3.21	0.48	0.20	3.24	0.89	-0.09	-0.10	9.30
156	1.73	0.02	0.03	8.11	2.76	1.03	0.23	9.39	2.08	0.00	0.00	8.48
157	0.34	0.09	0.13	10.18	2.94	0.26	0.46	4.06	0.37	0.10	0.14	8.89
158	8.81	0.03	0.03	10.40	2.10	0.31	0.17	49.23	6.15	0.08	0.09	8.13
159	1.76	0.01	0.01	8.23	2.83	0.67	0.45	1.31	1.40	0.02	0.02	7.90
160	3.94	0.19	0.40	6.56	2.26	2.09	0.75	61.66	4.48	0.26	0.45	8.60
161	2.97	0.17	0.24	9.48	2.77	0.90	0.45	13.13	3.42	0.10	0.14	8.65
162	1.97	0.01	0.02	6.70	2.74	1.28	0.35	118.66	2.83	-0.04	-0.06	9.19
163	2.86	0.17	0.32	6.77	2.34	1.95	0.43	5.21	2.79	0.33	0.47	10.46
164	2.72	0.05	0.06	11.64	4.09	0.53	0.12	3.13	3.17	0.05	0.06	12.93
165	1.52	0.09	0.14	8.25	2.56	0.96	0.59	264.28	1.46	0.05	0.08	7.79
166	2.09	0.12	0.16	10.05	1.92	1.41	0.50	4.41	2.37	0.11	0.17	8.16
167	5.00	0.00	0.00	13.83	2.63	1.19	0.36	8.18	5.95	0.11	0.15	7.68
168	1.64	0.22	0.33	8.91	2.99	1.02	0.43	20.26	2.35	0.27	0.39	9.98
169	2.26	0.00	0.00	7.14	11.76	1.05	0.42	6.26	2.23	-0.02	-0.03	7.77
170	3.92	0.37	0.50	9.68	3.53	0.73	0.28	26.77	3.18	0.29	0.37	10.61
171	1.44	0.03	0.04	9.94	4.46	0.67	0.16	5.28	1.96	0.10	0.11	10.21
172	2.86	0.17	0.23	10.13	3.13	1.20	0.36	23.31	3.16	0.27	0.37	10.79
173	3.39	-0.06	-0.07	15.43	3.25	0.84	0.06	3.16	10.25	0.01	0.02	21.17
174	1.83	0.04	0.05	9.97	10.74	0.31	0.09	2.31	1.71	0.08	0.08	16.19
175	7.62	0.11	0.13	9.51	5.25	0.28	0.06	210.00	7.81	0.11	0.12	21.91
176	9.76	0.11	0.12	15.73	7.00	1.81	0.08	10.50	8.43	0.05	0.05	20.70
177	6.37	0.07	0.09	10.62	7.09	1.32	0.06	3.31	15.15	0.05	0.05	25.54
178	2.85	-0.06	-0.07	17.40	5.28	1.04	0.10	2.91	2.83	0.04	0.04	16.11
179	1.63	0.12	0.14	14.67	8.65	0.49	0.08	2.85	2.36	0.07	0.08	20.62
180	3.97	0.03	0.04	20.61	4.42	0.33	0.08	3.93	3.18	0.02	0.02	16.32
181	2.69	0.00	0.00	18.27	3.15	0.32	0.04	0.87	2.97	-0.02	-0.02	29.89
182	2.36	0.03	0.04	21.35	1.18	0.57	0.06	2.94	2.76	0.03	0.04	22.22
183	1.83	0.01	0.01	13.59	8.07	0.96	0.11	9.63	4.18	0.02	0.02	17.41
184	5.52	0.02	0.03	14.14	2.99	0.65	0.08	2.22	6.49	0.00	0.00	16.45

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
185	2.43	-0.03	-0.03	26.63	6.56	0.24	0.06	224.36	1.55	-0.12	-0.13	26.00
186	3.10	0.02	0.06	-0.29	0.48	0.59	3.29	7.14	2.97	-0.01	-0.02	-0.54
187	5.41	0.09	0.22	5.39	1.42	2.86	1.13	11.85	5.10	0.11	0.24	5.40
188	1.94	0.00	0.01	0.96	0.80	1.05	8.27	4.89	1.92	0.00	0.04	0.59
189	4.95	-0.15	-0.15	-5.00	0.12	0.20	-6.37	0.62	2.11	-0.13	-0.11	-6.29
190	1.29	-0.03	-0.43	-2.16	0.26	0.20	-22.87	1.37	1.44	-0.09	-0.11	-2.48
191	2.23	-0.05	-0.12	0.89	0.87	0.59	1.21	1.89	1.56	-0.03	-0.08	2.14
192	2.32	0.03	0.04	4.15	2.23	0.58	0.49	1.42	2.71	-0.03	-0.04	3.91
193	2.42	0.05	0.14	2.24	0.80	1.28	2.83	13.05	2.96	0.04	0.17	0.59
194	1.71	-0.25	-0.15	-5.55	0.16	0.15	-4.77	2.81	1.26	-0.22	-0.11	-6.62
195	1.49	0.00	0.00	4.93	3.57	0.80	0.77	25.85	1.29	0.01	0.02	5.82
196	10.63	0.07	0.26	7.76	1.17	1.90	3.98	33.82	8.21	0.07	0.34	6.34
197	3.22	0.01	0.02	1.93	1.02	0.73	0.43	149.52	3.02	0.03	0.04	3.34
198	3.14	0.01	0.05	1.21	0.96	0.68	5.13	32.32	2.64	-0.02	-0.11	-0.08
199	3.14	0.11	0.22	5.80	1.17	1.28	1.23	2.91	3.05	0.17	0.38	5.75
200	0.60	-0.01	-0.08	3.62	2.57	0.29	6.30	2.70	0.50	-0.10	-0.65	2.22
201	4.07	0.13	0.25	6.17	0.99	1.67	0.89	2.18	3.84	0.17	0.32	6.57
202	3.44	-0.06	-0.11	4.57	1.98	1.17	0.71	66.17	2.89	0.04	0.07	4.93
203	2.73	0.02	0.05	0.51	0.70	0.33	1.36	32.32	3.89	0.01	0.03	1.27
204	1.47	-0.03	-0.05	4.87	1.30	0.98	0.90	3.42	1.65	0.02	0.05	5.39
205	1.75	0.00	0.00	4.42	1.25	1.16	0.87	12.33	3.10	0.05	0.09	3.96
206	1.72	0.17	0.04	5.50	1.20	1.22	1.46	4.04	1.81	0.18	0.46	5.57
207	2.74	0.02	0.10	-4.16	0.23	0.27	10.04	9.08	1.36	-0.17	-2.06	-7.33
208	4.43	0.03	0.04	2.64	0.36	0.18	0.88	7.32	1.37	-0.23	-0.44	0.69
209	1.05	-0.03	-0.07	3.47	0.71	0.64	1.55	1.66	1.59	-0.02	-0.04	2.27
210	2.39	0.03	0.04	5.85	1.64	0.61	0.54	3.65	2.75	0.08	0.13	5.43
211	2.26	0.01	0.01	7.67	1.51	0.61	0.29	0.90	2.57	0.05	0.06	8.43
212	6.21	0.00	0.00	12.33	2.40	0.74	0.15	5.60	5.57	-0.03	-0.03	10.20
213	2.03	0.15	0.28	5.99	2.03	1.77	0.70	17.29	2.77	0.18	0.31	7.56
214	0.59	-0.01	-0.02	6.01	5.44	0.56	0.19	11.73	0.71	-0.01	-0.01	10.07
215	1.79	0.03	0.04	10.19	5.20	0.73	0.12	9.22	2.28	0.04	0.05	13.09
216	1.19	0.05	0.06	8.73	6.26	0.54	0.20	4.34	1.19	0.05	0.06	11.15
217	1.13	0.01	0.02	12.47	2.96	0.82	0.34	1.80	1.48	0.02	0.02	10.13
218	1.48	0.18	0.25	10.32	1.95	0.93	0.71	4.30	1.36	0.18	0.32	7.74
219	1.51	0.13	0.21	7.00	2.21	0.93	0.56	7.15	1.64	0.14	0.22	7.11
220	1.54	0.15	0.31	5.66	1.64	0.88	0.67	1.03	2.24	0.08	0.13	7.31
221	2.44	0.08	0.11	7.47	2.69	1.11	0.29	4.75	2.62	0.18	0.24	9.66

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
222	2.33	0.07	0.09	11.08	3.37	1.22	0.21	3.78	2.63	0.10	0.13	11.90
223	2.15	0.02	0.04	5.41	5.32	0.83	0.12	3.97	2.21	0.04	0.04	13.88
224	2.36	0.14	0.21	6.56	1.83	0.64	0.19	7.52	3.23	0.17	0.20	10.25
225	2.75	0.09	0.13	9.13	2.46	0.73	0.27	1.38	2.59	0.10	0.13	10.15
226	2.81	0.06	0.08	9.77	3.52	0.99	0.17	2.95	2.01	-0.12	-0.14	10.17
227	0.46	0.05	0.06	12.02	3.90	0.15	0.29	6.46	0.25	0.07	0.09	10.62
228	2.47	0.20	0.34	7.33	3.73	1.35	0.27	32.32	2.82	0.22	0.29	11.19
229	2.55	0.08	0.09	13.64	5.29	0.89	0.11	3.75	2.55	0.12	0.14	14.81
230	1.61	0.01	0.01	11.90	1.95	0.40	0.21	0.60	1.63	0.01	0.01	11.11
231	6.66	0.17	0.28	7.12	1.57	1.37	0.61	3.46	6.32	0.14	0.23	7.53
232	1.85	0.11	0.16	9.18	2.81	1.42	0.43	32.32	2.02	0.14	0.21	9.02
233	1.61	0.03	0.05	9.31	3.43	0.68	0.27	2.48	1.96	0.07	0.10	9.73
234	0.91	0.15	0.22	8.37	2.59	0.68	0.60	32.32	0.88	0.20	0.31	7.98
235	4.49	-0.05	-0.05	6.62	1.32	0.47	0.11	7.04	5.26	0.02	0.03	9.89
236	1.86	0.05	0.07	4.81	2.59	0.82	0.17	3.91	3.41	0.07	0.08	9.46
237	3.47	0.08	0.08	15.66	2.91	0.77	0.17	1.71	3.61	0.15	0.17	13.14
238	5.19	0.09	0.11	12.09	3.85	1.52	0.19	6.02	5.22	0.09	0.12	11.61
239	3.17	-0.09	-0.15	8.58	4.53	2.38	0.25	7.74	4.12	0.09	0.15	11.17
240	0.66	0.06	0.11	6.67	3.06	0.64	0.64	37.89	0.70	0.03	0.05	7.26
241	1.63	0.03	0.04	6.89	1.75	1.09	0.55	3.96	2.14	0.08	0.13	7.16
242	0.92	-0.13	-0.15	8.56	4.35	0.38	0.15	1.27	0.98	-0.08	-0.09	9.02
243	2.77	0.11	0.14	9.41	2.61	1.06	0.26	8.68	2.69	0.08	0.11	7.94
244	2.18	0.15	0.21	7.24	1.93	0.58	0.44	12.11	1.50	0.10	0.15	6.93
245	7.39	0.07	0.08	9.07	2.35	0.54	0.17	80.79	1.06	0.09	0.11	8.31
246	7.38	0.06	0.09	8.77	1.11	1.27	0.56	2.25	7.46	0.14	0.23	7.48
247	1.71	0.09	0.12	8.29	4.37	0.53	0.33	1.82	1.37	0.00	0.00	8.73
248	1.39	0.27	0.04	9.94	2.11	0.74	0.85	33.53	0.98	-0.05	-0.09	7.11
249	1.60	-0.05	-0.06	14.42	4.18	0.58	0.19	3.01	2.25	0.04	0.05	10.82
250	4.25	0.08	0.10	8.34	2.63	1.21	0.21	5.84	4.88	0.06	0.07	10.56
251	4.13	-0.03	-0.04	12.59	2.70	1.33	0.24	3.69	2.77	0.01	0.01	8.97
252	0.39	-0.01	-0.01	10.04	3.72	0.28	0.09	123.34	2.48	0.01	0.01	10.61
253	3.62	0.06	0.12	5.23	2.18	0.98	0.70	1.74	3.54	0.18	0.30	8.33
254	2.41	0.05	0.05	12.96	4.45	0.73	0.14	1.67	2.81	0.06	0.07	13.76
255	3.73	0.03	0.03	15.11	6.52	1.21	0.14	13.08	3.92	0.11	0.13	13.47
256	1.36	0.01	0.02	15.94	3.72	0.67	0.27	19.73	1.40	0.01	0.01	10.21
257	2.52	0.01	0.01	12.66	2.49	1.07	0.21	1.93	2.91	0.02	0.02	9.69
258	3.90	0.21	0.33	8.22	2.78	2.78	0.41	37.60	6.48	0.16	0.23	8.37

