RELATIONSHIP BETWEEN TOTAL QUALITY MANAGEMENT (TQM) PRACTISES AND OPERATIONAL PERFORMANCE IN MANUFACTURING COMPANY

NUR ANIS BINTI BUNIAMIN

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Faculty of Industrial Management
UNIVERSITI MALAYSIA PAHANG

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SUPERVISOR'S DECLARATION

I hereby declare that I have checked this project report and in my opinion this report is satisfactory in terms of scope and quality for the award of the degree of Bachelor of Industrial Technology Management with Honours.

Signature:
Name of Supervisor: DR.LIU YAO
Position: SENIOR LECTURER
Date: JANUARY 2016

STUDENT'S DECLARATION

I hereby declare that the work in this report is my own except for the quotations and summaries which have been duly acknowledged. The report has not been accepted for any degree and is not concurrently submitted for award of other degree.

Signature:
Name: NUR ANIS BINTI BUNIAMIN
ID Number: PC12008
Date: JANUARY 2016

DEDICATION

Dedicated to my beloved parents,

Norizan binti Hamat and Buniamin bin Deraman.

My lovely siblings,

Nurul Ain Buniamin

Burhanuddin Buniamin

Nurul Athirah Buniamin

and

my family and friends.

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Besides my supervisor, I also would like to express my gratefulness to my roommates and course mates for any obstacles that we faces together to finish up this research. The time we spent together to finish this study was the memorable experiences that we might remember always.

Lastly, bigger appreciation to my lovely parents, sisters and brother that always gave morale support, countless encouragement throughout writing this study and my life in general.

ABSTRACT

Total quality management (TQM) practises are well known approaches that most of the overseas company used. But in Malaysian company, this approach is not so often used. Other than that, not many researchers do the research about the effect of TQM practises on operational performance. So the aims of this research are to identify the levels of TQM practises (leadership, customer focus, management of people, process improvement, strategic planning and use of information and analysis) for operational performance and to determine the effect of TQM practises on operational performance. The indicators of operational performance are productivity, quality and waste level. The collected data was analysed by using descriptive statistic, reliability, normality, Pearson Correlation, single mean t-test and regression analysis. As a result, only strategic planning and process improvement practises positively contribute to operational performance. For future researcher, they should do more research about operational performance like increase the numbers of indicators for operational performance. Therefore, they can give more comprehensive understanding to colleagues and students about operational performance.

ABSTRAK

Amalan pengurusan kualiti keseluruhan adalah satu pemdekatan yang terkenal di luar Negara. Tetapi pendekatan ini sangat tidak meluas di syarikat Malaysia. Objektif kajian ini adalah untuk mengenalpasti tahap amalan pengurusan kualiti keseluruhan (kepimpinan, tumpuan pelanggan, pengurusan manausia, penambahbaikan proses, perancangan strategik, dan penggunaan maklumat dan analisis) dalam prestasi operasi dan untuk menentukan kesan amalan pengurusan kualiti keseluruhan terhadap prestasi operasi. Pengukur untuk menguji prestasi operasi adalah produktiviti, kualiti dan tahap pembaziran. Data yang dikumpul akan dianalisis dengan menggunakan statistik deskriptif, kebolehpercayaan, normal, Pearson Korelasi, min ujian-t tunggal dan analisis regresi. Oleh itu, perancangan strategic dan proses yang meningkat telah memberi kesan kepada prestasi operasi. Bagi penyelidik masa depan, mereka boleh membuat penambahbaikan dalam kajian prestasi operasi seperti menambah pengukur prestasi operasi. Sekaligus dapat meningkatkan lagi pemahaman dalam prestasi operasi kepada rakan sekerja dan pelajar.

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INTRODUCTION

1.1 INTRODUCTION

Nowadays, quality plays a critical role for companies to survive in the ever-expanding global marketplace. Concept of Total Quality Management (TQM) has been developed as a result of strong global emulation. Total Quality Management (TQM) is a philosophy to merge the entire functional department such as financial, human resources, administration and marketing to focus on customer needs and organizational goals. It is an extensive and structured approach that looks for improving quality of products or services through proceeding refinement in response and continuous feedback. Total quality management also is a management approach centred on quality, based on the participation of an organisation's people and aiming at long term success (ISO 8402:1994). This is achieved through customer satisfaction which benefits all members of the organisation. In other word, TQM is a philosophy for managing an organisation in a way which enables it to meet stakeholders' needs and expectations efficiently and effectively, without compromising ethical values. The aim of this study was to examine the effect of total quality management practises on operational performance.

1.2 BACKGROUND

Total Quality Management (TQM) is a process that has been thoroughly researched by many quality gurus. Each master has devised his or her action plan for success. Today companies have begun implementing the concept established by the quality gurus. They have found that this concept has made them more able to provide quality goods and services to grab loyal customers (Aghazadeh, 2002).

Edward Deming is the father of TQM has been recognized for his contribution of rebuilding of the Japanese economy after the Second World War. By assigning statistical sampling techniques he looked to reach higher quality and productivity in manufacturing and management. The second pioneer is Joseph Juran. He has helped build the conceptual basis for quality management. While Deming places emphasis on statistical aspects of quality management, Juran focused on quality planning, establishment of formal quality policy, quality audit and system approach to manage quality. The other leader in quality movement is Philip Crosby. He was different from the other gurus because he focused on the cultural and behavioural aspects of quality management process rather than statistical tools. He created the zero defect movement focusing on prevention (Aghazadeh, 2002).

Thiagaragan et al. (2001) stated the concepts of total quality management (TQM) and the ISO 9000 are relatively new to the Malaysian industries. Even though the ISO 9000 family of quality standards was launched in 1987, the Malaysian industries only realized the benefits when some of the firms were awarded “registered firm” in 1988. According to Yusof (2002) Malaysian Government implemented its Umbrella Project in 1990, with the aim of upgrading technical levels and product quality amongst Small and Medium Sized Industry (SMIs), through SIRIM. Besides, the Malaysian government had carried out various efforts to assist in enhancing quality among Malaysian industries. For example, SIRIM was given the task of promoting ISO 9000 and TQM among Malaysian industries.

In addition, they also developed a framework of quality measurements based on prescriptive, conceptual, practitioner, and empirical literatures to generically benchmark the quality measurements of TQM for the use SMEs in Malaysia (Sadiq Sohail and

Boon Hoong, 2003). As the Malaysian manufacturing industry is considered to be one of the major contributors to the Malaysia's economy and thus correctly managing the TQM practices towards achieving quality performance is strategically and tactically important for gaining a competitive advantage (Arumugam et al., 2008). As stated Thiagaragan et al. (2001), Malaysia has also taken on itself the challenge of attaining the status of an industrialised nation by the year 2020. Malaysia therefore provides an interesting and more importantly, a practical arena for empirical study of effective TQM implementation in a developing economy.

1.3 PROBLEM STATEMENT

Lakhe and Mohanty (1994) wrote that the Total Quality Management (TQM) practises have received worldwide attention and is being adopted in many industries, particularly in developed economies. Bayazit (2003) stated total quality activities have been practiced in the developed nations but total quality management is relatively new approach that has been introduced into large companies in Turkey as an economically nations. In Malaysia also, concept of TQM is new and most of research done are in Small and Medium Sized Industry (SMIs) and services company. However, very few studies investigated the status of the Total Quality Management practises in manufacturing company in Malaysia.

Other than that, not many researchers do the research about the effect of TQM practises on operational performance. This happened because most of them study the mediating effects of employee performance and innovation performance on the relationship between TQM practices and firm performance and other performances (Sadikoglu and Zehir, 2010).

1.4 RESEARCH OBJECTIVE

To fill the gaps as stated above research objectives of this study are:

a) To identify the levels of TQM practises for operational performance.

b) To examine the effect of TQM practises on operational performance.

1.5 RESEARCH QUESTION

Research questions of this study are:

a) What are the levels of total quality management practises for operational performance?
b) What are the effects of total quality management practises on operational performance?

1.6 CONCEPTUAL FRAMEWORK

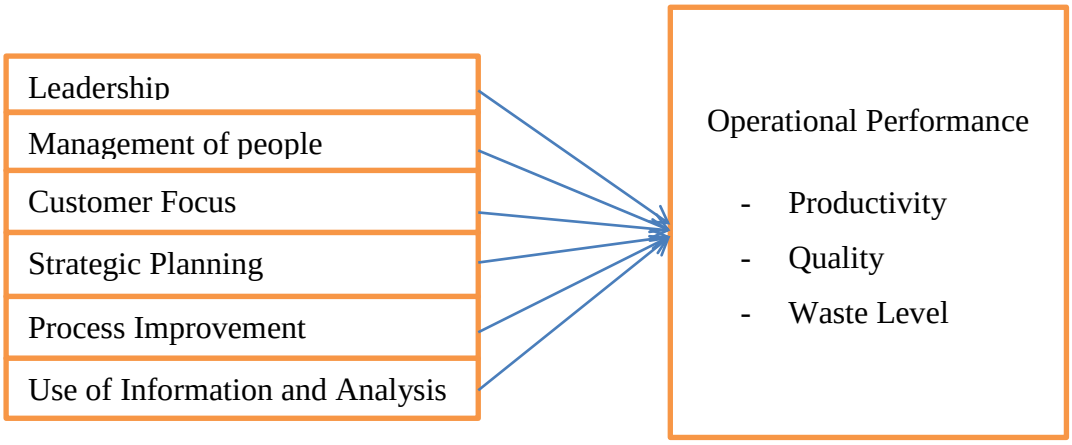

Figure 1.1 Conceptual Framework

Based on the above framework, it shows the independent and dependent variables for this research. There are 6 independent variables which are leadership, management of people, customer focus, strategic planning, process improvement and

use of information and analysis. For the operational performance which is our dependent variable, there are productivity, quality and waste level.

Operational performance definition is firm's performance measured against standard or prescribed indicators of effectiveness, efficiency, and environmental responsibility using measurements like cycle time, productivity, waste reduction, regulatory compliance and quality.

1.7 RESEARCH HYPOTHESIS

H1: Leadership practise positively affects operational performance.

H2: Management of people practise positively affects operational performance.

H3: Customer focus practise positively affects operational performance.

H4: Strategic planning practise positively affects operational performance.

H5: Process improvement practise positively affects operational performance.

H6: Use of information and analysis practise positively affects operational performance.

1.8 SCOPE OF STUDY

This study focuses on all the total quality management practises including leadership, management of people, customer focus, use of information and analysis, process improvement and strategic planning that apply in manufacturing companies for improving operational performance and the effect of total quality management practises on operational performance. It also limits to operational performance which covers quality, productivity and waste level. Besides, unit of analysis in this study is individual. This research will be conducted on manufacturing company located in Pahang state in Malaysia.

1.9 SIGNIFICANCE OF STUDY

Through this research, we can know how important this study is to manufacturing company and the organization that applied total quality management practises. TQM is very important to organization because it can improve quality product also performance of the organization. Cua et al. (2001) stated that TQM is a manufacturing program aimed at continuously improving and sustaining quality products and processes by capitalizing on the involvement of management, workforce, suppliers, and customers, in order to meet or exceed customer expectations (Powell, 1995).

Sadiq Sohail and Boon Hoong (2003) stated since 1990s, Malaysia has been transforming from a commodity-based producing nation to being a manufacturer of industrial products that is geared towards exports. The level of awareness of total quality management (TQM) has increased considerably over the past few years (Zhang et al., 2000). This study is very beneficial to all Malaysia manufacturing company because they can have more exposures and understanding about TQM.

Besides, readers also can understand the effect of TQM practises on operational performance. Mellat Parast et al. (2011) wrote the results indicate that top management support, employee training, and employee involvement are significant variables explaining the variability of operational performance.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This section is about literature review based on the previous study. There are many articles that can be a guideline for this research. Based on the previous research, we can know what the way to conduct this research is.

2.2 DEFINITION OF TOTAL QUALITY MANAGEMENT

A standout among the most persuasive people in the quality insurgency is Dr. Edwards Deming. In 1980, NBC Television delivered a unique system entitled If Japan Can, Why Can't We? The broadly saw system uncovered Deming's key part in the improvement of Japanese quality. As business and industry concentrated on quality, the US government perceived that quality is basic to the country's monetary well-being.

Samson and Terziovski (1999) reported in 1987, the Malcolm Baldrige National Quality Award (MBNQA) was built up as an announcement of national expectation to

give quality administration. Comparative quality honours and systems were made in other industrialized nations. The quality honours criteria are the most usually utilized strategy for sorting TQM components. Consequently their work was guided by what is quickly turning into the "widespread" recompenses structure. Various examination investigations of TQM and quality grants frameworks have been led, and prompted a level headed discussion about the viability of such recompenses and of the different TQM components.

The second pioneer is Joseph Juran. He has helped build the conceptual basis for quality management. While Deming places emphasis on statistical aspects of quality management, Juran focused on quality planning, establishment of formal quality policy, quality audit and system approach to manage quality. The other leader in quality movement is Philip Crosby. He was different from the other gurus because he focused on the cultural and behavioural aspects of quality management process rather than statistical tools. He created the zero defect movement focusing on prevention (Aghazadeh, 2002).

Nowadays, our economy is slow down but the growth of products in market is higher. Total quality management (TQM) is a principle that is used by the company for continuous improvement, efficient and effectiveness in order to meet customer requirement. Total quality management is a management philosophy that is purposely to empower every member of the organization. It is intended to promote continuous, sustained, and long term improvement in quality and productivity and to eliminate workers' fear of change (Gharakhani et al., 2013). Total quality management also is a key strategy for maintaining competitive advantage and managing operational to improve its overall effectiveness and performance towards achieving world-class status. TQM can be defined as a holistic management philosophy aiming at continuous improvement in all functions of an organization to produce and deliver commodities or services in line with customers’ needs or requirements by better, cheaper, faster, safer, and easier processing than competitors with the participation of all employees under the leadership of top management (Ketikidis et al., 2006).

Muñoz Casas (2010) stated quality is a part of this definition in that TQM can be said to be the culmination of a hierarchy of quality definitions:

1. Quality – is to continuously satisfy customers' expectations.

2. Total quality – is to achieve quality at low cost.

3. Total Quality Management – is to achieve total quality through everybody's expectation.

From all the definitions, this study defines the total quality management as quality principles that make the operational performance becomes efficient, effective, and can meet the customer requirement through continuous improvement.

2.3 TOTAL QUALITY MANAGEMENT PRACTISES

Deming, Crosby, Juran and Gryna, Feigenbaum, Ishikawa and others have developed certain propositions in the areas of total quality management practises. Previous researchers have different practises that they studied. For example, Sila and Ebrahimpour (2005) stated an extensive review and classification of the relevant empirical literature revealed that, in a broad sense, the following six TQM factors were the most often extracted factors like leadership, strategic planning, customer focus, information and analysis, human resource management, process management, and supplier management. TQM practises also human relations, aspects involving training, employee involvement and management leadership, process improvement methods, customer focus and manufacturers' own supplier (Sadiq Sohail and Boon Hoong, 2003).

Besides, TQM constructs have been investigated extensively to generate distinct generic construct, first defined a list of others constructs proposed in a large set of articles. Then, each construct was analysed whether it was different or similar to the constructs previously analysed. This process resulted with the eight following constructs such as quality leadership, customer focus and satisfaction, quality information and analysis, human resource development, strategic planning management, quality results, and quality assurance (Zakuan et al., 2008). Valmohammadi (2011) written in his study that based on an in-depth review, seven factors were identified to measure the extent of TQM implementation in Iranian manufacturing SME sector like leadership, process

management, customer focus, communication and quality information system, employee management and involvement, supplier management, tools and techniques.

The six proposed TQM elements are top management commitment, customer focus, people management, supplier quality management, continuous improvement, and process management. They believed that this will provide a generic framework for successful implementation of TQM in other countries (Abusa and Gibson, 2013). Sadikoglu and Olcay (2014) stated that leadership, knowledge and process management, training, supplier quality management, customer focus and strategic quality planning are management philosophies of continuously improving the quality of the products/services/processes by focusing on the customers' needs and expectations to enhance customer satisfaction and firm performance.

Table 1.1 Summaries of Total Quality Management Practises

Practises	**(Sadiq Sohail and Boon Hoong, 2003)**	**(Sila and Ebrahimpour, 2005)**	**(Valmohammadi, 2011)**	**(Abusa and Gibson, 2013)**	**(Sadikoglu and Olcay, 2014)**
Leadership	/	/	/	/	/
Management of people	/	/	/	/	/
Process improvement	/	/		/	/
Supplier partnership	/		/	/	/
Use of information and analysis		/	/		

Tools and techniques				/	
Customer focus	/	/	/	/	/
Strategic Planning		/	/		
Aspect involving training	/				
Employee involvement	/			/	
Quality results			/		
Quality assurance			/		
Process management				/	/

Based on the Table 1.1 above, there are a lot of total quality management practises that studied by previous researchers. So, because of time limitation this study will be focus on leadership, management of people or human resource, customer focus, use of information and analysis, process improvement or continuous improvement, and strategic planning.

2.3.1 Leadership

Leadership refers to pattern of behaviour as well as attitudes about communication, conflict resolution, criticism, teamwork, decision making and delegation (Trivellas and Drimoussis, 2013). This practise is a major driver for the TQM practises. Leadership role is important during decision making and setting the

strategic management, mission and vision of organisation. Quality management can achieve through involving and commitment by the leader from all the levels of management.