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
259	2.97	0.11	0.15	7.68	2.26	1.32	0.28	4.28	3.02	0.10	0.13	9.39
260	2.92	0.08	0.09	11.58	2.13	0.99	0.25	1.45	2.94	0.10	0.13	11.48
261	3.67	0.15	0.21	10.02	2.63	1.28	0.34	3.45	3.83	0.15	0.21	10.73
262	1.47	0.15	0.21	11.20	3.11	1.10	0.36	8.17	1.84	0.00	0.00	9.91
263	2.88	0.16	0.20	13.61	4.28	1.02	0.24	12.54	3.98	0.37	0.48	13.02
264	0.37	0.20	0.25	11.28	3.50	0.23	0.32	2.60	0.38	0.08	0.10	9.86
265	2.96	0.03	0.04	6.92	1.13	0.52	0.28	1.07	3.87	0.02	0.02	7.41
266	1.39	0.16	0.21	8.96	2.77	0.45	0.27	3.27	1.49	0.09	0.11	9.39
267	5.98	0.03	0.04	6.80	4.17	1.17	0.23	151.75	9.48	0.17	0.20	11.29
268	1.38	0.04	0.04	12.30	5.39	0.59	0.20	2.15	1.50	0.02	0.03	13.45
269	1.25	0.04	0.06	6.18	3.53	0.51	0.28	3.75	1.22	0.02	0.03	8.05
270	1.29	0.14	0.20	8.34	2.88	0.79	0.42	5.57	2.96	0.17	0.24	8.34
271	3.41	0.18	0.22	12.10	3.26	1.04	0.13	3.99	3.66	0.15	0.17	13.88
272	2.01	0.04	0.04	21.97	6.04	0.81	0.11	3.70	1.75	0.02	0.02	14.45
273	2.26	0.01	0.01	7.67	1.51	0.61	0.29	0.90	2.57	0.05	0.06	8.43
274	6.21	0.00	0.00	12.33	2.40	0.74	0.15	5.60	5.57	-0.03	-0.03	10.20
275	2.03	0.15	0.28	5.99	2.03	1.77	0.70	17.29	2.77	0.18	0.31	7.56
276	0.59	-0.01	-0.02	6.01	5.44	0.56	0.19	11.73	0.71	-0.01	-0.01	10.07
277	1.79	0.03	0.04	10.19	5.20	0.73	0.12	9.22	2.28	0.04	0.05	13.09
278	1.19	0.05	0.06	8.73	6.26	0.54	0.20	4.34	1.19	0.05	0.06	11.15
279	1.13	0.01	0.02	12.47	2.96	0.82	0.34	1.80	1.48	0.02	0.02	10.13
280	1.48	0.18	0.25	10.32	1.95	0.93	0.71	4.30	1.36	0.18	0.32	7.74
281	1.51	0.13	0.21	7.00	2.21	0.93	0.56	7.15	1.64	0.14	0.22	7.11
282	1.54	0.15	0.31	5.66	1.64	0.88	0.67	1.03	2.24	0.08	0.13	7.31
283	2.44	0.08	0.11	7.47	2.69	1.11	0.29	4.75	2.62	0.18	0.24	9.66
284	2.33	0.07	0.09	11.08	3.37	1.22	0.21	3.78	2.63	0.10	0.13	11.90
285	2.15	0.02	0.04	5.41	5.32	0.83	0.12	3.97	2.21	0.04	0.04	13.88
286	2.36	0.14	0.21	6.56	1.83	0.64	0.19	7.52	3.23	0.17	0.20	10.25
287	2.75	0.09	0.13	9.13	2.46	0.73	0.27	1.38	2.59	0.10	0.13	10.15
288	2.81	0.06	0.08	9.77	3.52	0.99	0.17	2.95	2.01	-0.12	-0.14	10.17
289	0.46	0.05	0.06	12.02	3.90	0.15	0.29	6.46	0.25	0.07	0.09	10.62
290	2.47	0.20	0.34	7.33	3.73	1.35	0.27	32.32	2.82	0.22	0.29	11.19
291	2.55	0.08	0.09	13.64	5.29	0.89	0.11	3.75	2.55	0.12	0.14	14.81
292	1.61	0.01	0.01	11.90	1.95	0.40	0.21	0.60	1.63	0.01	0.01	11.11
293	6.66	0.17	0.28	7.12	1.57	1.37	0.61	3.46	6.32	0.14	0.23	7.53
294	1.85	0.11	0.16	9.18	2.81	1.42	0.43	32.32	2.02	0.14	0.21	9.02
295	1.61	0.03	0.05	9.31	3.43	0.68	0.27	2.48	1.96	0.07	0.10	9.73

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
296	0.91	0.15	0.22	8.37	2.59	0.68	0.60	32.32	0.88	0.20	0.31	7.98
297	4.49	-0.05	-0.05	6.62	1.32	0.47	0.11	7.04	5.26	0.02	0.03	9.89
298	1.86	0.05	0.07	4.81	2.59	0.82	0.17	3.91	3.41	0.07	0.08	9.46
299	3.47	0.08	0.08	15.66	2.91	0.77	0.17	1.71	3.61	0.15	0.17	13.14
300	5.19	0.09	0.11	12.09	3.85	1.52	0.19	6.02	5.22	0.09	0.12	11.61
301	3.17	-0.09	-0.15	8.58	4.53	2.38	0.25	7.74	4.12	0.09	0.15	11.17
302	0.66	0.06	0.11	6.67	3.06	0.64	0.64	37.89	0.70	0.03	0.05	7.26
303	1.63	0.03	0.04	6.89	1.75	1.09	0.55	3.96	2.14	0.08	0.13	7.16
304	0.92	-0.13	-0.15	8.56	4.35	0.38	0.15	1.27	0.98	-0.08	-0.09	9.02
305	2.77	0.11	0.14	9.41	2.61	1.06	0.26	8.68	2.69	0.08	0.11	7.94
306	2.52	0.04	0.04	16.44	5.75	0.89	0.11	2.16	3.52	0.05	0.06	15.85
307	1.71	0.01	0.01	18.85	8.76	0.48	0.08	1.61	1.56	-0.02	-0.02	20.60
308	1.85	0.07	0.08	13.60	6.50	0.45	0.11	1.99	2.53	0.06	0.07	17.15
309	1.69	0.02	0.02	13.52	5.48	0.62	0.09	4.94	1.50	0.02	0.03	15.57
310	1.41	-0.02	-0.02	5.17	0.99	0.62	0.05	3.41	1.25	0.01	0.01	24.89
311	1.04	0.07	0.07	22.19	1.62	0.61	0.05	5.60	1.32	0.07	0.07	29.50
312	1.70	0.13	0.15	14.92	1.01	0.90	0.10	3.01	2.24	0.11	0.12	20.03
313	1.80	0.04	0.05	18.06	1.69	0.62	0.04	2.52	2.20	0.03	0.03	33.20
314	2.52	0.04	0.04	16.44	5.75	0.89	0.11	2.16	3.52	0.05	0.06	15.85
315	1.71	0.01	0.01	18.85	8.76	0.48	0.08	1.61	1.56	-0.02	-0.02	20.60
316	1.85	0.07	0.08	13.60	6.50	0.45	0.11	1.99	2.53	0.06	0.07	17.15
317	1.69	0.02	0.02	13.52	5.48	0.62	0.09	4.94	1.50	0.02	0.03	15.57
318	1.41	-0.02	-0.02	5.17	0.99	0.62	0.05	3.41	1.25	0.01	0.01	24.89
319	1.04	0.07	0.07	22.19	1.62	0.61	0.05	5.60	1.32	0.07	0.07	29.50
320	1.70	0.13	0.15	14.92	1.01	0.90	0.10	3.01	2.24	0.11	0.12	20.03
321	1.80	0.04	0.05	18.06	1.69	0.62	0.04	2.52	2.20	0.03	0.03	33.20
322	0.95	-0.02	-0.17	1.32	1.50	0.62	9.11	3.59	0.99	0.00	0.00	2.57
323	8.73	0.06	0.44	-3.23	0.37	2.53	5.25	21.29	10.96	0.03	0.16	-3.56
324	1.68	0.05	0.14	2.54	0.90	0.88	1.18	2.71	2.14	0.10	0.21	3.31
325	1.39	0.12	0.21	3.56	0.44	0.29	0.82	47.47	1.80	-0.09	-0.17	0.69
326	1.79	0.00	0.01	1.45	0.66	0.64	4.14	0.82	2.11	0.01	0.04	1.64
327	1.22	-0.03	-0.11	-0.36	0.63	0.72	1.95	2.67	1.79	0.07	0.20	1.14
328	0.72	-0.06	-0.04	1.40	1.12	0.12	-61.53	0.33	0.56	-0.03	-0.13	1.17
329	2.02	0.00	0.00	3.19	1.00	1.14	1.57	15.71	2.22	-0.10	-0.26	2.47
330	2.84	0.09	0.28	3.75	1.25	1.56	1.76	6.77	2.90	0.10	0.28	3.78
331	9.53	-0.01	-0.01	1.19	0.56	0.80	0.31	29.62	10.33	0.03	0.04	2.72
332	2.84	0.01	0.04	2.30	1.16	2.36	4.92	22.02	2.61	-0.07	-0.39	1.27

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
333	2.01	0.09	0.14	7.47	2.52	1.70	0.43	12.93	2.70	0.09	0.13	6.77
334	5.57	0.01	0.01	2.12	0.78	1.49	1.37	6.03	5.96	0.06	0.14	2.20
335	2.92	-0.08	-0.13	0.52	0.56	0.35	0.65	36.59	5.09	-0.02	-0.03	0.54
336	0.11	-0.04	-0.06	8.52	3.02	0.10	0.39	2.57	0.13	-0.04	-0.06	7.31
337	1.70	0.03	0.04	11.00	0.67	1.51	0.18	12.99	1.91	0.03	0.04	10.62
338	4.19	0.03	0.03	10.66	1.11	1.02	0.43	2.19	7.47	0.04	0.06	7.05
339	3.06	0.02	0.02	2.46	4.39	0.92	0.11	1.77	3.31	-0.07	-0.08	14.55
340	1.69	0.01	0.01	8.94	2.30	0.73	0.31	1.29	1.70	0.01	0.01	7.40
341	3.83	0.06	0.07	9.81	1.68	0.87	0.14	2.93	4.45	0.05	0.06	11.21
342	1.18	0.05	0.07	8.74	2.12	0.83	0.48	2.88	1.23	0.07	0.10	7.93
343	2.70	0.12	0.17	8.48	2.00	1.37	0.42	8.54	2.71	0.16	0.23	8.18
344	7.24	0.02	0.31	9.98	1.60	1.48	0.22	2.94	7.20	0.14	0.18	11.78
345	4.22	0.02	0.24	9.82	1.71	1.43	0.48	4.44	5.69	0.15	0.24	7.70
346	2.94	0.08	0.09	9.32	2.10	1.03	0.32	5.93	2.30	0.16	0.21	8.31
347	2.10	0.04	0.06	8.83	3.32	1.26	0.28	3.43	2.26	0.05	0.06	9.28
348	1.42	0.02	0.03	9.13	2.34	0.58	0.33	3.44	1.36	0.05	0.07	7.81
349	2.57	0.10	0.13	9.24	2.02	0.77	0.33	2.46	2.20	0.10	0.14	9.04
350	1.47	0.07	0.10	8.21	3.02	1.03	0.35	6.38	1.69	0.09	0.12	8.31
351	4.18	0.08	0.10	7.70	0.99	1.07	0.32	1.30	5.99	0.06	0.08	8.32
352	5.98	0.12	0.17	7.14	2.54	0.63	0.24	1.60	5.31	0.14	0.18	10.30
353	2.02	0.10	0.14	8.09	1.88	0.71	0.30	2.97	2.06	0.09	0.12	8.27
354	3.61	0.10	0.16	7.50	2.14	1.25	0.41	6.71	3.95	0.05	0.07	8.31
355	2.56	0.04	0.06	6.76	1.99	0.82	0.33	2.52	2.91	0.05	0.07	7.90
356	8.19	-0.04	-0.06	5.24	2.09	1.62	0.21	7.80	8.45	-0.02	-0.03	7.62
357	1.97	-0.02	-0.03	6.99	4.97	0.73	0.43	7.38	2.30	0.02	0.03	7.59
358	2.27	0.03	0.03	8.28	2.41	0.55	0.17	1.49	3.58	0.07	0.08	10.54
359	2.63	0.02	0.19	16.69	1.92	0.62	0.23	0.98	2.87	0.17	0.21	11.59
360	3.29	0.07	0.10	7.83	1.89	0.88	0.51	4.33	2.36	0.10	0.14	7.01
361	2.82	0.02	0.31	8.70	2.51	1.61	0.27	6.38	3.79	0.05	0.07	8.29
362	3.78	-0.10	-0.12	15.02	3.79	1.51	0.13	5.02	4.14	-0.06	-0.07	13.04
363	1.63	-0.01	-0.02	9.51	0.87	0.86	0.14	1.44	1.29	0.03	0.04	11.69
364	2.17	0.08	0.09	11.48	4.90	0.73	0.19	6.05	2.34	0.09	0.10	12.78
365	1.68	0.02	0.03	8.06	2.35	0.61	0.20	7.00	1.84	0.02	0.03	7.57
366	3.73	0.11	0.14	9.83	3.74	1.20	0.22	8.16	4.27	0.12	0.15	10.24
367	1.26	0.01	0.01	19.39	4.62	0.56	0.13	4.71	1.45	0.02	0.02	12.50
368	8.68	0.16	0.30	6.36	1.55	2.08	0.56	5.27	8.33	0.16	0.25	7.89
369	2.22	0.06	0.08	10.40	5.92	0.90	0.13	2.86	2.09	0.04	0.04	14.65

Questinnaire No.	REC_TURN	ROA	ROE	Z_SCORE	ACID	AS_TURN	D_E	INV_TURN	REC_TURN	ROA	ROE	Z_SCORE
370	1.81	0.06	0.07	9.58	3.33	0.82	0.20	7.62	1.83	0.11	0.14	10.16
371	3.00	0.16	0.18	13.51	1.43	0.63	0.48	1.42	4.26	0.16	0.24	7.45
372	5.39	0.00	0.00	11.00	3.02	1.39	0.20	6.49	5.04	0.07	0.09	7.18
373	1.80	0.01	0.01	6.77	2.22	0.30	0.37	0.47	1.67	-0.01	-0.01	7.09
374	1.58	0.00	0.00	8.32	3.09	0.82	0.24	3.05	1.67	-0.04	-0.05	7.87
375	2.51	0.09	0.13	6.18	2.06	1.36	0.43	6.20	2.40	0.09	0.13	7.04
376	2.71	0.02	0.29	13.98	3.68	1.39	0.39	39.87	3.32	0.14	0.21	9.75
377	3.37	0.01	0.02	6.13	0.96	0.63	0.29	1.44	3.34	0.04	0.06	7.01
378	1.95	0.09	0.12	6.74	1.65	0.62	0.37	2.24	1.83	0.13	0.18	7.82
379	10.19	-0.04	-0.05	9.21	4.15	0.55	0.09	2.12	10.24	-0.05	-0.05	13.51
380	2.65	-0.12	-0.13	12.65	1.72	0.39	0.09	45.86	5.54	-0.05	-0.06	12.17
381	0.48	0.06	0.06	16.61	0.76	4.29	0.05	25.54	7.40	0.03	0.03	26.64
382	0.61	-0.07	-0.08	15.02	0.81	0.26	0.06	0.97	1.06	-0.14	-0.16	23.13
383	1.02	0.02	0.02	3.50	0.84	0.37	0.04	3.37	1.15	0.03	0.03	29.69
384	4.82	0.02	0.02	17.37	3.95	0.68	0.09	1.56	4.17	0.02	0.02	16.56
385	0.95	0.02	0.03	15.97	0.91	0.48	0.09	4.53	0.99	0.01	0.02	16.35
386	0.24	-0.06	-0.07	18.68	0.82	0.11	0.10	3.90	0.26	-0.06	-0.07	17.35
387	2.10	-0.01	-0.01	19.71	1.39	0.14	0.06	22.02	2.01	-0.01	-0.01	17.12
388	1.61	-0.19	-0.20	2.85	5.53	0.24	0.05	1.24	1.42	-0.12	-0.12	26.36
389	1.78	0.08	0.09	13.54	4.10	0.58	0.09	2.36	2.04	0.06	0.06	15.66
390	0.48	0.06	0.06	16.61	0.76	4.29	0.05	25.54	7.40	0.03	0.03	26.64
391	2.65	0.04	0.08	10.44	2.86	0.91	-0.18	5.37	3.03	0.06	0.07	12.41
392												

Appendix E

Quantitative survey, Descriptive Stat. & Scoring Results

Summary: Appendix E' includes the Quantitative survey's results. It contains the results derived from the scoring process, the descriptive analysis conducted as well as the statistical analysis used for examining the correlation of the quality elements examined.