In the 1990s productivity is characterized regarding human execution through inventiveness, critical thinking, and cooperation, worth including commitments, devotion and duty to ceaseless change. Subsequently any compelling style of authority in this connection will have awesome effect on conduct adjustment and changing individuals' states of mind. Test lies with pioneers' capacity to change in radical way societies, states of mind, and systems for working. Leadership in the context of TQM is not about power, authority and control, it is more about empowerment, recognition, coaching and developing others. The power of modern leadership is in achieving congruence and getting wider ownership of the ultimate task of satisfying customers and building strong competitiveness (Zairi, 1994).

Das et al. (2011) stated leaders create a new environment in the organization by their inter-personal relationships and influences that involve others in the change initiative. They can encourage other employees to be more creative, think out of the box and generate worker’s ideas in order to improve operational performance.

2.3.2 Management of people

Management of people or human resource management is focusing on how well this practise applied and whether they are aligned or not with the organization’s strategic direction. Activities that involved in this practise are training development, communication, safety, multi-tasking and employee flexibility, employee responsibility and measurement of employee satisfaction. Within the human resource management (HRM) perspective, psychology-based practices, especially empowerment, extensive training, and teamwork, are seen as vital to sustained competitive advantage (Birdi et al., 2008). Certain organizations emphasizing employment security and intend to keep employees longer therefore it makes sense to invest more in training these employees (Ahmad and Schroeder, 2003).

When looking more specifically at the HR practises, training for example, has been given considerable attention (Abbott, 1993) with the general conclusion that group of employees in small firm are less likely to have access to structured training than their larger firm counterparts. Training and development have been perceived as crucial to the usage of TQM. Representatives need preparing in the standards of consistent change, critical thinking procedures and factual procedure control. Viable enrolment publicizing is basic, including the cautious decision of promoting media and the definition of proper promoting messages (Snape et al., 1995).

When employees enter the association, they will observe through examination, prizes and advancement. Evaluation might conceivably assume a key part in creating, imparting and observing the accomplishment of value guidelines (Wilkinson et al., 1992) in spite of the fact that practically speaking it regularly neglects to live up its guarantee and may deteriorate into minimal more than an unfilled custom (Snape et al., 1995).

2.3.3 Customer focus

Associations must be learned in client prerequisites and receptive to client requests, and measure consumer loyalty through TQM usage (Zakuan et al., 2010). We additionally measured the degree to which client related data is scattered through the association and the degree of client dissension fulfilment levels clarify a significant part of clarified change in the spans of administration supplier client connections crosswise over clients, tantamount to the impact of cost. Thus, it is a prominent misguided judgment that associations that attention on consumer loyalty are neglecting to oversee client maintenance (Bolton, 1998).

Client introduction requires an organization to comprehend and fulfil the client's necessities and it is accepted that by doing as such the firm will procure rewards as benefits. It has been indicated that for an organization to accomplish consistent above-normal execution, it must make a maintainable prevalent worth for its clients (Porter, 2008).

2.3.4 Strategic Planning

This component concentrates on the associations key and business arranging and alongside the association's thoughtfulness regarding clients and operational execution prerequisites (Evans and Lindsay, 2005). The accentuation was on client driven quality and operational execution perfection as key vital business issues that should be an indispensable piece of general business arranging. It was proper to recognize the TQM point of view of technique and corporate methodology. The TQM viewpoint bargains widely with specialty unit procedure in the feeling of how to go after an arrangement of clients. Then again, corporate methodology manages how to choose which clients to vie for. The degree of a characterized focal reason and mission in the association was additionally a piece of this develop (Samson and Terziovski, 1999).

Strategic planning consolidates the advancement and sending of arrangements, enhance associations with clients, suppliers, and business accomplices and offers in accomplishing some assistance with longing and fleeting objectives through take an interest arranging (Teh et al., 2009). Particularly, there was absence of observational studies that inspects the impacts of key anticipating quality execution or whatever other execution measure. Without a doubt, a noteworthy connection was found between vital arranging and quality execution (Talib et al., 2013), knowledge management behaviour (Ooi et al., 2008), role conflict (Teh et al., 2009) and customer satisfaction (Sit et al., 2009).

2.3.5 Process improvement

Process improvement or continuous improvement is by setting accentuation on the procedures by which quality upgrades are accomplished. In a common association, there were interrelated procedures which plan, assembling, showcasing and client administration. Change made on a specific procedure will prompt the general change of the operations and each representative and division is in charge of value. Process change turns into an activity in upgrading viability and proficiency while enhancing

procedure control and fortifying inside components for reacting to changing client requests (Agus, 2011).

This practice concentrates on dealing with the assembling process so it worked not surprisingly, without breakdowns, missing materials, installations, devices, and regardless of workforce variability. One critical matter in procedure change is to guarantee that procedure capacity can meet creation necessities. One part of procedure change was hardware support, which guarantees that variety was kept inside satisfactory limits, keeping the assembling procedure running easily. Great procedure change ought to include correctly recording different procedure methods, with guidelines for hardware operation keeping in mind the end goal to minimize the probability of operator mistakes. Some methods, such as plan, do, create and action (PDCA) cycle, seven quality control tools, statistical process control (SPC), sampling and inspection are effective for process control and process improvement (Zhang et al., 2000).

2.3.6 Use of information and analysis

Information and analysis practise is representing the criteria of quality measurement and benchmarking (Sadiq Sohail and Boon Hoong, 2003). Benchmarking alludes to the looking into and the recognition of best aggressive practices to give a rule to reasonable execution objectives and to set desires for expense, item unwavering quality and different variables. They can contemplate their rivals and distinguish the best practices in distinctive capacities with the goal that they have benchmarks. Change quickens when execution is measured and benchmarked against the best on the planet. Therefore, profitability, execution, and adequacy can be upgraded (Agus, 2011).

As Shores (1992) stated quality estimation is an objective introduction with consistent execution estimation, frequently with the utilization of factual examination. The investigation procedure guarantees that all deviations are suitably viewed as, measured and reacted to reliably. Furthermore, chiefs should likewise examine varieties identified in the business and nature and give predictable reaction and change. The data from the examination of progress must be utilized to change the responsible procedures in a way that encourages persistent change. The TQM philosophy emphasises decision

making based on fact involving analysis of information about customer needs, operational problems, and the success of improvement attempts (Samson and Terziovski, 1999). Besides, many popular TQM techniques like cause and effect analysis and Pareto charts are aimed for helping organisations to process information effectively (Dean and Bowen, 1994).

2.4 OPERATIONAL PERFORMANCE

As a general, performance is characterized as the extent to which an operation satisfies the execution goals essential measures with a specific end goal to address the issues of the clients' optional measures (Slack et al., 2009). Another researcher said performance is a critical factor for the effective management. This may stem back from the fact that without measuring something, it is difficult to improve it (Ketikidis et al., 2006). Meanwhile, Samson and Terziovski (1999) stated in their studied that elements of performance are quality, operational and business performance.

2.4.1 Definition of Operational Performance

Wheelwright (1978) has proposed a wide variety of operational performance measures for manufacturing facilities. These include cost, quality, delivery, and flexibility. Lately, the rate of new product introduction has also been included in this list (Vickery et al., 1997). According to Brah et al. (2002), operational performance is primary measure because they follow directly after implementation of total quality management. Besides, the dimensions of leadership, management of people, customer focus were the strongest significant predictors of operational performance (Arumugam et al., 2008).

Ismail Salaheldin (2009) wrote operational performance reflects the performance of internal operation of the company in terms of cost and waste reduction, improving the quality of products, improving flexibility, improving delivery performance and productivity improvement. Baird et al. (2011) stated in his research

that operational performance has two variables quality and inventory management. Therefore, adoption of advanced inventory management techniques such as JIT systems enable firms to maintain less inventory and achieve higher inventory turnover, thereby substantially increasing the amount of labour and equipment resources that can be devoted to productivity and quality improvement processes. In this research, operational performance definition is firm's performance measured against standard or prescribed indicators of using measurements like productivity, quality and waste level.

2.4.2 Components of Operational Performance

The components of operational performance are productivity, quality and waste level. Productivity is commonly defined as a ratio between the output volume and the volume of inputs. In other words, it measures how efficiently production inputs, such as labour and capital, are being used in an economy to produce a given level of output (Krugman, 1994). Besides, it also a measure of how effectively resources are used to produce various goods or services and increased by producing more with the same amount of resources or by producing the same amount with fewer resources (DALOTĂ, 2011). In this study, the definition of productivity is a measure of the efficiency of person, machine, factory and system in converting inputs into useful outputs.

The second component, Eldin (2011) stated quality means those features of products which meet customer needs and thereby provide customer satisfaction and freedom from errors that require doing work over again (rework). According (Miles et al., 2006), quality means fitness of purpose. That means the products or services fulfil the requirement of users. Therefore, the definition of quality that be used in this study is satisfying specific customers and user requirements and free from defects.

The last component is waste level. Waste level is the amount of substances or objects which are disposed of or are intended to be disposed of or are required to be disposed (Bontoux and Leone, 1997). So in here, the definition used is quantity or amount of unwanted materials leftover from production process or output which has no marketable value.