○ Section A': Scoring Results

Sample 392	Quality Tools	Organizational Culture	Processes	Performance Appraisal	Total	Rank (Scoring)
Group A (Small)	3.09	2.93	3.44	2.83	3.07	3
Group B (Medium)	3.21	3.21	3.38	3.37	3.29	1
Group C (Large)	2.90	3.27	3.03	3.10	3.07	2
All Groups	3.15	3.10	3.18	3.00	3.11	
Total Rank (Scoring)	2	3	1	4		

Quality Elements	Group A (Small)	
	Sample 392	
	Score	**Rank**
Quality Tools	3.09	2
Organizational Culture	2.93	3
Processes	3.44	1
Performance Appraisal	2.83	4

Quality Elements	**Group B (Medium)**	
	Sample 392	
	Score	**Rank**
Quality Tools	3.21	4
Organizational Culture	3.21	3
Processes	3.38	1
Performance Appraisal	3.37	2

Quality Elements	**Group C (Large)**
	Sample 392

	Score	Rank
Quality Tools	2.90	4
Organizational Culture	3.27	1
Processes	3.03	3
Performance Appraisal	3.10	2

○ Section B: Descriptive Statistics

Medium SMEs	Me_DEPENDANT	Me_ORGANIZATIONAL_CULTURE	Me_ PERFORMANCE APPRAISAL	Me_PROCESSES	Me_QUALITY_TOOLS
Mean	13.70	16.57	16.12	12.27	9.86
Median	13.75	16.75	16.38	13.11	9.00
Maximum	21.20	23.31	23.88	19.89	20.14
Minimum	7.37	4.31	8.25	3.89	1.86
Std. Dev.	2.73	3.24	3.34	3.64	3.88
Skewness	0.09	-1.35	-0.06	-0.18	0.48
Kurtosis	3.46	6.85	2.59	2.33	2.81
Jarque-Bera	0.71	65.19	0.53	1.72	2.83
Probability	0.70	0.00	0.77	0.42	0.24
Sum	972.94	1,176.38	1,144.38	871.00	700.00

Sum Sq. Dev.	521.20	736.30	780.59	928.93	1,053.90
Observations	71.00	71.00	71.00	71.00	71.00

Small SMEs	S_ DEPENDANT	S_ORGANIZATIONAL_CULTURE	S_PERFORMANCE APPRAISAL	S_PROCESSES	S_QUALITY_TOOLS
Mean	14.75	17.46	17.08	13.69	10.76
Median	14.95	17.63	17.38	13.78	10.21
Maximum	22.44	24.44	25.00	24.00	23.71
Minimum	8.69	7.06	7.88	4.00	1.00
Std. Dev.	2.45	2.88	3.26	3.54	3.83
Skewness	0.05	-0.63	-0.20	-0.07	0.56
Kurtosis	3.40	4.57	2.94	3.38	3.74
Jarque-Bera	0.96	23.06	0.88	0.93	10.08
Probability	0.62	0.00	0.64	0.63	0.01
Sum	2,005.46	2,374.38	2,322.75	1,862.00	1,462.71
Sum Sq. Dev.	810.27	1,118.39	1,438.12	1,691.28	1,977.71

Observations	136.00	136.00	136.00	136.00	136.00

Micro SMEs	Mi_ DEPENDANT	Mi _ORGANIZATIONAL_CULTURE	Mi _ PERFORMANCE APPRAISAL	Mi _PROCESSES	Mi _QUALITY_TOOLS
Mean					
Median	14.03	16.94	16.17	13.18	9.84
Maximum	14.36	17.44	16.50	13.67	9.71
Minimum	22.02	24.44	23.88	25.00	21.43
Std. Dev.	4.89	3.38	5.38	2.00	1.43
Skewness	2.73	3.33	3.56	3.86	3.57
Kurtosis	-0.40	-0.90	-0.31	-0.08	0.42
	3.77	4.59	2.70	3.39	3.20
Jarque-Bera					
Probability	9.43	44.73	3.72	1.36	5.78
	0.01	0.00	0.16	0.51	0.06
Sum					
Sum Sq. Dev.	2,595.72	3,133.25	2,992.13	2,437.78	1,819.71
	1,373.48	2,040.93	2,336.78	2,746.25	2,350.31
Observations					
	185.00	185.00	185.00	185.00	185.00

○ Section C': Quality elements Correlations, Covariance's and p-values

▪ Covariance:

Micro SMEs	TQM	ORGANIZATIONAL CULTURE	PERFORMANCE APPRAISAL	PROCESSES	QUALITY TOOLS
TQM	7.42				
ORGANIZATIONALCULTURE	6.58	11.03			
PERFORMANCE APPRAISAL	7.70	4.58	12.63		
PROCESSES	8.17	5.17	7.75	14.84	
QUALITY TOOLS	7.25	5.52	5.85	4.91	12.70

Small SMEs	TQM	ORGANIZATIONAL CULTURE	PERFORMANCE APPRAISAL	PROCESSES	QUALITY TOOLS
TQM	*5.96*				
ORGANIZATIONALCULTURE	4.89	8.22			
PERFORMANCE APPRAISAL	*5.92*	*3.51*	*10.57*		
PROCESSES	6.18	3.20	5.24	12.44	
QUALITY TOOLS	*6.84*	*4.63*	*4.36*	*3.83*	*14.54*

Medium SMEs	DEPENDANT	ORGANIZATIONAL	PERFORMANCE APPRAISAL	PROCESSES	QUALITY

	CULTURE				TOOLS
TQM	7.34				
ORGANIZATIONAL CULTURE	6.24	10.37			
PERFORMANCE APPRAISAL	6.71	2.50	10.99		
PROCESSES	7.95	5.69	6.86	13.08	
QUALITY TOOLS	8.47	6.40	6.48	6.15	14.84

- **Correlations**

Micro SMEs	Mi_DEPENDANT	Mi_ORGANIZATIONAL_ CULTURE	Mi_ PERFORMANCE APPRAISAL	Mi_PROCESSES	Mi_QUALITY_TO OLS
Mi_DEPENDANT	1.00				
Mi_ORGANIZATIONAL_CU LTURE	0.73	1.00			
Mi_ PERFORMANCE APPRAISAL	0.80	0.39	1.00		
Mi_PROCESSES	0.78	0.40	0.57	1.00	
Mi_QUALITY_TOOLS	0.75	0.47	0.46	0.36	1.00

Appendix E: Quantitative survey, Descriptive Stat. & Scoring Results

Small SMEs	S_DEPENDANT	S_ORGANIZATIONAL_ CULTURE	S_ PERFORMANCE APPRAISAL	S_PROCESSES	S_QUALITY_TOOLS
S_DEPENDANT	1.00				
S_ORGANIZATIONAL_CULTURE	0.70	1.00			
S_ PERFORMANCE APPRAISAL	0.75	0.38	1.00		
S_PROCESSES	0.72	0.32	0.46	1.00	
S_QUALITY_TOOLS	0.73	0.42	0.35	0.28	1.00

Medium SMEs	Me_DEPENDANT	Me_ORGANIZATIONAL_ CULTURE	Me_ PERFORMANCE APPRAISAL	Me_PROCESSES	Me_QUALITY_TOOLS
Me_DEPENDANT	1.00				
Me_ORGANIZATIONAL_CULTURE	0.72	1.00			
Me_ PERFORMANCE APPRAISAL	0.75	0.23	1.00		
Me_PROCESSES	0.81	0.49	0.57	1.00	
Me_QUALITY_TOOLS	0.81	0.52	0.51	0.44	1.00

ALL SMEs	G_DEPENDANT	G_ORGANIZATIONAL_ CULTURE	G_ PERFORMANCE APPRAISAL	G_PROCESSES	G_QUALITY_T OOLS
G_DEPENDANT	1.00				
G_ORGANIZATIONAL_CUL TURE	0.72	1.00			
G_ PERFORMANCE APPRAISAL	0.77	0.36	1.00		
G_PROCESSES	0.77	0.40	0.54	1.00	
G_QUALITY_TOOLS	0.76	0.47	0.44	0.35	1.00

(Mi-Micro, S=Small, Me=Medium, G=Total)

- **Quality Elements - p-values**

	Micro				
	Quality Tools	Organizational Culture	Processes	Performance Appraisal	Dependant (TQM)
Quality Tools					
Organizational Culture	0.0000000				
Processes	0.0000006	0.0000000			
Performance Appraisal	0.0000000	0.0000000	0.0000000		
Dependant (TQM)	0.0000000	0.0000000	0.0000000	0.0000000	

	Small				
	Quality Tools	Organizational Culture	Processes	Performance Appraisal	Dependant (TQM)
Quality Tools					
Organizational Culture	0.0000003				
Processes	0.0007868	0.0001732			
Performance Appraisal	0.0000269	0.0000062	0.0000000		
Dependant (TQM)	0.0000000	0.0000000	0.0000000	0.0000000	

	Medium				
	Quality Tools	Organizational Culture	Processes	Performance Appraisal	Dependant (TQM)
Quality Tools					
Organizational Culture	0.0000042				
Processes	0.0001175	0.0000152			
Performance Appraisal	0.0000063	0.0496118	0.0000002		
Dependant (TQM)	0.0000000	0.0000000	0.0000000	0.0000000	

	All-General				
	Quality Tools	Organizational Culture	Processes	Performance Appraisal	Dependant (TQM)
Quality Tools					
Organizational Culture	0.0000000				
Processes	0.0000000	0.0000000			
Performance Appraisal	0.0000000	0.0000000	0.0000000		
Dependant (TQM)	0.0000000	0.0000000	0.0000000	0.0000000	

APPENDIX F

Ratio Analysis Statistics (Test of Equality)

Summary: Appendix F' shows the equality tests conducted in all the financial ratios used in evaluating the financial performance of the Greek ISO certified SMEs and their equivalent groups (Micro, Small, Medium)

- **APPENDIX F Ratio Analysis Statistics (Test of Equality)**

○ Acid test Ratio (*Mean and St. Deviations)*

	Medium SME		Small SME		Micro SME	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
2008	0.75	0.87	0.94	0.92	1.29	0.94
2009	0.76	0.87	0.99	0.89	1.45	1.12
2010	0.73	0.82	1.00	0.91	1.39	0.90
2011	0.82	1.00	1.07	1.07	1.58	1.29
2012	0.86	1.18	1.20	1.42	1.63	1.29
2013	0.89	1.29	1.26	1.52	1.71	1.57
2014	0.79	0.97	1.20	1.35	1.69	1.46

ACID TEST RATIO	2008			2009			2010		
Method	df	Value	Probability	df	Value	Probability	df	Value	Probability
Anova F-test	(2, 1563)	46.87	0.00	(2, 1563)	70.20	0.00	(2, 1563)	75.17	0.00
Welch F-test*	(2, 1040.8)	46.56	0.00	(2, 1030.8)	63.26	0.00	(2, 1039.8)	77.30	

ACID TEST RATIO	2011			2012			2013		
Method	df	Value	Probability	df	Value	Probability	df	Value	Probability
Anova F-test	(2, 1563)	61.51	0.00	(2, 1563)	45.77	0.00	(2, 1563)	40.65	0.00
Welch F-test*	(2, 1031.8)	56.50	0.00	(2, 1035.99)	50.44	0.00	(2, 1033.19)	42.28	0.00

- **APPENDIX F Ratio Analysis Statistics (Test of Equality)**

ACIT TEST RATIO		2014	
Method	df	Value	Probability
Anova F-test	(2, 1563)	63.69	0.00
Welch F-test*	(2, 1005.18)	69.40	0.00

○ Asset Turnover Ratio (*Mean and St. Deviations)*

	Medium SME		Small SME		Micro SME	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
2008	0.71	0.81	0.89	0.77	1.11	0.66
2009	0.68	0.79	0.81	0.72	1.00	0.65
2010	0.64	0.71	0.74	0.61	0.94	0.61
2011	0.64	0.72	0.75	0.69	0.89	0.60
2012	0.63	0.74	0.74	0.73	0.87	0.62
2013	0.65	0.77	0.70	0.61	0.89	0.65
2014	0.64	0.74	0.73	0.64	0.92	0.71

ASSET TURNOVER		2008			2009			2010	
Method	df	Value	Probability	df	Value	Probability	df	Value	Probability
Anova F-test	(2, 1563)	36.78	0.00	(2, 1563)	25.25	0.00	(2, 1563)	28.88	0.00
Welch F-test*	(2, 1032.97)	38.87	0.00	(2, 1035.47)	25.94	0.00	(2, 1037.62)	28.66	0.00

- **APPENDIX F Ratio Analysis Statistics (Test of Equality)**

ASSET TURNOVER	2011			2012			2013		
Method	df	Value	Probability	df	Value	Probability	df	Value	Probability
Anova F-test	(2, 1563)	18.74	0.00	(2, 1563)	15.29	0.00	(2, 1563)	17.96	0.00
Welch F-test*	(2, 1034.51)	19.75	0.00	(2, 1034.61)	16.31	0.00	(2, 1033.66)	18.19	0.00

ASSET TURNOVER	2014		
Method	df	Value	Probability
Anova F-test	(2, 1563)	21.14	0.00
Welch F-test*	(2, 1038.22)	20.07	0.00

○ Inventory turnover ratio (*Mean and St. Deviations)*

	Medium SME		Small SME		Micro SME	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
2008	6.34	11.52	8.13	14.72	18.96	27.82
2009	5.65	10.20	9.00	20.28	26.03	60.06
2010	5.55	9.35	6.60	9.82	15.54	25.81
2011	6.58	13.06	9.21	22.64	18.49	45.13
2012	5.67	11.40	13.68	29.97	22.89	69.23
2013	5.91	12.68	9.69	22.35	24.07	68.74
2014	5.17	8.66	10.29	22.01	20.77	45.88

- **APPENDIX F Ratio Analysis Statistics (Test of Equality)**

INVENTORY TURNOVER	2008			2009			2010		
Method	df	Value	Probability	df	Value	Probability	df	Value	Probability
Anova F-test	(2, 1563)	64.95	0.00	(2, 1563)	45.34	0.00	(2, 1563)	55.51	0.00
Welch F-test*	(2, 963.951)	45.77	0.00	(2, 843.002)	33.11	0.00	(2, 962.916)	34.56	0.00