2.5 RELATIONSHIP BETWEEN TQM PRACTISES AND OPERATIONAL PERFORMANCE.

Relationship between leadership practise and operational performance

Previous research in TQM practices emphasizes the critical leadership practise driving overall TQM implementation in the organizations (Talib et al., 2010). The scholars likewise noticed that senior pioneers and administration direct the association and evaluate the operational execution. Also, they stated that top-administration duty is the essential driver of operational perfection. Further, studies demonstrated that top-administration duty essentially influences the quality execution (Prajogo and Brown, 2004). Therefore, the study hypothesis H1: leadership practise positively affects operational performance.

Relationship between management of people practise and operational performance

Talib et al. (2013) reported that human resource management is one of the basic practices for enhancing business and administration forms. Another study by Sanchez-Rodriguez et al. (2006) noted that management of people was positively associated with operational performance. (Yang, 2006) further inferred that human resource administration as TQM practice altogether corresponded with consumer loyalty which is also supported by (Talib and Rahman, 2014). Further, Teh et al. (2008) found a positive relationship between empowerment and role conflict. Based on the above comprehensive review of the association between human resource management and different performance measurement indicators, the following hypothesis is proposed H2: management of people practise positively affects operational performance.

Relationship between customer focus practise and operational performance

To achieve quality, it is essential to know what customers want and to provide products or services that meet their requirements (Zhang et al., 2000). Successful operational performance perceives the need to put the client first in each choice made. The way to quality administration is keeping up a cosy association with the client so as to completely decide the client's requirements, and additionally to get input on the degree to which those needs are being met. The client ought to be firmly included in the

item outline and advancement process, with inputs at each phase of the procedure so that there is less probability of value issues once full creation starts (Flynn et al., 1997). Therefore, this study hypothesizes H3: customer focus practise positively affects operational performance.

Relationship between strategic planning practise and operational performance

Strategic planning incorporates the development and deployment of plans, enhance associations with clients, suppliers, and business accomplices (Talib et al., 2010) furthermore, offers in accomplishing some assistance with longing and transient objectives through take an interest arranging (Teh et al., 2009). Particularly, there is absence of experimental studies that looks at the impacts of key anticipating quality execution or some other execution measure. Without a doubt, a huge connection is found between vital arranging and operational execution (Prajogo and Brown, 2004). Also, (Feng et al., 2006) in there comparative study revealed that strategic planning in TQM practice is unequivocally connected with operational performance. Therefore, the next hypothesis is H4: strategic planning practise positively affects operational performance.

Relationship between process improvement practise and operational performance

Continuous improvement and innovation, which is the most vital piece of service, means hunting down ceaseless upgrades and creating procedures to discover new or enhanced techniques during the time spent changing over inputs into helpful yields. It helps in decreasing the procedure variability along these lines ceaselessly enhancing the yield operational performance (Talib et al., 2010). Corbett and Rastrick (2000) asserted that in TQM, the best way to improve organizational performance is to continuously improve the performance activities. Thus, the following hypothesis is proposed H5: process improvement positively affects operational performance.

Relationship between information and analysis practise and operational performance

Satisfying client needs and desires are thought to be gauge of any sort of organizations. At the point when clients' requirements and desires are accomplished,

operational execution is enhanced and therefore, fulfilment is set up. Similarly Sit et al. (2009) also indicated that data and examination significantly affect consumer loyalty. Data and investigation likewise assists operational execution with ensuring the accessibility of high calibre, opportune information and data for all clients like representatives, suppliers, and clients (Teh et al., 2009) and (Lee et al., 2010).Therefore, the study hypothesis H6: use of information and analysis practise positively affects operational performance.

2.6 SUMMARY

This chapter is all about literature review. It consists of the introduction, definition of the total quality management, total quality management practises, definition of performance, definition of operational performance and relationship between total quality management practises and operational performance. In this chapter, the researcher explained 6 practises which are leadership, management of people, customer focus, continuous improvement, strategic planning and informa and analysis.

CHAPTER 3

RESEARCH METHOD

3.1 INTRODUCTION

This chapter is all about conceptual framework, research design, instrument development, data collection and data analysis. It will focus on the description of how research will be conducted and the detailed of methodology that has been formulated to collect data needed to test the significances of the hypothesis that been created.

3.2 RESEARCH DESIGN

Exploration outlines is a work arrangement as well as contain the insight about what must be done to finish the undertaking. The capacity of an examination configuration is to guarantee that the proof got empowers us to answer the starting inquiry as unambiguously as could reasonably be expected.

Quantitative research design is the standard experimental method of most scientific disciplines. This research design is an excellent way of finalizing results and

proving or disproving a hypothesis. Advantage of this research design is data analysis is relatively less time consuming for example using statistical software. Next is testing hypotheses that are constructed before the data are collected and can generalize research findings when the data are based on random samples of sufficient size.

3.3 INSTRUMENT DEVELOPMENT

Before collection data, the researcher needs to design research instruments because through the instruments or tools the data can be collected to accomplish the research objectives. The instruments will be interview, survey or both. In this study, the researcher use survey to collect the data from the company. To conduct the survey, researcher also has to design the questionnaires according to the independent and dependent variables. Through that the objectives can be achieve.

3.3.1 Questionnaire

The questionnaire has 3 sections which are demographic, total quality management practises and operational performance. For the first section, respondents have to answer about gender, age, and race, and educational level, position in the company and experience in manufacturing company. Section two covers the TQM practises which are leadership, management of people, customer focus, strategic planning, continuous improvement and use of information and analysis. For the leadership the questions like top management are actively involved in establishing and communicating the organization's vision, goals, plans and values for quality program and senior executive anticipate change and make plans to accommodate. In the customer focus the questions that will be asked are client is integrated in the product development process and we systematically and regularly measure external customer satisfaction to improve quality of product.

For the management of people, the questions like all employees believe that quality is their responsibility and we have an organisation wide training and

development process including career path planning for all employees. The questions for process improvement practise like we encourage meeting production requirement through TQM and we used some methods like QC tools, sampling and inspection for effective process improvement. In strategic planning, the questions look alike our plan focus on achievement of 'Best Practise' and our site's manufacturing operations are effectively aligned with the central business mission. For the last practise the questions like we use outstanding company as benchmarking and important information is presented and transmitted to employees.

Last section covers operational performance. In this section, the respondents will be asking in term of productivity, quality and waste level. The questionnaire is adapted from (Samson, 1999). For the complete questions refer to Appendix A.

3.4 DATA COLLECTION

Data collection is an important aspect of any types of research study. Inaccurate data collection can impact the results of a study and ultimately lead to invalid results. In this part, there are two types of data which are primary data and secondary data. The questionnaire is categorizing under primary data source. The researcher needs to go to Vacuumschmelze (M) Sdn. Bhd. to distribute the questionnaires survey.

This research will be conducted using quantitative method research to obtain data from respondents. Denzin and Lincoln (2009) defined quantitative research as associated with an interpretive philosophy. Questionnaire will be distributed to 126 managerial employees of Vacuumschmelze (Malaysia) Company. Finding of quantitative research can be treated as conclusive and used to recommend a final course action. Therefore, as quantitative research is essentially about collecting representative data from targeted respondents to explain how many people think or feel in particular way towards total quality management practises.

Arumugam et al. (2008) written in his studied that in order to bridge the gap and provide organizations with practical assistance in dealing with TQM's effects on quality performance, this research uses ISO 9001:2000 certified organizations within the

Malaysian manufacturing industry to examine, whether the application of TQM practices result in an improvement of firms' quality performance.

3.4.1 Primary Data Collection

Primary data is the first hand data collected from respondents. In this study, primary data is obtained through survey methods. The survey focuses on TQM practises that apply in Vacuumschmelze (Malaysia) Company and the effect on operational performance when the company practise the TQM. The data gathered by means of a questionnaire. In a descriptive study, structured questionnaires can be used as a means to identify general patterns. It was held to obtain the primary data as form of respondent's expectation and view. Furthermore, questionnaires are instruments completed by the respondents themselves.

3.4.2 Secondary Data Collection

Secondary data is the information collected for purpose of the research which readily available from other sources such as journals, articles, books and magazine. The data are cheaper and can easily obtained compare to primary data. Use those which exist and they would form the secondary data. For this research, the secondary data is used to support the theories that relevance with the field of study. Researcher uses journals, articles, books, Google Scholar as the secondary data.

3.4.3 Population and Sampling

The respondents selected to be surveyed in this study are the employees in the Vacuumschmelze (M) Sdn.Bhd which is located in Lot 3465 Tanah Putih in Pekan Pahang. The managerial employees in this company are 126 employees. Based on

Krejcie & Morgan table (1970) (as in Appendix B) this studies sample size is 95 workers.