INVENTORY TURNOVER	2011			2012			2013		
Method	df	Value	Probability	df	Value	Probability	df	Value	Probability
Anova F-test	(2, 1563)	22.52	0.00	(2, 1563)	19.97	0.00	(2, 1563)	26.69	0.00
Welch F-test*	(2, 892.253)	17.90	0.00	(2, 796.651)	30.20	0.00	(2, 867.899)	21.65	0.00

INVENTORY TURNOVER	2014		
Method	df	Value	Probability
Anova F-test	(2, 1563)	37.16	0.00
Welch F-test*	(2, 806.076)	38.91	0.00

- **APPENDIX F Ratio Analysis Statistics (Test of Equality)**

○ Receivable Turnover ratio (*Mean and St. Deviations)*

	Medium SME		Small SME		Micro SME	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
2008	1.84	2.17	2.22	2.05	3.16	2.94
2009	1.74	2.09	2.09	2.01	2.68	2.12
2010	1.72	2.10	1.81	1.54	2.71	2.64
2011	1.79	2.32	1.82	1.60	2.65	2.57
2012	1.72	2.14	1.92	1.80	2.64	2.36
2013	1.78	2.17	2.08	2.19	2.78	2.60
2014	1.88	2.29	1.99	1.76	2.88	2.76

RECEIVABLE TURNOVER	2008			2009			2010		
Method	df	Value	Probability	df	Value	Probability	df	Value	Probability
Anova F-test	(2, 1563)	40.72	0.00	(2, 1563)	27.11	0.00	(2, 1563)	34.24	0.00
Welch F-test*	(2, 1022.1)	33.91	0.00	(2, 1041.44)	26.26	0.00	(2, 993.191)	26.94	0.00

RECEIVABLE TURNOVER	2011			2012			2013		
Method	df	Value	Probability	df	Value	Probability	df	Value	Probability
Anova F-test	(2, 1563)	25.60	0.00	(2, 1563)	27.69	0.00	(2, 1563)	25.10	0.00
Welch F-test*	(2, 994.724)	22.09	0.00	(2, 1028.22)	24.09	0.00	(2, 1035.9)	22.95	0.00

- **APPENDIX F Ratio Analysis Statistics (Test of Equality)**

RECEIVABLE TURNOVER		2014	
Method	df	Value	Probability
Anova F-test	(2, 1563)	29.34	0.00
Welch F-test*	(2, 1006.86)	23.84	0.00

○ Return on Assets (ROA) ratio (*Mean and St. Deviations)*

	Medium SME		Small SME		Micro SME	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
2008	0.03	0.08	0.04	0.07	0.05	0.09
2009	0.02	0.04	0.03	0.05	0.04	0.06
2010	0.01	0.04	0.02	0.05	0.02	0.06
2011	0.01	0.04	0.00	0.05	0.02	0.06
2012	0.00	0.04	0.00	0.06	0.01	0.09
2013	0.01	0.05	0.01	0.07	0.02	0.09
2014	0.01	0.07	0.02	0.08	0.03	0.10

ROA		2008			2009			2010	
Method	df	Value	Probability	df	Value	Probability	df	Value	Probability
Anova F-test	(2, 1563)	9.71	0.00	(2, 1563)	11.68	0.00	(2, 1563)	8.25	0.00
Welch F-test*	(2, 1029)	8.60	0.00	(2, 1019)	12.27	0.00	(2, 1008)	10.81	0.00

- **APPENDIX F Ratio Analysis Statistics (Test of Equality)**

ROA		2011			2012			2013	
Method	df	Value	Probability	df	Value	Probability	df	Value	Probability
Anova F-test	(2, 1563)	8.20	0.00	(2, 1563)	9.02	0.00	(2, 1563)	9.13	0.00
Welch F-test*	(2, 1024)	7.19	0.00	(2, 971)	8.26	0.00	(2, 990)	9.16	0.00

ROA		2014	
Method	df	Value	Probability
Anova F-test	(2, 1563)	4.87	0.01
Welch F-test*	(2, 1019)	4.40	0.01

○ Return on Equity (ROE) ratio (*Mean and St. Deviations)*

	Medium SME		Small SME		Micro SME	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
2008	0.10	0.21	0.14	0.23	0.18	0.28
2009	0.07	0.12	0.09	0.15	0.11	0.16
2010	0.03	0.21	0.08	0.19	0.06	0.23
2011	-0.01	0.26	0.02	0.22	0.05	0.22
2012	-0.06	0.39	-0.02	0.26	0.01	0.23
2013	0.02	0.14	-0.01	0.24	0.04	0.22
2014	-0.01	0.44	0.03	0.29	0.06	0.43

- **APPENDIX F Ratio Analysis Statistics (Test of Equality)**

ROE		2008			2009			2010	
Method	df	Value	Probability	df	Value	Probability	df	Value	Probability
Anova F-test	(2, 1563)	14.63	0.00	(2, 1563)	12.14	0.00	(2, 1563)	8.61	0.00
Welch F-test*	(2, 1030.08)	14.59	0.00	(2, 1023.95)	12.77	0.00	(2, 1034.46)	9.51	0.00

ROE		2011			2012			2013	
Method	df	Value	Probability	df	Value	Probability	df	Value	Probability
Anova F-test	(2, 1563)	8.92	0.00	(2, 1563)	6.48	0.00	(2, 1563)	6.85	0.00
Welch F-test*	(2, 1035.93)	8.35	0.00	(2, 1007.89)	6.56	0.00	(2, 981.795)	5.41	0.00

ROE		2014	
Method	df	Value	Probability
Anova F-test	(2, 1563)	3.65	0.03
Welch F-test*	(2, 1001.13)	2.99	0.05

- **APPENDIX F Ratio Analysis Statistics (Test of Equality)**

○ Debt to Equity ratio (*Mean and St. Deviations)*

	Medium SME		Small SME		Micro SME	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
2008	1.45	2.11	2.38	3.24	3.21	4.38
2009	1.66	3.02	2.38	3.88	2.84	3.90
2010	1.57	2.89	2.18	4.63	2.95	4.81
2011	1.51	2.71	1.95	3.96	2.46	5.17
2012	1.67	4.00	1.75	3.79	2.05	4.49
2013	1.16	5.74	1.45	3.81	2.38	9.27
2014	1.36	6.55	1.39	7.77	2.20	7.11

DEBT TO EQUITY	2008			2009			2010		
Method	df	Value	Probability	df	Value	Probability	df	Value	Probability
Anova F-test	(2, 1563)	35.47	0.00	(2, 1563)	13.97	0.00	(2, 1563)	14.13	0.00
Welch F-test*	(2, 957.905)	40.70	0.00	(2, 1025.2)	15.80	0.00	(2, 979.18)	16.29	0.00

DEBT TO EQUITY	2011			2012			2013		
Method	df	Value	Probability	df	Value	Probability	df	Value	Probability
Anova F-test	(2, 1563)	7.18	0.00	(2, 1563)	1.20	0.30	(2, 1563)	4.75	0.01
Welch F-test*	(2, 973.975)	7.64	0.00	(2, 1037.19)	1.09	0.34	(2, 944.069)	3.27	0.04

- **APPENDIX F Ratio Analysis Statistics (Test of Equality)**

DEBT TO EQUITY		2014	
Method	Df	Value	Probability
Anova F-test	(2, 1563)	2.31	0.10
Welch F-test*	(2, 1036.98)	2.37	0.09

○ Altman's Z-Score ratio (*Mean and St. Deviations)*

	Medium SME		Small SME		Micro SME	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev.
2008	1.95	2.94	2.32	2.69	3.20	3.60
2009	1.92	2.83	2.43	2.75	3.32	3.15
2010	1.88	2.92	2.24	2.73	3.16	3.28
2011	2.01	3.42	2.41	3.59	3.63	4.11
2012	1.99	3.41	2.67	4.12	3.92	4.54
2013	2.04	3.76	2.78	4.10	3.87	4.54
2014	2.23	4.18	2.82	4.53	3.99	4.88

Z-SCORE		2008			2009			2010	
Method	df	Value	Probability	df	Value	Probability	df	Value	Probability
Anova F-test	(2, 1563)	22.22	0.00	(2, 1563)	30.93	0.00	(2, 1563)	25.43	0.00
Welch F-test*	(2, 1028.4)	19.05	0.00	(2, 1038.82)	28.91	0.00	(2, 1036.34)	22.97	0.00

- **APPENDIX F Ratio Analysis Statistics (Test of Equality)**

Z-SCORE		2011			2012			2013	
Method	df	Value	Probability	df	Value	Probability	df	Value	Probability
Anova F-test	(2, 1563)	26.90	0.00	(2, 1563)	30.64	0.00	(2, 1563)	25.86	0.00
Welch F-test*	(2, 1036.28)	24.86	0.00	(2, 1026.64)	30.28	0.00	(2, 1035.99)	25.25	0.00

Z-SCORE		2014	
Method	df	Value	Probability
Anova F-test	(2, 1563)	20.15	0.00
Welch F-test*	(2, 1037.89)	19.59	0.00

Appendix Ga

Financial Ratios Trend Analysis per size groups

Summary: Appendix Ga includes the results derived from the trend analysis conducted on the financial ratios used on the per size group of the Greek ISO certified SMEs for the population and the sample participated in the survey.

Section A': Trend Analysis – All SMEs

Acid Ratio

Group	2008	2009	2010	2011	2012	2013	2014
Micro	1.29	1.45	1.39	1.58	1.63	1.71	1.69
Small	1.21	1.45	1.28	1.37	1.54	1.61	1.54
Medium	1.24	1.26	1.21	1.36	1.43	1.48	1.32

Asset Turnover

Group	2008	2009	2010	2011	2012	2013	2014
Micro	1.11	1.00	0.94	0.89	0.87	0.89	0.92
Small	1.15	1.04	0.95	0.96	0.95	0.89	0.93
Medium	1.18	1.13	1.06	1.05	1.04	1.08	1.06

Inventory Turnover

Group	2008	2009	2010	2011	2012	2013	2014
Micro	18.96	26.03	20.71	18.49	22.89	24.07	20.77
Small	10.42	11.55	8.47	11.82	17.54	12.43	13.19
Medium	10.51	9.36	9.19	10.90	9.40	9.79	8.57

Receivable Turnover

Group	2008	2009	2010	2011	2012	2013	2014
Micro	3.16	2.68	2.71	2.65	2.64	2.78	2.88
Small	2.85	2.67	2.32	2.34	2.46	2.67	2.56
Medium	3.05	2.89	2.84	2.97	2.85	2.95	3.11

Appendix Ga' Financial Ratios Trend Analysis per size groups

Return-on-Equity

Group	2008	2009	2010	2011	2012	2013	2014
Micro	0.05	0.04	0.02	0.02	0.01	0.02	0.03
Small	0.06	0.04	0.03	0.00	0.00	0.02	0.02
Medium	0.05	0.03	0.02	0.02	-0.01	0.01	0.02

Return-on-Assets

Group	2008	2009	2010	2011	2012	2013	2014
Micro	0.18	0.11	0.06	0.05	0.01	0.04	0.06
Small	0.18	0.12	0.11	0.03	-0.03	-0.01	0.04
Medium	0.16	0.12	0.05	-0.02	-0.09	0.04	-0.01

Debt-to-Equity

Group	2008	2009	2010	2011	2012	2013	2014
Micro	3.21	2.84	2.95	2.46	2.05	2.38	2.20
Small	3.05	3.06	2.79	2.50	2.25	1.86	1.79
Medium	2.41	2.76	2.60	2.50	2.77	1.92	2.25

Z-Score

Group	2008	2009	2010	2011	2012	2013	2014
Micro	3.20	3.32	3.16	3.63	3.92	3.87	3.99
Small	2.97	3.11	2.87	3.09	3.42	3.57	3.62
Medium	3.24	3.18	3.12	3.33	3.30	3.37	3.70

Section B' Ratios – Trend Analysis – Sample Size SMEs

Acid Ratio

Group	2008	2009	2010	2011	2012	2013	2014
Micro	1.73	2.11	1.98	2.42	2.79	3.12	3.00
Small	1.57	1.66	1.81	2.27	2.88	3.02	2.88
Medium	1.74	1.67	1.54	2.12	2.43	2.91	2.10

Asset Turnover

Group	2008	2009	2010	2011	2012	2013	2014
Micro	1.03	0.90	0.92	0.84	0.80	0.83	0.90
Small	1.04	0.97	0.90	0.89	0.86	0.83	0.87
Medium	1.12	1.06	0.97	0.94	0.91	0.94	0.99

Inventory Turnover

Group	2008	2009	2010	2011	2012	2013	2014
Micro	20.99	32.48	16.17	19.95	23.17	33.09	25.13
Small	9.49	10.20	7.51	8.47	18.39	10.48	11.72
Medium	9.27	8.71	9.47	10.07	8.78	9.82	8.02

Receivable Turnover

Group	2008	2009	2010	2011	2012	2013	2014
Micro	3.15	2.58	2.58	2.52	2.67	2.75	3.04
Small	2.92	2.73	2.20	2.22	2.46	2.47	2.59
Medium	3.51	3.23	3.02	3.17	3.00	2.88	3.39

Return-on-Equity

Group	2008	2009	2010	2011	2012	2013	2014
Micro	0.08	0.05	0.04	0.04	0.05	0.07	0.07
Small	0.09	0.06	0.05	0.03	0.04	0.06	0.06
Medium	0.09	0.05	0.03	0.04	0.00	0.03	0.04

Return-on-Assets

Group	2008	2009	2010	2011	2012	2013	2014
Micro	0.19	0.12	0.11	0.08	0.06	0.08	0.11
Small	0.22	0.13	0.12	0.09	0.05	0.08	0.08
Medium	0.16	0.12	0.07	0.04	-0.01	0.06	0.05

Debt-to-Equity

Group	2008	2009	2010	2011	2012	2013	2014
Micro	1.62	1.20	1.60	0.84	0.71	0.78	0.57
Small	1.43	1.24	1.06	0.96	0.83	0.49	0.38
Medium	1.38	1.36	0.83	0.96	1.08	0.68	-0.20

Z-Score

Group	2008	2009	2010	2011	2012	2013	2014
Micro	5.45	5.92	6.05	7.42	8.48	8.59	8.99
Small	4.98	5.56	5.57	7.27	8.65	8.83	9.94
Medium	5.79	5.81	5.98	7.14	7.20	8.55	9.77

Appendix Gb

Financial Ratios

Trend Analysis

per Quality groups

Summary: Appendix Gb includes the results derived from the trend analysis conducted on the financial ratios used on the per quality level implemented group of the Greek ISO certified SMEs for the population and the sample participated in the survey.

Section A': Trend Analysis – All SMEs

Liquidity (Means)

Acid Ratio			
Year	Micro	Small	Medium
2008	2.23	1.79	2.64
2009	2.92	1.91	1.75
2010	2.73	2.38	1.41
2011	4.08	3.01	2.72
2012	3.82	4.92	3.23
2013	4.14	6.23	4.99
2014	5.66	3.98	1.88
Variability	1.15	1.66	1.21

Efficiency Ratios (Means)

Asset Turnover				Inventory Turnover			
Year	Micro	Small	Medium	Year	Micro	Small	Medium
2008	0.91	0.96	0.99	2008	22.51	6.51	8.26
2009	0.71	0.91	0.89	2009	57.06	5.06	5.10
2010	0.78	0.86	0.81	2010	16.47	4.29	11.61
2011	0.74	0.76	0.79	2011	17.39	3.75	9.36
2012	0.65	0.72	0.78	2012	9.79	4.07	7.12
2013	0.61	0.65	0.94	2013	16.34	3.24	6.97
2014	0.71	0.65	1.06	2014	36.84	3.15	8.36
Variability	0.10	0.13	0.11		16.39	1.17	2.05

Efficiency Ratios (Cont.)

Account Receivable Turnover			
Year	Micro	Small	Medium
2008	2.96	2.07	3.04
2009	2.60	1.90	2.00
2010	2.99	1.86	1.81
2011	4.13	1.54	1.79
2012	4.06	1.70	1.76
2013	4.02	1.71	1.34
2014	5.36	2.01	2.63
Variability	0.95	0.19	0.58

Profitability (Means)

ROA				ROE			
Year	Micro	Small	Medium	Year	Micro	Small	Medium
2008	0.11	0.09	0.07	2008	0.16	0.24	0.04
2009	0.08	0.11	0.06	2009	0.10	0.16	0.09
2010	0.05	0.07	0.01	2010	0.07	0.13	0.04
2011	0.03	0.06	0.00	2011	0.04	0.10	-0.01
2012	0.03	0.07	-0.05	2012	0.03	0.08	-0.06
2013	0.03	0.04	-0.01	2013	0.04	0.05	-0.01
2014	0.03	0.04	-0.03	2014	0.03	0.05	-0.03
Variability	0.03	0.02	0.04		0.05	0.07	0.05

Solvency/Leverage (Means)

Debt/Equity				Z-Score			
Year	Micro	Small	Medium	Year	Micro	Small	Medium
2008	0.40	0.85	0.54	2008	8.82	6.79	8.64
2009	0.28	0.45	2.25	2009	10.13	8.36	8.83
2010	0.26	0.32	-1.06	2010	10.39	6.54	8.97
2011	0.17	0.25	-0.46	2011	12.50	11.79	12.02
2012	0.12	0.15	0.14	2012	14.68	16.21	9.63
2013	0.12	0.10	0.08	2013	15.99	15.34	14.08
2014	0.07	0.08	0.07	2014	20.81	22.10	21.69
Variability	0.12	0.27	1.03		4.18	5.77	4.73

○ Section B': Ratios - Trend Analysis for ISO+ SMEs

Liquidity

Acid Ratio			
Year	Micro	Small	Medium
2008	1.82	1.69	1.72
2009	2.20	1.78	1.84
2010	2.09	1.90	1.75
2011	2.54	2.47	2.30
2012	3.06	3.02	2.65
2013	3.46	2.97	2.99
2014	3.20	3.16	2.50
Variability	0.62	0.64	0.50

Efficiency

Asset Turnover				Inventory Turnover			
Year	Micro	Small	Medium	Year	Micro	Small	Medium
2008	1.03	1.01	1.18	2008	21.80	9.54	6.66
2009	0.89	0.95	1.10	2009	29.09	10.71	7.52
2010	0.91	0.91	1.02	2010	14.89	7.33	6.97
2011	0.84	0.87	0.99	2011	18.26	8.77	8.26
2012	0.80	0.87	0.97	2012	22.29	20.55	6.63
2013	0.85	0.85	0.93	2013	27.69	10.21	7.00
2014	0.86	0.91	0.95	2014	23.02	11.68	5.85
Variability	0.07	0.06	0.09		4.95	4.33	0.76

Account Receivable Turnover

Year	Micro	Small	Medium
2008	3.01	2.95	3.75
2009	2.54	2.72	3.61
2010	2.47	2.17	3.23
2011	2.35	2.28	3.53
2012	2.59	2.46	3.37
2013	2.64	2.48	3.16
2014	2.76	2.68	3.46
Variability	0.22	0.27	0.21

Profitability

ROA				ROE			
Year	Micro	Small	Medium	Year	Micro	Small	Medium
2008	0.09	0.09	0.12	2008	0.21	0.22	0.21
2009	0.05	0.06	0.05	2009	0.12	0.14	0.13
2010	0.05	0.06	0.04	2010	0.13	0.13	0.09
2011	0.05	0.03	0.05	2011	0.08	0.10	0.08
2012	0.05	0.04	0.02	2012	0.08	0.08	0.07
2013	0.08	0.07	0.04	2013	0.12	0.10	0.08
2014	0.09	0.08	0.06	2014	0.13	0.11	0.09
Variability	0.02	0.02	0.03		0.04	0.05	0.05

Solvency/Leverage

Debt/Equity				Z-Score			
Year	Micro	Small	Medium	Year	Micro	Small	Medium
2008	1.37	1.10	1.02	2008	5.92	5.42	6.23
2009	0.93	0.93	0.76	2009	6.27	6.00	6.16
2010	1.39	0.72	0.67	2010	6.46	6.28	6.45
2011	0.56	0.58	0.52	2011	8.07	7.90	7.54
2012	0.42	0.39	0.36	2012	9.24	9.08	8.22
2013	0.37	0.36	0.28	2013	9.28	9.43	9.24
2014	0.34	0.31	0.29	2014	9.58	9.99	9.32
Variability	0.46	0.31	0.28		1.59	1.84	1.37

○ Section C': Ratios - Trend Analysis for ISO SMEs

Liquidity

Acid Ratio			
Year	Micro	Small	Medium
2008	1.18	1.00	1.10
2009	1.47	1.04	1.04
2010	1.26	1.04	0.97
2011	1.36	1.02	1.03
2012	1.37	1.03	1.09
2013	1.40	1.16	1.04
2014	1.26	1.12	0.96
Variability	0.10	0.06	0.06

Efficiency

Asset Turnover				Inventory Turnover			
Year	Micro	Small	Medium	Year	Micro	Small	Medium
2008	1.09	1.22	1.05	2008	17.25	11.22	18.44
2009	1.03	1.06	1.05	2009	36.66	11.53	15.47
2010	1.00	0.90	0.92	2010	21.08	10.38	16.01
2011	0.91	1.03	0.89	2011	27.51	10.37	16.58
2012	0.87	0.95	0.85	2012	31.62	19.37	17.16
2013	0.84	0.87	1.00	2013	60.28	16.17	21.30
2014	1.10	0.86	1.08	2014	29.01	17.37	14.89
Variability	0.10	0.13	0.09		14.07	3.76	2.18

Efficiency

Account Receivable Turnover			
Year	Micro	Small	Medium
2008	3.76	3.37	3.12
2009	2.71	3.25	2.92
2010	2.88	2.52	3.31
2011	2.62	2.43	3.05
2012	2.46	2.95	2.79
2013	2.73	2.94	3.16
2014	3.26	2.60	3.73
	0.45	0.37	0.30

Profitability

ROA				ROE			
Year	Micro	Small	Medium	Year	Micro	Small	Medium
2008	0.05	0.05	0.02	2008	0.13	0.18	0.11
2009	0.05	0.02	0.04	2009	0.13	0.07	0.13
2010	0.03	0.03	0.02	2010	0.05	0.09	0.04
2011	0.02	0.00	0.01	2011	0.09	0.02	-0.04
2012	0.02	0.01	-0.01	2012	0.00	-0.07	-0.24
2013	0.02	0.01	0.02	2013	-0.05	0.01	0.06
2014	0.01	0.00	0.01	2014	0.03	-0.06	0.02
Variability	0.01	0.02	0.02		0.07	0.09	0.12

Solvency/Leverage

Debt/Equity				Z-Score			
Year	Micro	Small	Medium	Year	Micro	Small	Medium
2008	3.04	2.97	3.18	2008	2.40	2.22	2.14
2009	2.61	2.90	2.67	2009	2.99	2.12	2.31
2010	2.95	2.88	2.84	2010	2.83	2.08	2.06
2011	2.21	2.85	3.51	2011	3.02	1.97	1.99
2012	2.05	2.97	4.19	2012	3.18	2.21	1.92
2013	2.62	1.21	2.43	2013	3.17	2.39	1.94
2014	1.66	0.81	-2.00	2014	2.30	1.95	1.91
Variability	0.50	0.94	2.03		0.36	0.15	0.15

APPENDIX H
Ratio Analysis
(Post Hoc Analysis)

Summary: Appendix H' includes the results derived from the post hoc analysis conducted on the financial ratios used from the population and the sample of the Greek ISO certified SMEs participated in the survey.

Section A': RESULTS BY SIZE (ALL REGISTERED SMEs)

For the Acid test Ratio the Post-Hoc is shown below:

Acid Ratio	2008						2009					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,030	0,654					0,020	0,778				
Micro	0,047	0,455	0,077	0,189			*.1989**	0,003	*.1788**	0,004		

Acid Ratio	2010						2011					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	0,078	0,212					0,016	0,846				
Micro	*.1828**	0,002	0,104	0,059			*.2205**	0,006	*.2041**	0,006		

Acid Ratio	2012						2013					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	0,108	0,280					0,138	0,225				
Micro	*.201639**	0,033	0,094	0,284			*.2310**	0,033	0,093	0,354		

Acid Ratio	2014					
	Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Differenc e (I-J)	Sig.
Medium						
Small	*.2263**	0,021				
Micro	*.3682**	0,000	0,142	0,101		

For the Asset Turnover ratio, the Post-Hoc is shown below:

Asset Turnover	2008						2009					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,032	0,531					-0,084	0,095				
Micro	-0,071	0,147	-0,039	0,394			*-.1303**	0,007	-0,046	0,299		

APPENDIX H: Ratio Analysis – Post Hoc Analysis

Asset Turnover	2010						2011					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	*-.1105**	0,013					-0,088	0,060				
Micro	*-.1212**	0,004	-0,011	0,782			*-.1627**	0,000	-0,074	0,073		

Asset Turnover	2012						2013					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,088	0,076					*-.1822**	0,000				
Micro	*-.174480**	0,000	*-.086195**	0,049			*-.1884**	0,000	-0,006	0,884		

Asset Turnover	2014					
	Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium						
Small	*-.1319**					
Micro	*-.1472**	0,002	-0,015	0,727		

For the Inventory Turnover ratio, the Post-Hoc is shown below:

Inventory Turnover	2008						2009					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,090	0,955					2,185	0,482				
Micro	*8.4445**	0,000	*8.5341**	0,000			*16.6625**	0,000	*14.4773**	0,000		

Inventory Turnover	2010						2011					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,723	0,603					0,917	0,715				
Micro	*6.3472**	0,000	*7.0705**	0,000			*7.5853**	0,002	*6.6688**	0,003		

Inventory Turnover	2012						2013					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	*8.137435**	0,027					2,643	0,457				
Micro	*13.489057**	0,000	5,352	0,100			*14.2794**	0,000	*11.6364**	0,000		

Inventory Turnover	2014		
	Medium	Small	Micro

Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium						
Small	4,620	0,064				
Micro	*12.1981**	0,000	*7.5785**	0,001		

For the Receivable Turnover ratio, the Post-Hoc is shown below:

Receivable Turnover	2008						2009					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,204	0,262					-0,211	0,164				
Micro	0,104	0,548	0,308	0,055			-0,209	0,146	0,001	0,992		

Receivable Turnover	2010						2011					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	*-.5261**	0,001					*-.6350**	0,000				
Micro	-0,135	0,375	*.3908**	0,006			*-.3207**	0,041	*.3143**	0,030		

Receivable Turnover	2012						2013					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	*-.384493**	0,015					-0,283	0,107				
Micro	-0,202	0,176	0,182	0,188			-0,174	0,297	0,109	0,479		

Receivable Turnover	2014					
	Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium						
Small	*-.5522**	0,001				
Micro	-0,233	0,154	*.3191**	0,035		

For the Return on Assets (ROA) ratio, the Post-Hoc is shown below:

ROA	2008						2009					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	0,002	0,814					0,001	0,804				
Micro	0,000	0,943	-0,001	0,849			0,002	0,674	0,001	0,863		

APPENDIX H: Ratio Analysis – Post Hoc Analysis

ROA	2010						2011					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	*.0112**	0,006					*-.0138**	0,002				
Micro	-0,003	0,507	*-.0138**	0,000			-0,001	0,722	*.0123**	0,002		

ROA	2012						2013					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	0,009	0,129					0,007	0,214				
Micro	*.020179**	0,000	*.011389**	0,026			*.0141**	0,011	0,007	0,183		

ROA	2014					
	Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium						
Small	0,000	0,972				
Micro	0,006	0,384	0,006	0,328		

For the Return on Equity (ROE) ratio, the Post-Hoc is shown below:

ROE	2008						2009					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	0,019	0,344					-0,001	0,944				
Micro	0,018	0,336	-0,001	0,971			-0,002	0,829	-0,002	0,878		

ROE	2010						2011					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	*.0593**	0,001					*.0491**	0,013				
Micro	0,011	0,507	*-.0481**	0,002			*.0709**	0,000	0,022	0,211		

ROE	2012						2013					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	*.060501**	0,017					*-.0433**	0,013				
Micro	*.103799**	0,000	0,043	0,053			0,005	0,753	*.0485**	0,002		

ROE	2014					
	Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium						
Small	0,051	0,125				
Micro	*.0694**	0,027	0,019	0,523		

For the Debt to Equity Ratio, the Post-Hoc is shown below:

Debt-to-Equity	2008						2009					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	*.6459**	0,017					0,296	0,310				
Micro	*.8028**	0,002	0,157	0,512			0,082	0,767	-0,214	0,405		

Debt-to-Equity	2010						2011					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	0,188	0,586					0,000	1,000				
Micro	0,347	0,289	0,159	0,600			-0,037	0,906	-0,038	0,898		

Debt-to-Equity	2012						2013					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,523	0,120					-0,058	0,918				
Micro	*-.725390**	0,023	-0,203	0,493			0,459	0,388	0,517	0,294		

Debt-to-Equity	2014					
	Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium						
Small	-0,462	0,441				
Micro	-0,050	0,931	0,412	0,435		

For the Altman Z-Score, the Post-Hoc is shown below:

Z-Score	2008						2009					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,267	0,271					-0,063	0,779				
Micro	-0,040	0,861	0,226	0,289			0,142	0,507	0,205	0,301		