Purposive sampling represents a group of different non-probability sampling techniques. Also known as judgmental, selective or subjective sampling, purposive sampling relies on the judgement of the researcher when it comes to selecting the units for examples people, cases/organisations, events, and pieces of data that are to be studied. Usually, the sample being investigated is quite small, especially when compared with probability sampling techniques.

The goal of purposive sampling is not to randomly select units from a population to create a sample with the intention of making generalisations from that sample to the population of interest. Besides, the main goal of purposive sampling is to focus on particular characteristics of a population that are of interest, which will best enable you to answer your research questions. This is the general intent of research that is guided by a quantitative research design. So here, managerial workers in Vacuumschmelze (M) Sdn. Bhd were selected to answer the questionnaire.

3.5 DATA ANALYSIS

Data analysis will be done using the Statistical Package for Social Science Software (SPSS) to make demographic profile of respondents and in addition spellbinding insights that will take a gander at the use of mean, middle, and mode which is the most normally utilized measures to quantify focal inclination. The mean of the information speaks to the normal whole of the estimations of a variable isolated by the quantity of perceptions, the middle is a state of information where it sits above and beneath where half of the cases fall, and the mode measures the recurrence of happening quality in the information set of demographic segment (Bhunia, 2013).

3.5.1 Descriptive Analysis

The respondents demographic was analysed into descriptive statistic. Under descriptive statistic, the data was translated into frequency, mean, mode, median, and per cent. The data was summarized and come out with the information. This analysis also can put the data into simpler summary.

3.5.2 T-test

One sample t-tests are commonly used to contrast a specimen mean with a known populace mean. Single mean t-test is a factual method regularly performed for testing the mean estimation of a variable. A solitary mean t-test is done to check whether there are any huge contrasts in mean of variables. In this exploration, the single mean t-test is utilized to know whether the quality mean of free and ward variable were nonpartisan or weren't unbiased. The test esteem for this test is 3. The critical level is at 0.05. On the off chance that the figured noteworthy worth is under 0.05, this would demonstrate that the variable is factually essentially contrast from 3 or not unbiased and the other way around.

3.5.3 Reliability Test

Other than doing recurrence and demographic examination, unwavering quality investigation will likewise be directed to figure out if the information acquired from respondents utilizing the survey are dependable before proceeding to different examination matter. For the most part, variables are dependable when Cronbach's Alpha value is 0.70 or more. So for this exploration, variables are viewed as dependable when the Cronbach's Alpha quality is 0.70 or more. On the off chance that the estimation of the Cronbach's Alpha beneath than 0.50, a thing must be erased from the segment "Cronbach's Alpha if thing erased" to guarantee the estimation of Cronbach's Alpha can

build and make it more solid. Unwavering quality investigation that uses estimation of Cronbach's Alpha alludes to the certainty that we can put on the instrument measuring the variable and in the meantime give a numeric worth if the estimation is rehashed on the same article.

3.5.4 Normality Test

The test results indicate whether we should reject or fail to reject the null hypothesis that the data come from a normally distributed population. We can do a normality test and produce a normal probability plot in the same analysis. The normality test and probability plot are usually the best tools for judging normality, especially for smaller samples.

3.5.5 Correlation

Analysis of relationship will be done using Pearson Correlation. From the Pearson Correlation coefficients, it can determine whether the variables are positively or negatively related with operational performance. This method can verify whether the TQM practises leadership, management of people, customer focus, process improvement, strategic planning and information and analysis have correlation or not with operational performance.

Correlation measures the degree to which two quantitative variables, X and Y, "go together." When high estimations of X are connected with high estimations of Y, a positive relationship exists. At the point when high estimations of X are connected with low estimations of Y, a negative relationship exists. The indication of the relationship coefficient figures out if the connection is certain or negative. The extent of the connection coefficient decides the strength of the relationship. The guide lines:

1. $r = 0.0$ {no correlation between two variables}

2. $0.0 < |r| < 0.5$ {weak positively correlated}

3. $0.5 \leq |r| < 0.7$ {moderate positively correlated}

4. $0.7 \leq |r| < 1.0$ {strong positively correlated}

For example, r = -0.849 shows a strong negatively correlated.

3.5.6 Regression Analysis

After that, all hypotheses in this study will be tried through the utilization of relapse investigation. This model used to offer us some assistance with predicting the estimation of one or more different variables whose quality can be foreordained. The main phases of procedure was recognized the variable we need to anticipate the reliant variable and to than do different relapse investigation concentrating on the variable we need to use as indicators (explanatory variables). The multiple regression analysis then recognizes the relationship between the indigent variable and the informative variable.

In particular, relapse examination offered us some assistance with understanding how run of the mill estimation of the reliant variable changes when any of the autonomous variable was differed, while the other free variable were helped altered. Most normally, relapse investigation evaluates the contingent desire of the reliant variable given the free variables. That was the arrived at the midpoint of estimation of the subordinate variable when the autonomous variables were held altered.

3.6 SUMMARY

The chapter explained research design, instrument development, data collection and data analysis. In addition, descriptive research design used in order to gain details data information. Quantitative research method is used to obtain data collection from questionnaires distributed to the respondents. A questionnaire was used as research instruments. Both primary and secondary data are important in this. Social Packaging and Social Science (SPSS) was used to analyse the data from the questionnaires to achieve research objectives.

CHAPTER 4

RESULT AND DISCUSSION

4.1 INTRODUCTION

This chapter shows the research findings and results of statistical analysis that conducted through SPSS. The demographic of respondents will be shown through descriptive statistic. For single mean T-test, this test is conducted to test the level of independent variable which is total quality management (TQM) practises that applied in the Vacuumschmelze (M) Sdn Bhd. Besides, to test whether the data is trusted or not, we do the reliability test. Furthermore, for normality test and Pearson Correlation, these analyses are carried out to see the relationship between the variables. Then, do the regression analysis to know the effect of TQM practises towards operational performance.

A total of 95 questionnaires were distributed to the respondents. The 95 responses (100%) were successfully collected from the human resources in the company.

4.2 RESULTS OF DESCRIPTIVE ANALYSIS

The demographic of respondents are shown in Table 4.2 below. Most of the respondents that answered the survey are female (69.5%) which is 66 respondents. Meanwhile, male are (30.5%) which is 29 respondents. The ranges of ages number between 21-30 years old (53.7%), 31-40 years old (37.9%), and 41-50 years old (8.4%). Majority respondents that answered the questionnaires are in the age of 21-30 years old. In term of position, the respondents are quality assurance/control manager (8.4%), engineering department manager (3.2%), production manager (6.3%), human resources and development manager (2.1%) and others (80%). Others here are secretary, supervisor, engineer and technician. (50.5%) of the employees are below than 5 years of experiences, followed by (42.1%) are 5-10 years of experiences and (7.4%) are more than 10 years experiences. Furthermore, the respondent's races are Malay (91.6%), Chinese (4.2%), Indian (2.1%) and others also (2.1%). For the employees education levels are PHD (1.1%), Masters (5.3%), and Degree/Diploma/Others (93.6%). So majority employees are degree, diploma, certificate and SPM holders.

Table 4.2: Respondents Demographic

Demographic Variables	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Gender				
Male	29	30.5	30.5	30.5
Female	66	69.5	69.5	100
Total	95	100	100	
Age				
21-30	51	53.7	53.7	53.7
31-40	36	37.9	37.9	91.6
41-50	8	8.4	8.4	100
Total	95	100	100	

Position				
Quality Survey/Control Manager	8	8.4	8.4	8.4
Engineering Department Manager	3	3.2	3.2	11.6
Production Manager	6	6.3	6.3	17.9
Human Resource and Development Manager	2	2.1	2.1	20.0
Others	76	80	80	100
Total	95	100	100	
Experience				
Less than 5 years	48	50.5	50.5	50.5
5-10 years	40	42.1	42.1	92.6
>10 years	7	7.4	7.4	100
Total	95	100	100	
Races				
Malay	87	91.6	91.6	91.6
Chinese	4	4.2	4.2	95.8
Indian	2	2.1	2.1	97.9
Others	2	2.1	2.1	100
Total	95	100	100	
Education Level				
PHD	1	1.1	1.1	1.1
Masters	5	5.3	5.3	6.4
Degree/Diploma/Others	89	93.6	93.6	100
Total	95	100	100	

4.3 RESULTS OF RELIABILITY

Cronbach's Alpha value in the reliability test is to see whether the items in each group are reliable or not. Table 4.3 below showed the summary of Cronbach's Alpha for each variable like leadership, customer focus, management of people, process improvement, strategic planning, use of information and analysis and operational performance.

The Cronbach's Alpha value for leadership practise is (0.798) with 4 items. Next, customer focus practise is (0.884) with 4 items too. Besides, management of people and process improvement practise are (0.802) and (0.877) with both have 4 items. Strategic planning and use of information and analysis practise are (0.906) and (0.818) with 4 and 3 items each. For dependent variable which is operational performance, the Cronbach's Alpha is (0.895) with 6 items.

Table 4.3: Summary of Reliability Analysis

Variables	Cronbach's Alpha	N of Items	Items	Cronbach' Alpha if Item Deleted
Leadership	.798	4	B1	.665
			B2	.792
			B3	.757
			B4	.763
Customer Focus	.884	4	B5	.848
			B6	.862
			B7	.857
			B8	.836
Management of People	.802	4	B9	.757
			B10	.798
			B11	.682
			B12	.776
Process Improvement	.877	4	B13	.896

			B14	.814
			B15	.822
			B16	.822
Strategic Planning	.906	4	B17	.859
			B18	.890
			B19	.879
			B20	.884
Use of information and analysis	.818	3	B21	.742
			B22	.841
			B23	.646
Operational performance	.895	6	C1	.864
			C2	.871
			C3	.863
			C4	.882
			C5	.901
			C6	.877

4.4 RESULTS OF NORMALITY TEST

In this analysis, the normality test is to test whether the data is normally distributed or not. Normal distribution has skewness and kurtosis which is (Z-values = 0). If our values were closed to 0 probably our distribution was normal (Brown, 2011).

Regarding Brown (2012) the data is normal when the values of skewness and kurtosis fall in the range between -2 and +2. In order to get the Z-values for skewness and kurtosis, we needed to divide the statistic and standard error values. If all the Z-values fall within the range of -2 and +2, the data is normally distributed. So, based on Table 4.4 summary of normality test, it indicated all the data was normally distributed because all the Z-values fall between -2 and +2.

Skewness was measured the symmetric of distribution. If the (Z-value) was negative, the data was negatively skewed and positively skewed when (Z-value) was positive. For leadership, Z-value was -0.5547. Besides, customer focus and management

of people, the Z-value were -0.4939 and 0.3401. While for process improvement and strategic planning, the Z-values were 0.0243 and 0.9555. The Z-values for use of information and analysis and operational performance were 0.8907 and 0.9595.

For kurtosis, it measured the 'peakedness' of distribution. Regarding Kim (2013), the excess kurtosis equal zero, it indicated normal distribution while negative excess kurtosis (platykurtic distribution) was flat- topped curve and positive excess kurtosis (leptokurtic distribution) was high peak. In this data, customer focus (Z-value= -0.3571), management of people (Z-value= -0.2735) and process improvement (Z-value= -1.1021) were platykurtic distribution. For leadership (Z-value = 0.8571), strategic planning (Z-value = 0.5), use of information and analysis (Z-value =0.2857) and operational performance (Z-value =0.8408) were positive kurtosis which mean all the data were normally distributed.

Table 4.4: Summary of Normality Test

		Statistic	**Std. Error**	**Z-value**
Leadership	Skewness	-0.137	0.247	-0.5547
	Kurtosis	0.420	0.490	0.8571
Customer focus	Skewness	-0.122	0.247	-0.4939
	Kurtosis	-0.175	0.490	-0.3571
Management of people	Skewness	0.084	0.247	0.3401
	Kurtosis	-0.134	0.490	-0.2735
Process Improvement	Skewness	0.006	0.247	0.024
	Kurtosis	-0.540	0.490	-1.1020
Strategic Planning	Skewness	0.236	0.247	0.9555
	Kurtosis	0.245	0.490	0.5

Use of information and analysis	Skewness	0.220	0.247	0.8907
	Kurtosis	0.140	0.490	0.2857
Operational performance	Skewness	0.237	0.247	0.9557
	Kurtosis	0.412	0.490	0.8408

4.5 RESULTS OF PEARSON CORRELATION

This analysis is tested to determine whether the independent variables (leadership, customer focus, management of people, process improvement, strategic planning, and use of information and analysis) are positively or negatively correlated with operational performance. This result can see through the Pearson Correlation coefficients which is coefficient of r.

Table 4.5 below showed the Pearson Correlation coefficient for every practise with operational performance. For the first practise which is leadership, the r value is 0.714 at 0.01 significant level. Because of the r-value fall between range of 0.7 and 1.0 that means leadership has strong positively correlated with operational performance.

Table 4.5: Pearson Correlation for leadership

		leadership	**Operational performance**
leadership	Pearson Correlation	1	.714**
	Sig. (2-tailed)		.000
	N	95	95
Operational performance	Pearson Correlation	.714**	1
	Sig. (2-tailed)	.000	

	N	95	95

**. Correlation is significant at the 0.01 level (2-tailed).

In addition, Table 4.6 below showed (r=0.574) that verified the management of people practise has moderate positively correlation with operational performance at 0.01 significant level. This is because r-value falls between $0.05 \leq r < 0.7$.

Table 4.6: Pearson Correlation for management of people

		Management of people	**Operational performance**
Management of people	Pearson Correlation	1	.574**
	Sig. (2-tailed)		.000
	N	95	95
Operational performance	Pearson Correlation	.574**	1
	Sig. (2-tailed)	.000	
	N	95	95

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.7: Pearson Correlation for customer focus

		Customer focus	**Operational performance**
Customer focus	Pearson Correlation	1	.764**
	Sig. (2-tailed)		.000
	N	95	95
Operational performance	Pearson Correlation	.764**	1
	Sig. (2-tailed)	.000	
	N	95	95

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.7 above viewed the strong positively correlated the customer focus with operational performance which is correlation coefficient value (r=0.764) at 1% significant level. This is because r-value falls between 0.07≤ r <1.

Table 4.8: Pearson Coefficient for strategic planning

		Strategic planning	**Operational performance**
Strategic planning	Pearson Correlation	1	.762**
	Sig. (2-tailed)		.000
	N	95	95
Operational performance	Pearson Correlation	.762**	1
	Sig. (2-tailed)	.000	
	N	95	95

**. Correlation is significant at the 0.01 level (2-tailed).

Furthermore, the Table 4.8 above showed the strong positively correlated the strategic planning practise and operational performance because r-value falls between 0.07 ≤ r <1. The correlation coefficient value is 0.762 at 1% significant level.

Table 4.9: Pearson Correlation for process improvement

		Process improvement	**Operational performance**
Process improvement	Pearson Correlation	1	.782**
	Sig. (2-tailed)		.000
	N	95	95
Operational performance	Pearson Correlation	.782**	1
	Sig. (2-tailed)	.000	
	N	95	95

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.9 above showed the Pearson Correlation for process improvement. The correlation coefficient value is 0.782 that displayed the strong positively correlated between the process improvement practise and operational performance at 0.01 significant level. The r- value indicated strong because it falls between $0.07 \leq r < 1$.

Table 4.10: Pearson Correlation for use of information and analysis

		Use of information and analysis	**Operational performance**
Use of information and analysis	Pearson Correlation	1	.643**
	Sig. (2-tailed)		.000
	N	95	95
Operational performance	Pearson Correlation	.643**	1
	Sig. (2-tailed)	.000	
	N	95	95

**. Correlation is significant at the 0.01 level (2-tailed).

Next, Table 4.10 showed the correlation coefficient value r=0.643 which mean moderate positively correlated between the use of information and analysis practise and operational performance at 1% significant level. Therefore, it falls between $0.05 \leq r < 0.07$.

4.6 RESULTS OF SINGLE MEAN T-TEST

As a general, the used of single mean T-test is to compare a sample mean to a population mean. In this analysis also we can get the level of practises used in manufacturing company. Table 4.11 below showed the summary of single mean t-test.

Table 4.11: Summary of Single Mean T-test

Variables	Mean	Standard Deviation	t	df	Sig. (2-tailed)	Mean difference
Leadership	3.6816	.63418	10.475	94	.000	.68158
Customer focus	3.7605	.74190	9.991	94	.000	.76053
Management of people	3.6553	.65556	9.742	94	.000	.65526
Process improvement	3.7500	.68417	10.685	94	.000	.75000
Strategic planning	3.6737	.67050	9.793	94	.000	.67368
Use of information and analysis	3.6105	.62579	9.509	94	.000	.61053
Operational performance	3.6053	.66890	8.819	94	.000	.60526

Mean value for the first practise is 3.6816 and standard deviation value is 0.63418. For customer focus, the mean value is 3.7605 and the standard deviation is 0.74190. Next is management of people, the mean value and standard deviation are 3.6553 and 0.65556. Mean and standard deviation values for process improvement are 3.7500 and 0.68417. For strategic planning, the mean and standard deviation values are 3.6737 and 0.67050. While for use of information and analysis, the both values are 3.6105 and 0.62579.

The significant value in the single mean t-test is to indicate whether the variables are statically significantly difference from 3 or not. So, from the summary table above, it indicates that all the practises roughly reach the scale “4” the level of “often”.

Table 4.12: Rank of TQM Practises Level

Practises	Rank	Mean
Customer focus	1	3.7605
Process improvement	2	3.7500
Leadership	3	3.6816
Strategic planning	4	3.6737
Management of people	5	3.6553
Use of information and analysis	6	3.6105

Through the Table 4.12 above, it showed the rank of total quality management (TQM) practises level that applied in the manufacturing company. Even though all these practises were often applied in the company but we also can predict which one was more often practised by the company. The more often practise was customer focus followed by process improvement. The less often practise was use of information and analysis.