APPENDIX H: Ratio Analysis – Post Hoc Analysis

Z-Score	2010						2011					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,252	0,280					-0,237	0,425				
Micro	0,037	0,866	0,289	0,159			0,300	0,287	*.5373**	0,040		

Z-Score	2012						2013					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	0,126	0,697					0,191	0,565				
Micro	*.626139**	0,043	0,500	0,081			0,496	0,116	0,305	0,298		

Z-Score	2014					
	Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium						
Small	-0,081	0,824				
Micro	0,285	0,412	0,366	0,256		

Section B': RESULTS BY SIZE (SURVEY'S SAMPLE SMEs)

Examining the sample of the survey the results derived are presented below:

For the Acid test Ratio the Post-Hoc is shown below:

Acid Ratio	2008						2009					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,154	0,241					*-.4517**	0,002				
Micro	0,014	0,931	0,168	0,324			*-.4435**	0,014	0,008	0,965		

Acid Ratio	2010						2011					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,176	0,123					-0,157	0,325				
Micro	*-.441791**	0,002	-0,266	0,072			-0,309	0,118	-0,152	0,462		

Acid Ratio	2012						2013					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	0,092	0,665					-0,097	0,687				
Micro	-0,358	0,171	-0,449	0,102			-0,202	0,499	-0,105	0,738		

Acid Ratio	2014					
	Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium						
Small	-0,121	0,537				
Micro	*-.898881**	0,000	*-.778149**	0,002		

For the Asset Turnover ratio, the Post-Hoc is shown below:

Asset Turnover	2008						2009					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	0,012	0,853					0,066	0,295				
Micro	0,091	0,250	0,079	0,342			*.1576**	0,044	0,091	0,263		

APPENDIX H: Ratio Analysis – Post Hoc Analysis

Asset Turnover	2010						2011					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,015	0,781					0,041	0,495				
Micro	0,047	0,495	0,062	0,387			0,096	0,197	0,055	0,481		

Asset Turnover	2012						2013					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	0,064	0,267					-0,002	0,979				
Micro	0,114	0,111	0,050	0,507			0,109	0,130	0,111	0,143		

Asset Turnover	2014					
	Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium						
Small	-0,028	0,683				
Micro	0,094	0,263	0,122	0,168		

For the Inventory Turnover ratio, the Post-Hoc is shown below:

Inventory Turnover	2008						2009					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	*-11.4964**	0,000					*-22.2892**	0,000				
Micro	*-11.7210**	0,000	-0,225	0,948			*-23.7726**	0,001	-1,483	0,842		

Inventory Turnover	2010						2011					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	*-8.663145**	0,000					*-11.476000**	0,005				
Micro	*-6.702114**	0,009	1,961	0,462			*-9.875606**	0,048	1,600	0,760		

Inventory Turnover	2012						2013					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-4,779	0,392					*-22.606120**	0,004				
Micro	*-14.392380**	0,038	-9,614	0,185			*-23.271338**	0,016	-0,665	0,947		

Inventory Turnover	2014					
	Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium						
Small	-13.405049*	0,004				
Micro	-17.102775*	0,003	-3,698	0,534		

For the Receivable Turnover ratio, the Post-Hoc is shown below:

Receivable Turnover	2008						2009					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,232	0,440					0,149	0,539				
Micro	0,360	0,329	0,592	0,128			.6512*	0,031	0,502	0,112		

Receivable Turnover	2010						2011					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,386	0,079					-0,300	0,227				
Micro	0,439	0,105	.825555*	0,004			.642230*	0,037	.942174*	0,004		

Receivable Turnover	2012						2013					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,206	0,437					-0,276	0,246				
Micro	0,338	0,301	0,544	0,113			0,129	0,662	0,405	0,190		

Receivable Turnover	2014					
	Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium						
Small	-0,445	0,098				
Micro	0,351	0,291	*.796782**	0,023		

For the Return on Assets (ROA) ratio, the Post-Hoc is shown below:

ROA	2008						2009					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	0,002	0,871					0,007	0,342				
Micro	-0,027	0,586	-0,054	0,695			-0,003	0,769	-0,010	0,311		

APPENDIX H: Ratio Analysis – Post Hoc Analysis

ROA	2010						2011					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	0,010	0,145					-0,014	0,059				
Micro	-0,010	0,267	*-.020252**	0,029			-0,005	0,553	0,008	0,373		

ROA	2012						2013					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,009	0,305					-0,011	0,234				
Micro	*-.044710**	0,000	*-.035221**	0,003			*-.039757**	0,001	*-.028450**	0,021		

ROA	2014					
	Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium						
Small	-0,009	0,387				
Micro	*-.031707**	0,015	-0,023	0,098		

For the Return on Equity (ROE) ratio, the Post-Hoc is shown below:

ROE	2008						2009					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,469	0,334					0,008	0,639				
Micro	0,338	0,422	-0,054	0,132			-0,002	0,911	-0,010	0,639		

ROE	2010						2011					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	0,014	0,509					0,004	0,860				
Micro	-0,038	0,151	-0,052	0,061			-0,040	0,110	-0,044	0,097		

ROE	2012						2013					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,008	0,736					-0,006	0,766				
Micro	*-.069587**	0,022	-0,061	0,055			-0,022	0,348	-0,016	0,505		

ROE	2014					
	Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium						
Small	-0,031	0,165				
Micro	-0,051	0,064	-0,020	0,487		

For the Debt to Equity Ratio, the Post-Hoc is shown below:

Debt-to-Equity	2008						2009					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,195	0,437					0,037	0,861				
Micro	-0,242	0,432	-0,048	0,883			0,165	0,531	0,128	0,644		

Debt-to-Equity	2010						2011					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,545	0,093					0,110	0,524				
Micro	-0,772	0,054	-0,227	0,588			0,112	0,602	0,001	0,995		

Debt-to-Equity	2012						2013					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	0,125	0,521					-0,293	0,190				
Micro	0,374	0,122	0,248	0,327			-0,104	0,707	0,190	0,513		

Debt-to-Equity	2014					
	Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium						
Small	-0,197	0,655				
Micro	-0,771	0,159	-0,573	0,317		

For the Altman Z-Score, the Post-Hoc is shown below:

Z-Score	2008						2009					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,469	0,271					-0,354	0,387				
Micro	0,338	0,519	0,807	0,145			-0,105	0,836	0,249	0,639		

Z-Score	2010						2011					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	-0,480	0,227					-0,155	0,758				
Micro	-0,070	0,886	0,409	0,426			-0,286	0,646	-0,130	0,842		

Z-Score	2012						2013					
	Medium		Small		Micro		Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium												
Small	0,179	0,752					0,239	0,652				
Micro	-1,279	0,067	*-1.457198**	0,047			-0,041	0,950	-0,280	0,683		

Z-Score	2014					
	Medium		Small		Micro	
Groups	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.	Mean Difference (I-J)	Sig.
Medium						
Small	0,947	0,144				
Micro	0,784	0,327	-0,163	0,846		

Appendix I'- Variate Statistics (MANOVA)

Summary: Appendix I' includes the results derived from the Multi-Variate analysis (MANOVA) conducted on the financial ratios used from the population and the sample of the Greek ISO certified SMEs that participated in the survey.

○ Section A': Variance Analysis – Population of SMEs – Results

Table 1: Pillai's trace test (Population of SMEs)

MANOVA

Years	**Pillai's Trace**	**Sagn.**
2008	4.51	0.00
2009	3.68	0.00
2010	0.09	0.00
2011	7.01	0.00
2012	4.26	0.00
2013	5.07	0.00
2014	0.06	0.00

Table 2: Levene's Test Coefficients

Levene's Test Ratios	2008		2009		2010	
	F	Sign	F	Sign	F	Sign
ACID	0.306130	0.736347	4.441349	**0.011968**	4.157860	**0.015859**
ASS_TURN	0.344235	0.708830	1.817334	0.162890	2.182991	0.113137
D_E	14.047814	**0.000001**	1.589374	0.204468	3.650154	0.026267
INV_TURN	66.890056	**0.000000**	60.485154	**0.000000**	51.590697	**0.000000**
REC_TURN	5.370737	**0.004759**	0.748129	0.473465	13.464438	**0.000002**
ROA	3.306867	**0.036954**	2.401637	**0.090990**	2.303782	0.100307
ROE	1.458206	0.233052	3.683524	**0.025409**	0.143325	0.866487
Z_SCORE	3.869180	**0.021128**	0.523208	0.592747	2.531736	**0.079931**

Table 3: Levene's Test Coefficients

Levene's Test Ratios	2011		2012		2013	
	F	Sign	F	Sign	F	Sign
ACID	6.905884	**0.001041**	1.869004	0.154711	2.077436	0.125686
ASS_TURN	0.305342	0.736927	7.182561	**0.000792**	0.108447	0.897235
D_E	2.015019	0.133754	3.385040	**0.034189**	1.980787	**0.138397**
INV_TURN	17.125490	**0.000000**	29.786793	**0.000000**	20.285638	**0.000000**
REC_TURN	11.453270	**0.000012**	3.051009	**0.047666**	6.228560	**0.002034**
ROA	0.382314	0.682361	5.108211	**0.006175**	7.564615	**0.000543**
ROE	5.704690	**0.003418**	1.592110	0.203911	15.898425	**0.000000**
Z_SCORE	0.744573	0.475149	0.526239	0.590955	1.290325	0.275550

Table4: Levene's Test Coefficients

Levene's Test Ratios	2014	
	F	Sign
ACID	11.739088	**0.000009**
ASS_TURN	3.374124	**0.034563**
D_E	0.302638	0.738921
INV_TURN	40.123282	**0.000000**
REC_TURN	13.821663	**0.000001**
ROA	0.317293	0.728176
ROE	2.729775	**0.065626**
Z_SCORE	0.179516	0.835696

Table5: Regression weight - Canonical variant

	2008			2009		
	F	Sig. of F	Raw discriminant function coefficients	F	Sig. of F	Raw discriminant function coefficients
ACID	.89250	.410	-0.05501	5.96264	0.003	0.48211
ASS_TURN	109,317	.335	0.59947	3.70994	0.025	-0.46951
D_E	506,150	.006	-0.1129	0.58843	0.555	0.00313
INV_TURN	2,415,458	.000	-0.04046	21.31136	0	0.01969
REC_TURN	186,726	.155	-0.11294	1.27487	0.28	-0.01923
ROA	.03131	.969	2.2234	0.08831	0.915	1.99238
ROE	.57228	.564	-0.44369	0.02585	0.974	-0.3567
Z_SCORE	.78301	.457	-0.07076	0.5707	0.565	-0.08644

Table 6 – Continues

	2010			2011		
	F	Sig. of F	Raw discriminant function coefficients	F	Sig. of F	Raw discriminant function coefficients
ACID	4.93857	0.007	-0.2058	5.32679	0.005	-0.28174
ASS_TURN	4.63024	0.01	0.137	6.70548	0.001	0.59378
D_E	0.56718	0.567	-0.04912	0.01079	0.989	-0.0156
INV_TURN	20.2727	0	-0.04144	6.82429	0.001	-0.01037
REC_TURN	6.23018	0.002	-0.0817	7.47724	0.001	0.11389
ROA	7.83781	0.000	11.10923	6.60455	0.001	14.21831
ROE	6.92391	0.001	0.33496	7.12407	0.001	-4.078
	1.08865	0.337	-0.11882	2.14526	0.117	0.0381

Table 7: - Continues

2014		
F	Sig. of F	Raw discriminant function coefficients
7.81521	0.000	-0.52588
5.35741	0.005	0.70686
0.40262	0.669	-0.01069
14.41566	0.000	-0.01945
5.33261	0.005	0.0187
0.61306	0.542	-0.25068
2.47896	0.084	-0.88171
0.72398	0.485	0.08847

Table 8:Financial Performance (FP) Equations – MANOVA

2008	compute FP = (-0.05501*ACID)+(0.59947*ASS_TURN) +(0.1129*D_E)+(0.04046*INV_TURN)+(0.11294*REC_TURN) +(2.2234*ROA)+(-0.44369*ROE)+(-0.07076*Z_SCORE).
2009	compute FP = (0.48211*ACID)+(-0.46951*ASS_TURN) +(0.00313*D_E)+(0.01969*INV_TURN)+(0.01923*REC_TURN)+(1.99238*ROA) +(-0.3567*ROE)+(-0.08644*Z_SCORE).
2010	compute FP = (-0.2058*ACID)+(0.137*ASS_TURN) +(0.04912*D_E) +(0.04144*INV_TURN)+(0.0817*REC_TURN)+(11.10923*ROA) +(0.33496*ROE)+(-0.11882*Z_SCORE).
2011	compute FP = (-0.28174*ACID)+(0.59378*ASS_TURN) +(0.0156*D_E)+(0.01037*INV_TURN)+(0.11389*REC_TURN) +(14.21831*ROA)+(-4.078*ROE)+(0.0381*Z_SCORE).
2012	compute FP = (0.14667*ACID)+(-1.01771*ASS_TURN) +(0.02161*D_E)+(0.00944*INV_TURN)+(0.01073*REC_TURN)+(4.99419*ROA) +(1.31257*ROE)+(-0.04504*Z_SCORE).
2013	compute FP = (0.15246*ACID)+(-1.110165*ASS_TURN) +(0.01731*D_E)+(0.01103*INV_TURN)+(0.01302*REC_TURN)+(9.58733*ROA) +(-1.736*ROE)+(-0.02983*Z_SCORE).
2014	compute FP = (-0.52588*ACID)+(0.70686*ASS_TURN)

+(-0.01069*D_E)+(-0.01945*INV_TURN)+(0.0187*REC_TURN)
+(-0.25068*ROA)+(-0.88171*ROE)+(0.08847*Z_SCORE).