4.7 RESULTS OF REGRESSION ANALYSIS

Through this analysis, we can predict what happened to operational performance when the independent variables are affected. Table 4.13 below showed the regression analysis results for summary model. R column below presented the value of multiples correlation coefficients. Capital R interpreted just like small r which is correlation coefficient except it told the strength in the combined relationship between independent and dependent variables (Higgins, 2005). This value showed quality of prediction of dependent variable. So here R value is 0.827 which is indicates a good level of prediction on operational performance. For R square which is coefficient of determination, the value is 0.685. All 6 practises explained 68.5% of the variability of operational performance.

Table 4.13: Regression Analysis Results for Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.827[a]	.685	.663	.38822

a. Predictors: (Constant), use of information and analysis, process improvement, Management of people, strategic planning, leadership, Customer focus

Table 4.14: ANOVA Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.795	6	4.799	31.843	.000[b]
	Residual	13.263	88	.151		
	Total	42.058	94			

a) Dependent Variable: operational performance

b) Predictors: (Constant), use of information and analysis, process improvement, Management of people, strategic planning, leadership, Customer focus.

For Table 4.14 below, it showed the value of F= 31.843 and significant level is 0. When significant level is smaller than 0.01, it means all the 6 practises is statistically significantly predict the operational performance at 1%.

Table 4.15: Regression Analysis Results for Estimated Model Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Beta		
1(constant)	.499	.259		1.929	.057
Leadership	.140	.141	.133	.995	.323
Customer focus	.137	.134	.152	1.024	.309
Management of people	-.135	.116	-.132	-1.166	.247
Process improvement	.374	.126	.383	2.974	.004
Strategic planning	.369	.121	.370	3.042	.003
Use of information and analysis	-0.53	.132	-.050	-.403	.688

The B value which is coefficient value in Table 4.15 above, it indicates how much operational performance change when all the practises are constant. For example, the B value for leadership is 0.140. That's mean for additional unit of leadership practise, the operational performance expected to increase in 0.140 units. The B value for customer focus is 0.137. So, for additional unit in customer focus, the operational performance expected to be increased in 0.137 units. However, because of their sig values greater than 0.01, they do not give contribution to operational performance.

For process improvement and strategic planning, both B values are 0.374 and 0.369. So for every additional unit in process improvement and strategic analysis practises, the operational performance in manufacturing company expected to increase in 0.374 and 0.369 units too. The sig values for both practises are 0.004 and 0.003.Thus, both practises contributed to the operational performance because their sig value smaller than 0.01.

Moreover, for management of people practise the B value is -0.135. This showed the expected decreasing 0.135 units in operational performance when additional unit of management of people practise. Same goes to the use of information and analysis practise. The B value is -0.53, means that the operational performance in manufacturing company expected to decrease in 0.53 units if use of information and analysis practise increased in unit. Hence, management of people and use of information and analysis practises does not contribute to the operational performance because their sig values greater than 0.01.

The sig values for process improvement and strategic planning are 0.004 and 0.003. So, if manager wants to increase operational performance, the practise that need to be focused are process improvement and strategic planning because both sig values are less than 0.01. Therefore, process improvement and strategic planning practises are statically significant towards operational performance and positive.

Beta value in the Table 4.15 above can indicate the most contribute practises. For process improvement and strategic planning which are the practises that gave effect towards operational performance, their Beta values are 0.383 and 0.370. Therefore, the most contribute practise and gave effect to operational performance is process improvement because it has the higher Beta value compared to strategic planning.

4.8 SUMMARY

SPSS used to run the descriptive statistic to summarize the data. Other than that, reliability test was to test whether the data was reliable or not. Normality test was to test whether the data was normally distributed or not. Pearson Correlation was to test the correlation between the independent and dependent variables. For single mean t-test, it was to identify the level for every independent variable which leadership, customer focus, management of people, process improvement, strategic planning and use of information and analysis practises. Lastly, regression was to examine what changed to operational performance when one practise was varied and the other practises were constant.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 INTRODUCTION

In this chapter, for conclusion part, the researcher will conclude about the objectives of this research. In recommendation part, the researcher will give recommendation about managerial and for future research.

5.2 CONCLUSION

5.2.1 Answer for Research Question 1

RQ1: What are the levels of (TQM) practises for operational performance?

To identify the levels of TQM practises on operational performance, single mean T-test was conducted. Based on the results, all the practises got the mean values more than 3 like customer focus (3.7605), process improvement (3.7500), leadership (0.6818), strategic planning (3.6737), management of people (3.6553) and use of information and analysis practises (3.6105).

So from the mean values, it reveals that all the practises roughly obtain the scale "4" which is the level of "often". Therefore, this study successfully answered the research objective one.

5.2.2 Answer for Research Question 2

RQ2: What are the effects of TQM practises on operational performance?

To answer the research objective 2, the regression analysis was carried out. Based on R square in regression analysis, all 6 practises which are leadership, customer focus, management of people, process improvement, strategic planning, and use of information and analysis explained 68.5% of the variability of operational performance in manufacturing company.

Besides, only two practises which are strategic planning and process improvement with 0.003 and 0.004 significance values gave effect to operational performance because their significant values were less than 0.05. Therefore, from the hypothesis part the fourth and fifth hypothesis, were accepted. The rest hypotheses were rejected because the significant values higher than 0.05.

As a conclusion, Vacuumschmelze (M) Sdn. Bhd frequently applied these practises in their company and they also can upgrade the operational performance through focusing strategic planning and process improvement.

5.3 RESEARCH CONTRIBUTION

For research contribution, the researcher divided the contribution by two parts managerial and researchers. For managerial part, this field of study will help the Vacuumschmelze (M) Sdn Bhd. to improve their operational performance by focusing on strategic planning and process improvement. Other than that, this study also can give more understanding to the company about the total quality management practises and their effect towards operational performance.

Besides Vacuumschmelze, this study also can help other companies to improve their operational performance. They can increase their attention in doing the strategic planning and process improvement practises.

In addition, this study also can give contribution to the researchers in term of reference and knowledge. New researchers can take this field of study as reference when they are doing their research in the same field of study. They also can get more understanding about total quality management practises and operational performance.

5.4 LIMITATION

For every work that we do, there is limitation. In this research, the researcher faces some limitation. First was to get the approval from company to do the survey. Sometimes, the company always was welcoming the students to do cooperation with them. But at a certain time they cannot give full commitments due to some urgent matters like end of months or busy with salary distribution. Second was a time constraint. This research had to finish within the time limit but researcher also had many assignments and projects that need to accomplish. Therefore, they cannot give full attention to this research.

Limitation also occurred in doing this research. The only limitation in the research is time constraint. There are a lot of total quality management practises that covered in journal but because of time limitation in this research, researcher only could cover 6 practises which are leadership, customer focus, management of people, process improvement, strategic planning and use off information and analysis.

5.5 RECOMMENDATION

For recommendation, researcher suggests for Vacuumschmelze to put more effort on strategic planning and process improvement practises to further improve operational performance. They also can practise more to achieve scale “5” which is level “always”.

In term of future researchers, the researcher liked to suggest them to do more research about operational performance. They could increase the number of indicators for operational performance like cost, delivery and flexibility (Ahmad and Schroeder, 2003). This will give more comprehensive understanding to colleagues and students about operational performance.

Because of time limitation, researcher only focused on 6 practises. Therefore, for future researcher, they can do the research about total quality management that covered all the practises. So, reader can have broad understanding about total quality management practises.

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APPENDIX A

QUESTIONNAIRES

Section 1: general information

Please tick in the appropriate boxes or fill in the blanks.

1. Gender: ☐ male ☐ female

2. Age: _____years old

3. What is your position in your company?

   - CEO/ General Manager/ Director
   - Quality Assurance/Control Manager
   - Engineering Department Manager
   - Production Manager
   - Human Resource and Development Manager
   - Others (Please specify) ……..