Table 9: Financial Performance (FP)-Statistical significance

	2008	2009	2010	2011	2012	2013	2014
Type III Sum of Squares	65.9995	55.9501	16.0654	74.0029	61.3450	53.9168	65.2274
F	**32.9962**	27.9781	8.1248	**37.0011**	30.6736	26.9537	**32.6079**
Sig.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

○ Section B': Variance Analysis –Sample of SMEs - Results

Table 10: Pillai's trace test (Survey's Sample)

	MANOVA	
	Pillai's Trace	**SAGNIFICANCE**
2008	2.406743	**0.000199**
2009	2.660139	**0.000031**
2010	3.355176	**0.000000**
2011	2.356509	**0.000282**
2012	1.991394	**0.003336**
2013	2.498086	**0.000103**
2014	2.860155	**0.000007**

Table 11: Levene's test (Own Sample)

Levene's Test	**2008**		**2009**		**2010**	
	F	***Sig***	***F***	***Sig***	***F***	***Sig***
ACID	2.224037	0.109567	9.007678	**0.000150**	1.266948	0.282853
ASS_TURN	0.606292	0.545892	1.509066	0.222408	1.594818	0.204273
D_E	1.635530	0.196207	1.027039	0.359035	4.074246	**0.017738**
INV_TURN	33.256880	**0.000000**	28.184376	**0.000000**	23.033751	**0.000000**
REC_TURN	1.093088	0.336223	1.621479	0.198939	5.120219	0.006385
ROA	3.203503	**0.041710**	2.159837	0.116725	1.602697	0.202683
ROE	2.469899	0.085940	1.051275	0.350483	1.372813	0.254621
Z_SCORE	5.262150	**0.005566**	2.668331	**0.070638**	2.202890	0.111863

Table 12 – Continues

Levene's Test	**2011**		**2012**		**2013**	
	F	***Sig***	***F***	***Sig***	***F***	***Sig***
ACID	0.563111	0.569898	1.592035	0.204834	0.095621	0.908830
ASS_TURN	1.607101	0.201796	2.542966	**0.079939**	4.368766	**0.013296**
D_E	2.489286	0.084290	5.241694	**0.005671**	0.024668	0.975635
INV_TURN	10.848951	**0.000026**	6.381159	**0.001876**	16.142786	**0.000000**
REC_TURN	4.284706	**0.014434**	3.652111	**0.026830**	3.432659	**0.033285**
ROA	0.728225	0.483422	3.926478	**0.020499**	6.207388	**0.002220**
ROE	0.521142	0.594256	0.792943	0.453241	4.864085	**0.008196**
Z_SCORE	0.090936	0.913096	0.907979	0.404192	1.348700	0.260792

Table 13 - Continues

Levene's Test	***2014***	
	F	***Sig***
ACID	1.651270	0.193148
ASS_TURN	5.136123	**0.006286**
D_E	1.981718	0.139221
INV_TURN	17.719412	**0.000000**
REC_TURN	8.827807	**0.000178**
ROA	2.431384	0.089250
ROE	1.603347	0.202549
Z_SCORE	3.619815	0.027694

Table 14: Regression weight - Canonical variant(Own Sample)

	2008			2009		
	F	Sig. of F	Raw discriminant function coefficients	F	Sig. of F	Raw discriminant function coefficients
ACID	0.82245	0.44	0.14804	5.89657	0.003	0.61864
ASS_TURN	0.68742	0.503	-0.03272	2.12083	0.121	-0.25676
D_E	0.45733	0.633	-0.11974	0.19768	0.821	-0.05268
INV_TURN	11.91413	0	-0.04294	9.8859	0	0.01515
REC_TURN	1.16708	0.312	0.03848	2.3545	0.096	-0.1043
ROA	0.14908	0.862	0.75366	0.67119	0.512	-2.53215
ROE	1.19093	0.305	1.33852	0.15258	0.859	0.04684
Z_SCORE	1.19263	0.305	-0.10916	0.3795	0.684	-0.12895

Table 15 – Continues

	2010			2011		
	F	Sig. of F	Raw discriminant function coefficients	F	Sig. of F	Raw discriminant function coefficients
ACID	5.06524	0.007	0.57447	1.34261	0.262	0.07697
ASS_TURN	0.38208	0.683	-0.23832	0.8686	0.42	-0.2231
D_E	2.46646	0.086	0.19858	0.25572	0.774	-0.02027
INV_TURN	9.67673	0	0.04217	4.62004	0.01	-0.0016
REC_TURN	4.34902	0.014	-0.06707	4.30884	0.014	-0.2819
ROA	2.54027	0.08	-3.03613	1.79084	0.168	-14.46648
ROE	1.79027	0.168	0.19708	1.58113	0.207	5.86745
Z_SCORE	0.77205	0.463	0.01949	0.11838	0.888	-0.02078

Table 16 – Continues

	2012			2013		
	F	Sig. of F	Raw discriminant function coefficients	F	Sig. of F	Raw discriminant function coefficients
ACID	1.40076	0.248	-0.05375	0.24546	0.782	0.09025
ASS_TURN	1.45534	0.235	1.01777	1.32153	0.268	-0.91532
D_E	1.20773	0.3	0.21134	0.86531	0.422	-0.14671
INV_TURN	2.18947	0.113	-0.00811	5.41087	0.005	0.00585
REC_TURN	1.26345	0.284	0.05048	1.07047	0.344	0.02567
ROA	7.71489	0.001	-13.53931	5.74152	0.003	19.36351
ROE	2.74897	0.065	2.38955	0.44257	0.643	-6.94253
Z_SCORE	2.18742	0.114	0.00115	0.12869	0.879	-0.05774

Table 17 - Continues

	2014		
	F	Sig. of F	Raw discriminant function coefficients
ACID	7.16883	0.001	-0.43256
ASS_TURN	0.98252	0.375	0.50508
D_E	0.99855	0.369	-0.061
INV_TURN	6.59376	0.002	-0.01157
REC_TURN	2.87087	0.058	0.00819
ROA	2.97436	0.052	-4.30135
ROE	2.04355	0.131	-0.70304
Z_SCORE	1.20301	0.301	0.10293

Table 18: Financial Performance (FP) function - MANOVA (Own Sample)

2008	compute FP = (0.14804*Acid)+(-0.03272*Ass_turn)+(-0.11974*D_e) +(-0.04294*Inv_Turn)+(0.03848*Rec_Turn)+(0.75366*ROA)+(1.33852*ROE)+(-0.10916*Z_Score).
2009	compute FP = (0.61864*Acid)+(-0.25676*Ass_turn)+(-0.05268*D_e)+(0.01515*Inv_Turn)+(-0.1043*Rec_Turn)+(-2.53215*ROA)+(0.04684*ROE) +(-0.12895*Z_Score).
2010	compute extra_variable=(0.57447*Acid)+(-0.23832*Ass_turn)+(0.19858*D_e)+(0.4217*Inv_Turn)+(0.06707*Rec_Turn) +(-3.03613*ROA)+(0.19708*ROE)+(0.01949*Z_Score).
2011	compute FP = (0.07697*Acid)+(-0.2231*Ass_turn)+(-0.02027*D_e) +(-0.0016*Inv_Turn)+(-0.2819*Rec_Turn)+(-14.46648*ROA)+(5.86745*ROE) +(-0.02078*Z_Score).
2012	compute FP = (-0.05375*Acid)+(1.01777*Ass_turn)+(0.21134*D_e) +(-0.00811*Inv_Turn)+(0.05048*Rec_Turn)+(-3.53931*ROA)+(2.38955*ROE) +(0.00115*Z_Score).
2013	compute FP = 0.09025*Acid)+(-0.91532*Ass_turn) +(-0.14671*D_e)+(0.00585*Inv_Turn)+(0.2567*Rec_Turn)+(19.36351*ROA) +(-6.94253*ROE)+(-0.05774*Z_Score).
2014	compute FP = 0.43256*Acid)+(0.50508*Ass_turn)+(-0.061*D_e) +(-0.01157*Inv_Turn)+(0.00819*Rec_Turn)+(-4.30135*ROA)+(-.70304*ROE) +(0.10293*Z_Score).

Table 8: Financial Performance (FP) - Results (Own Sample)

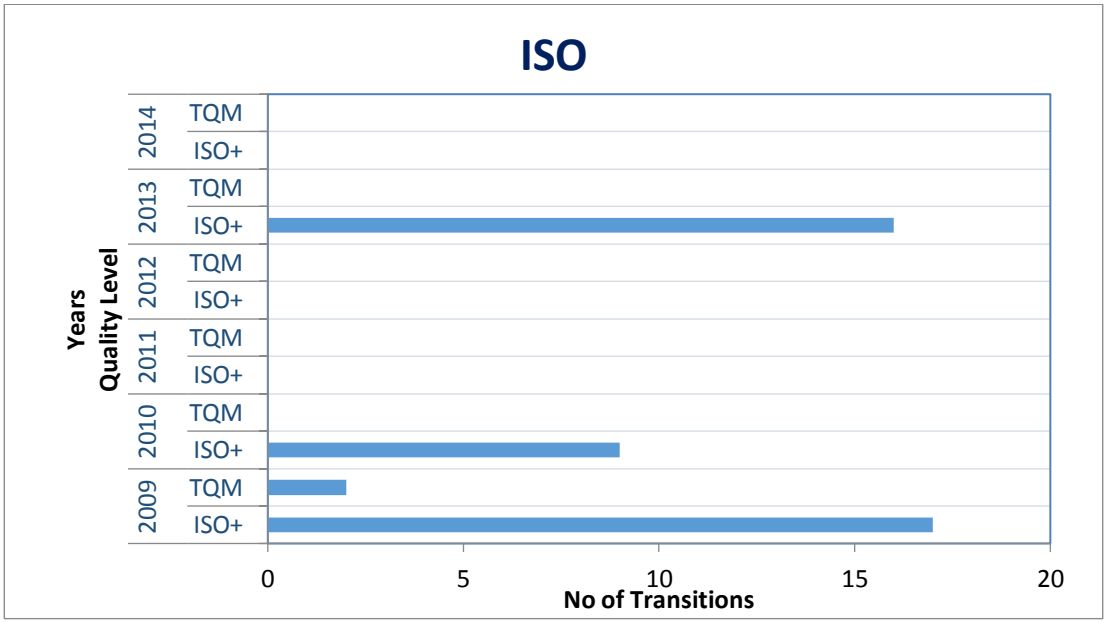
	2008	2009	2010	2011	2012	2013	2014
Type III Sum of Squares	28.48401818	43.15136369	1338.748534	21.29805158	31.69990564	36.33441563	45.96243217
F	14.23935736	**21.57522151**	11.3668292	10.64888817	**15.85249276**	15.29022436	**22.98188284**
Sig.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Appendix J
Comparative Analysis SMEs Transitions

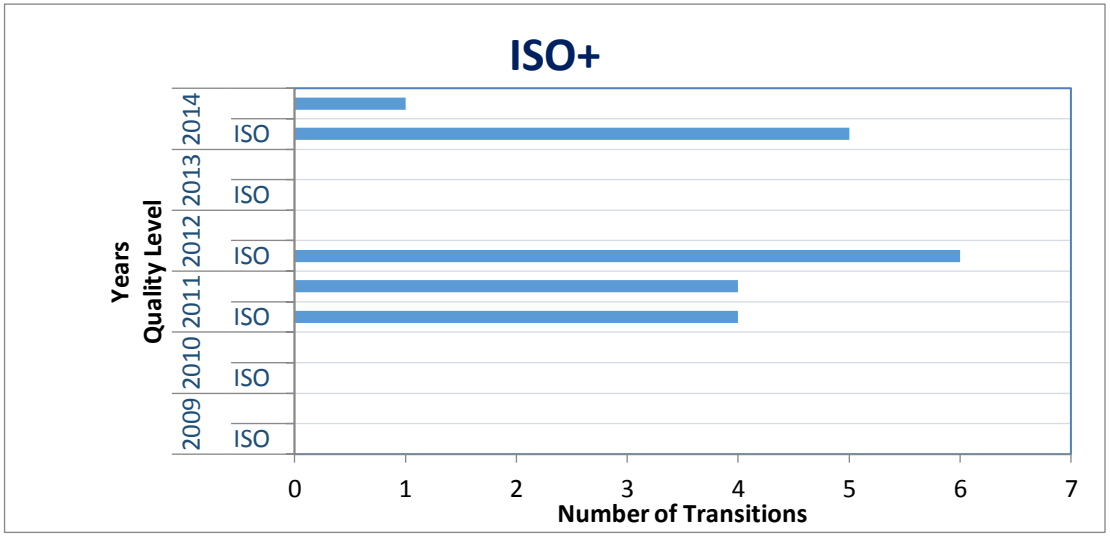
Summary: Appendix J' includes the results derived from the comparative analysis conducted on the sample of the Greek ISO certified SMEs that participated in the survey and their transitions from the ISO level to ISO+ or TQM levels or backwards.

○ SME Quality level changes (Transfers)

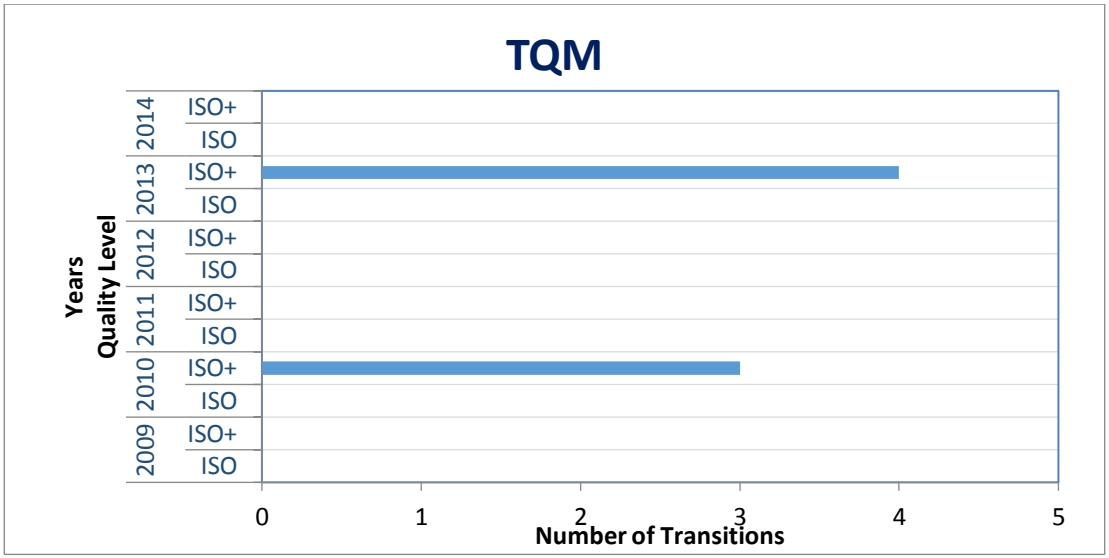
Micro SMEs	2009			2010			2011			2012			2013			2014		
	ISO	ISO+	TQM	ISO	ISO+	TQM	ISO	ISO+	TQM	ISO	ISO+	TQM	ISO	ISO+	TQM	ISO	ISO+	TQM
ISO		17	2		9									16				
ISO+							4		4	6						5		1
TQM					3									4				



Appendix J': TQM and Financial Performance (Transfers)

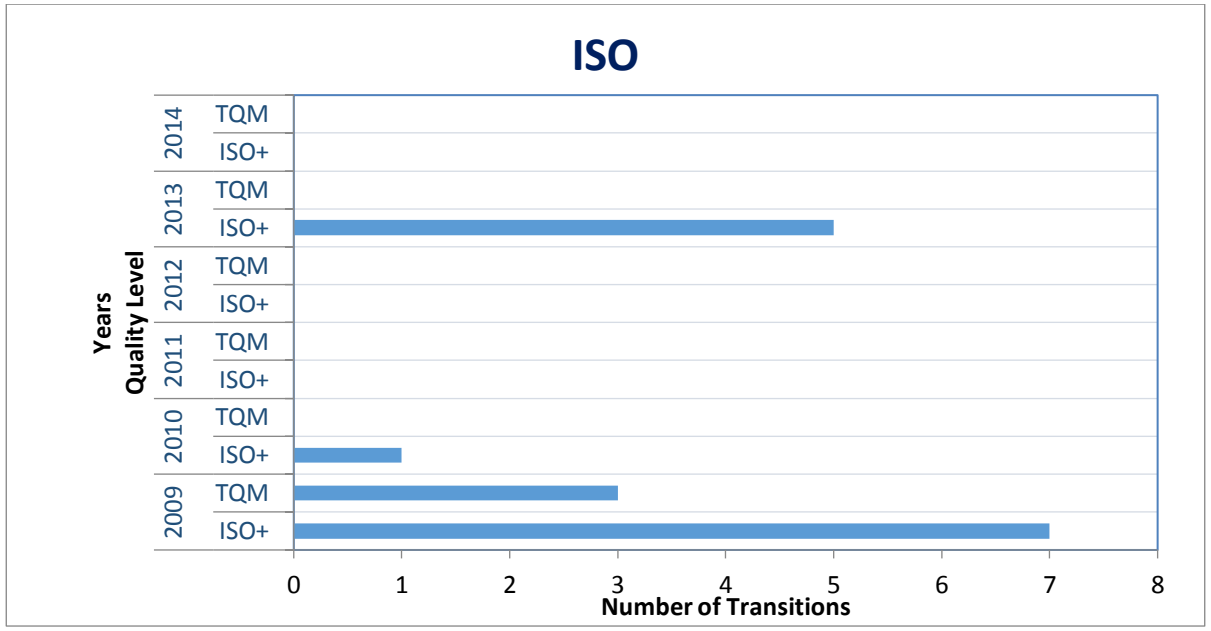


Appendix J': TQM and Financial Performance (Transfers)

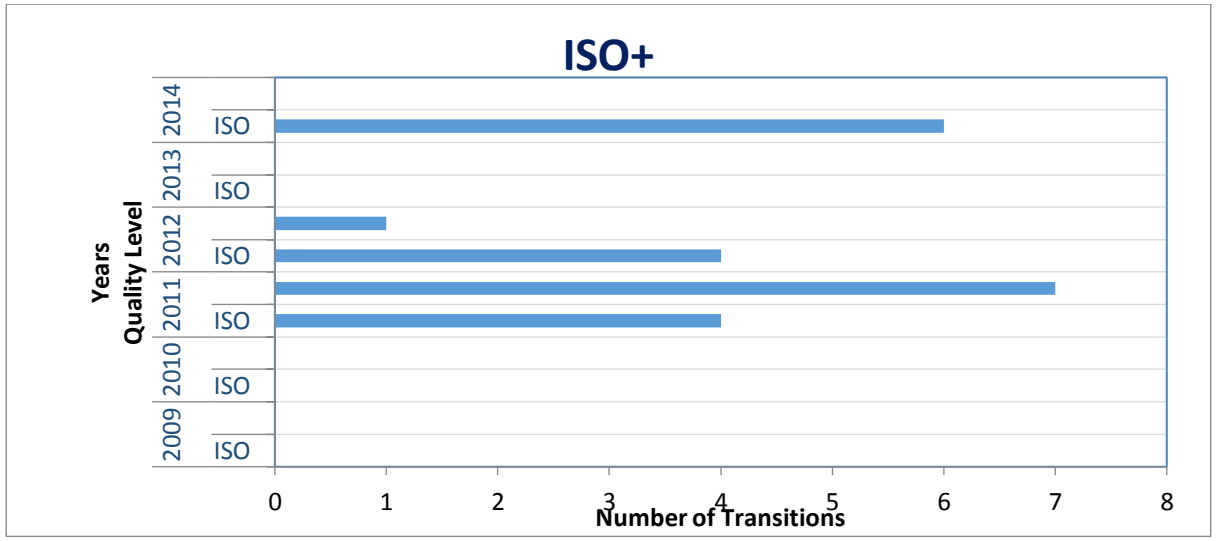


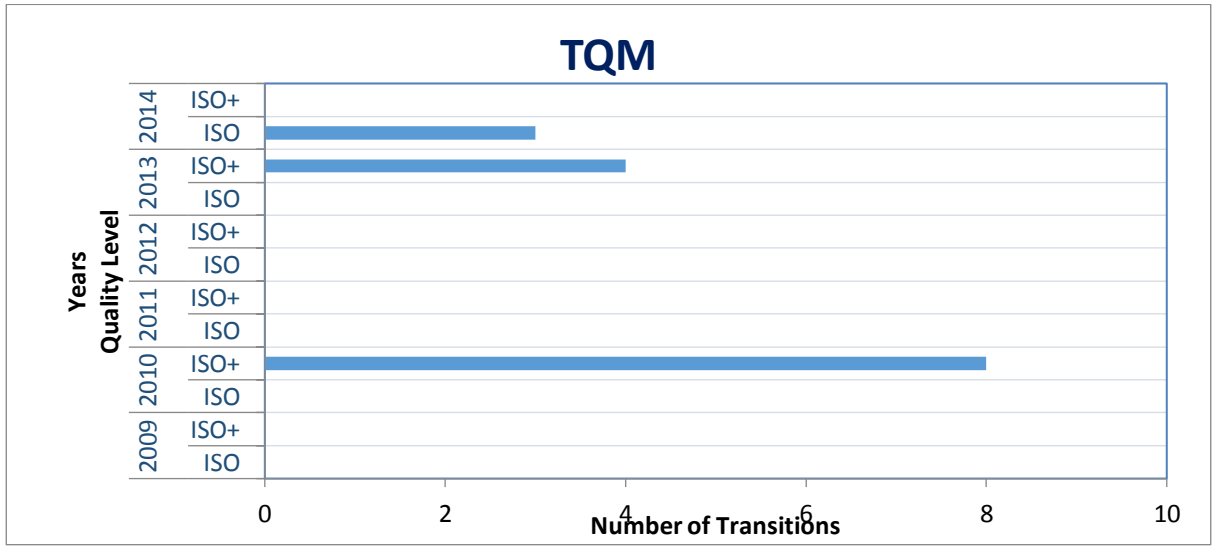
Small	2009			2010			2011			2012			2013			2014		
SMEs	ISO	ISO+	TQM	ISO	ISO+	TQM	ISO	ISO+	TQM	ISO	ISO+	TQM	ISO	ISO+	TQM	ISO	ISO+	TQM
ISO		7	3		1									5				
ISO+							4		7	4		1				6		
TQM					8									4		3		

Appendix J': TQM and Financial Performance (Transfers)



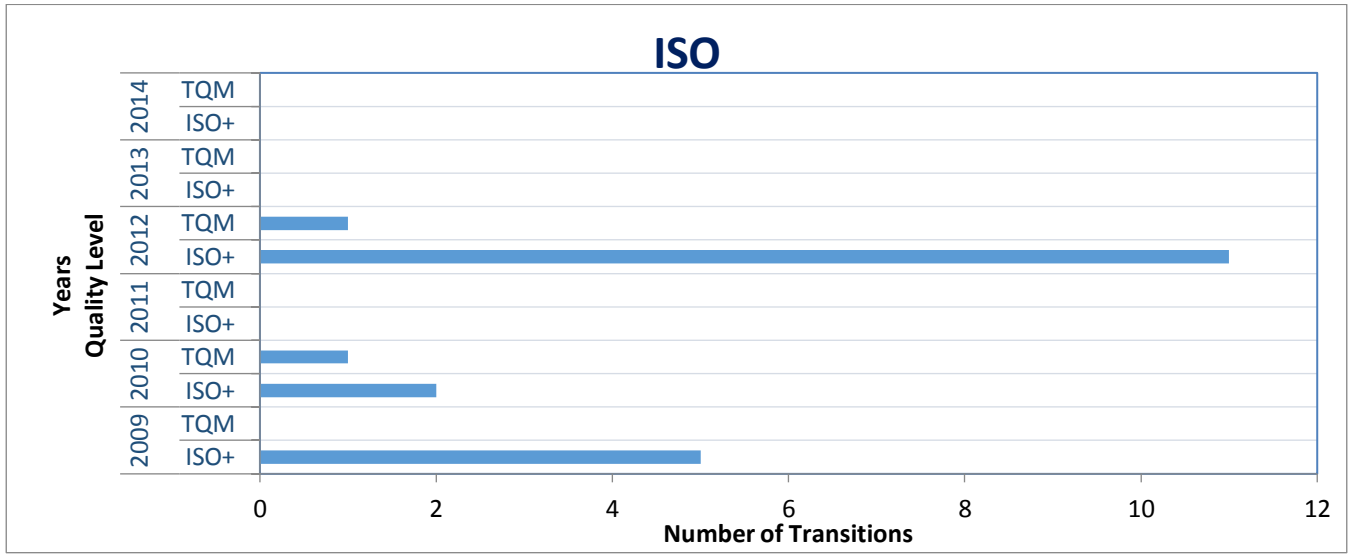
Appendix J': TQM and Financial Performance (Transfers)



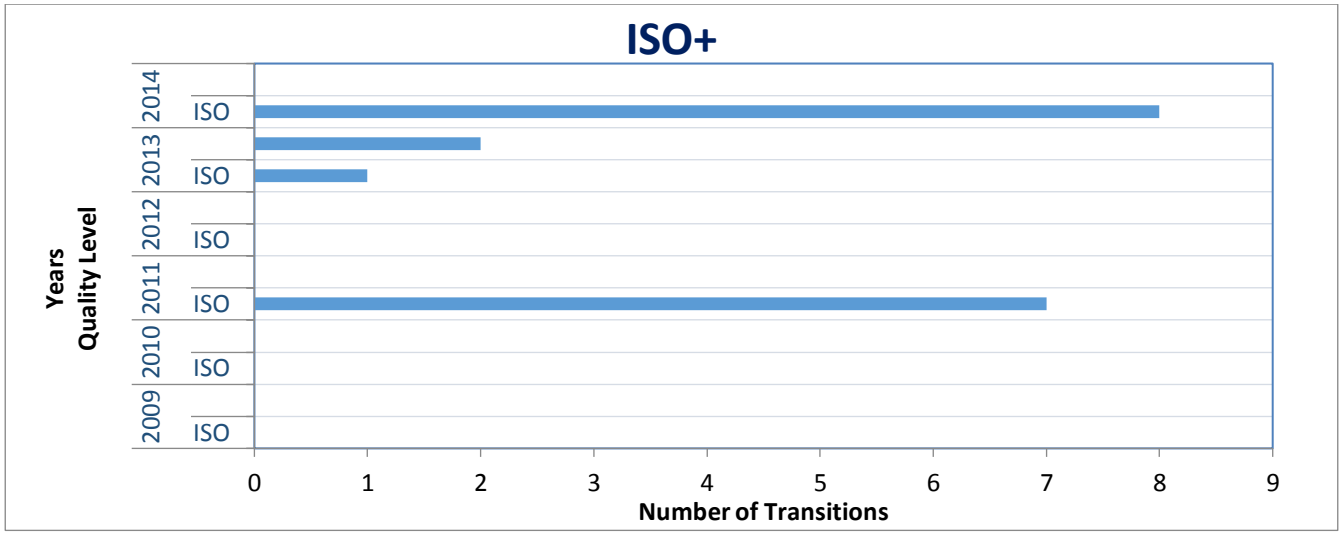


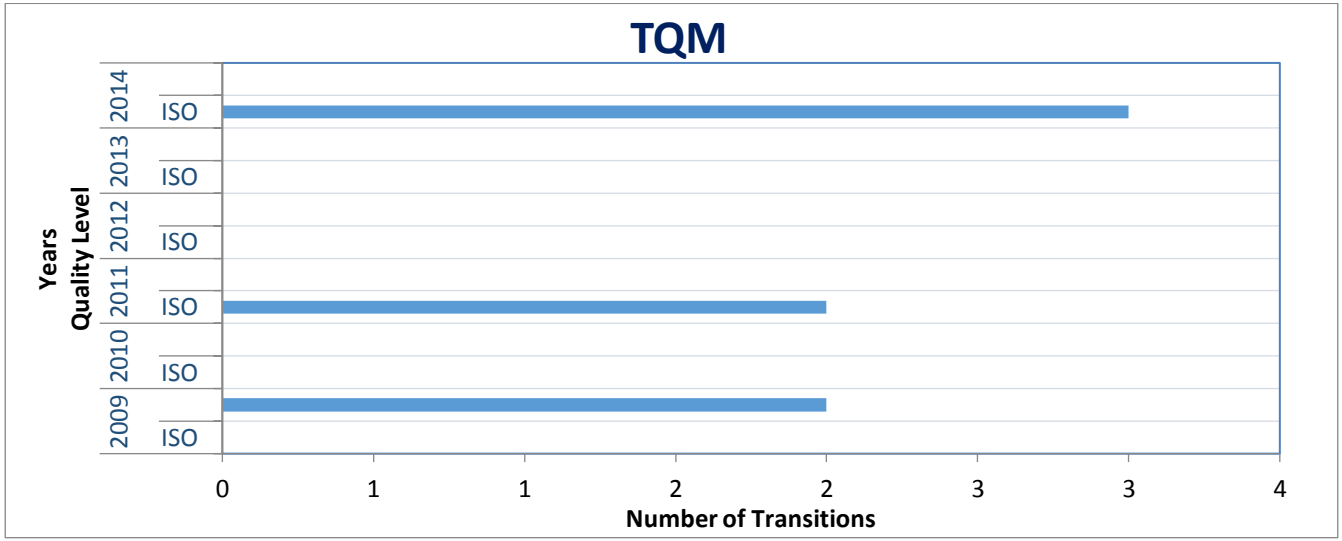
Appendix J': TQM and Financial Performance (Transfers)

Medium	2009			2010			2011			2012			2013			2014		
	ISO	ISO+	TQM	ISO	ISO+	TQM	ISO	ISO+	TQM	ISO	ISO+	TQM	ISO	ISO+	TQM	ISO	ISO+	TQM
ISO		5			2	1					11	1						
ISO+							7						1		2	8		
TQM		2					2									3		



Appendix J': TQM and Financial Performance (Transfers)





Appendix K
Timetable of Political and Financial Events (Greek Crisis)

Summary: Appendix K' shows the timetable conducted with all the Political and Financial events that characterized the Greek Financial Crisis from the year 2008 till 2015.

Appendix K: Timetable of Political and Financial Events (Greek Crisis)