4. How many years of experience do you have in manufacturing industry?

   - Less than 5 years
   - 5-10 years
   - More than 10 years

5. Races:

   - Malay
   - Chinese
   - Indian
   - Others:_____

6. What is your educational level?

- PHD
- Masters
- Degree/Diploma/Others:_____

Section 2: Total Quality Management Practices

Please circle your perception on the importance of each statement listed below. Please use the following scales (the extent or degree of practice in your organization):

1 = never 2 = rarely 3 = sometimes 4 =often 5 = always

Leadership						
1.	Top management are actively involved in establishing and communicating the organization's vision, goals, plans, and values for quality program.	1	2	3	4	5
2.	Senior executives anticipates change and make plans to accommodate in achieving goals	1	2	3	4	5
3.	Top management allocates adequate resources toward efforts to improve quality	1	2	3	4	5
4.	All major department heads within our company accept their responsibly for quality	1	2	3	4	5
Customer focus						
1.	Client is integrated in the product development process	1	2	3	4	5
2.	We systematically and regularly measure external customer satisfaction to improve quality of product.	1	2	3	4	5
3.	Customer complaints are used as method to improvement in product quality.	1	2	3	4	5
4.	Company carries out market studied to determine its customers' needs and wants	1	2	3	4	5
Management of People						

1.	All employees believe that quality is their responsibility.	1	2	3	4	5
2.	We have an organisation-wide training and development process including career path planning for all employees.	1	2	3	4	5
3.	Employees are totally encouraged to be involved.	1	2	3	4	5
4.	Participation of employees in achieving organizational objectives.	1	2	3	4	5
	Process Improvement					
1.	We encourage meeting production requirement through TQM.	1	2	3	4	5
2.	We used some methods like QC tools, sampling and inspection for effective process improvement.	1	2	3	4	5
3.	Process improvement can increase the quality of product.	1	2	3	4	5
4.	Good process improvement can minimise the error of quality management.	1	2	3	4	5
	Strategic Planning					
1.	Our plan focus on achievement of 'Best Practise' to meet customer satisfaction	1	2	3	4	5
2.	Our site's manufacturing operations are effectively aligned with the central business mission.	1	2	3	4	5
3.	We have a written statement of strategy covering all manufacturing operations which is clearly articulated and agreed to by our Senior Managers.	1	2	3	4	5
4.	We have a comprehensive and structured planning process which regularly set and reviews short and long-term goals	1	2	3	4	5
	Use of Information and Analysis					
1.	We use outstanding company as benchmarking to improve company performance in quality of products.	1	2	3	4	5
2.	Information and analysis presented and transmitted to	1	2	3	4	5

	employees to achieve product quality and customer expectation.					
3.	Company has precise data about the competition used to identify areas of improvements.	1	2	3	4	5

Section 3: Operational Performance

1= strongly disagree 2= disagree 3= neither disagree nor agree 4= agree

5= strongly agree

Measurements		Scales				
	Productivity					
1.	TQM practises encourage the increment in productivity.	1	2	3	4	5
2.	Productivity can generate from giving reward and recognition.	1	2	3	4	5
	Quality					
1.	TQM practises increase the quality of product.	1	2	3	4	5
2.	Before appearing of TQM practises there is a lack of improving quality of product.	1	2	3	4	5
	Waste level					
1.	TQM practises decrease the product rework.	1	2	3	4	5
2.	TQM practises reduce the number of product scrap.	1	2	3	4	5

APPENDIX B

KREJCIE & MORGAN TABLE

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

APPENDIX C

GANTT CHART FOR PSM 1

Progress	Week								
	1	2	3	4	5	6	7	8	9
Identify research issue									
Deciding the topic and research objective									
Approval of topic and research objective									
Preparation of project research proposal									
Chapter 1 Introduction									
Background									
Problem statement									
Research Objectives and research questions									
Scope of Study									
Expected Result									
Significance of Study									
Chapter 2 Literature Review									
Chapter 3 Research Method									
Submit Draft Proposal									
Submit Proposal									

GANTT CHART FOR PSM 2

Chapter	Week											
	1	2	3	4	5	6	7	8	9	10	11	13
Chapter 4 Introduction												
Respondent Demographic												
Reliability test												
Normality test												
Perason Correlation												
Single Mean T-test												
Regression Analysis												
Chapter 5 Introduction												
Conclusion												
Research Contribution												
Limitation												
Recommendation												
Submit draft												
Submit Report												
Presentation												

APPENDIX D

SPSS DATA RESULTS

Descriptive Statistics

	N	Range	Minimum	Maximum	Sum	Mean	Std. Deviation	Variance
Gender	95	1.00	1.00	2.00	161.00	1.6947	.46296	.214
Age	95	2.00	1.00	3.00	147.00	1.5474	.64854	.421
What is your position in your company?	95	4.00	2.00	6.00	515.00	5.4211	1.25968	1.587
How many years of experience do you have in manufacturing industry?	95	2.00	1.00	3.00	149.00	1.5684	.62997	.397
Races	95	3.00	1.00	4.00	109.00	1.1474	.54516	.297
What is your educational level?	95	2.00	1.00	3.00	278.00	2.9263	.30043	.090
Valid N (listwise)	95							

Frequencies

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	29	30.5	30.5	30.5
	female	66	69.5	69.5	100.0
	Total	95	100.0	100.0	

Age

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	21-30 years	51	53.7	53.7	53.7
	31-40 years	36	37.9	37.9	91.6
	41-50 years	8	8.4	8.4	100.0
	Total	95	100.0	100.0	

What is your position in your company?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Quality Assurance/Control Manager	8	8.4	8.4	8.4
	Engineering Department Manager	3	3.2	3.2	11.6
	Production Manager	6	6.3	6.3	17.9
	Human Resource and Development Manager	2	2.1	2.1	20.0
	Others	76	80.0	80.0	100.0
	Total	95	100.0	100.0	

How many years of experience do you have in manufacturing industry?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 5 years	48	50.5	50.5	50.5
	5-10 years	40	42.1	42.1	92.6
	More than 10 years	7	7.4	7.4	100.0
	Total	95	100.0	100.0	

Races

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Malay	87	91.6	91.6	91.6
	Chinese	4	4.2	4.2	95.8
	Indian	2	2.1	2.1	97.9
	Others	2	2.1	2.1	100.0
	Total	95	100.0	100.0	

What is your educational level?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	PHD	1	1.1	1.1	1.1
	Masters	5	5.3	5.3	6.3
	Degree/Diploma/Others	89	93.7	93.7	100.0
	Total	95	100.0	100.0	

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
25.7368	17.446	4.17682	7

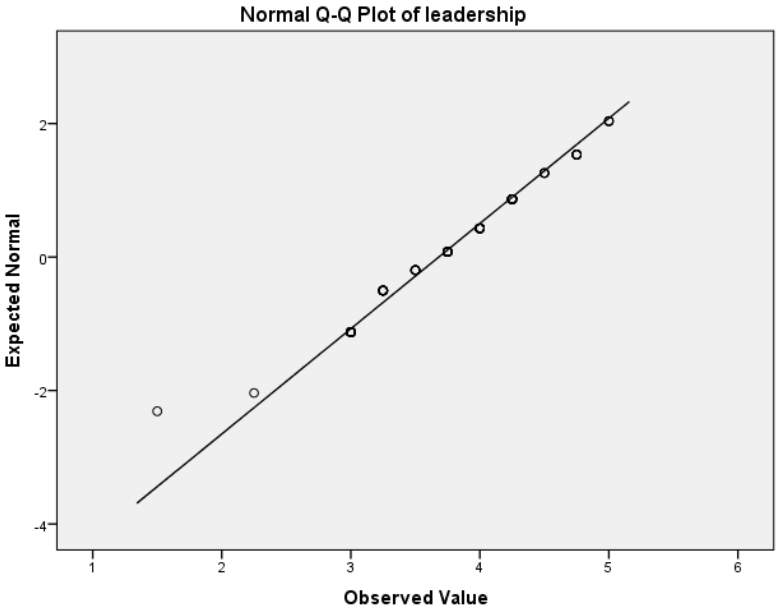
EXPLORE (NORMALITY TEST)

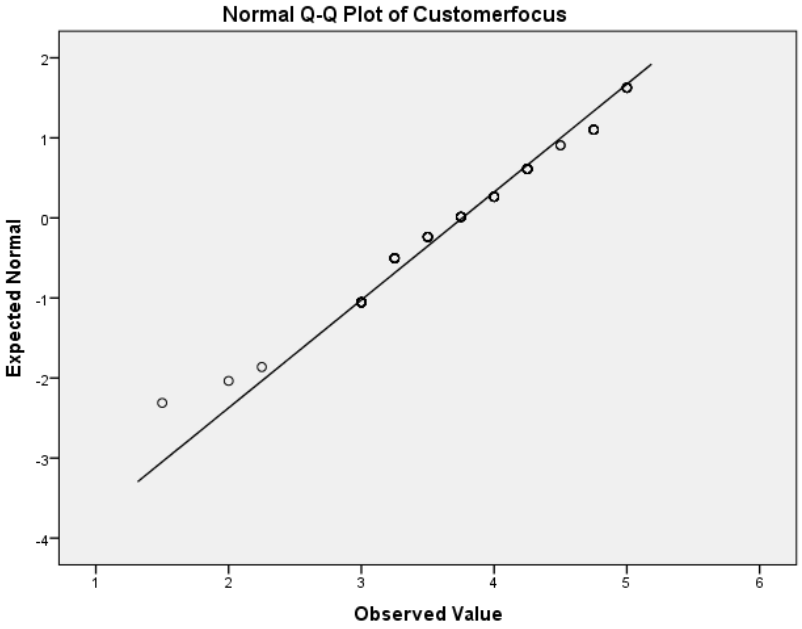
Descriptives

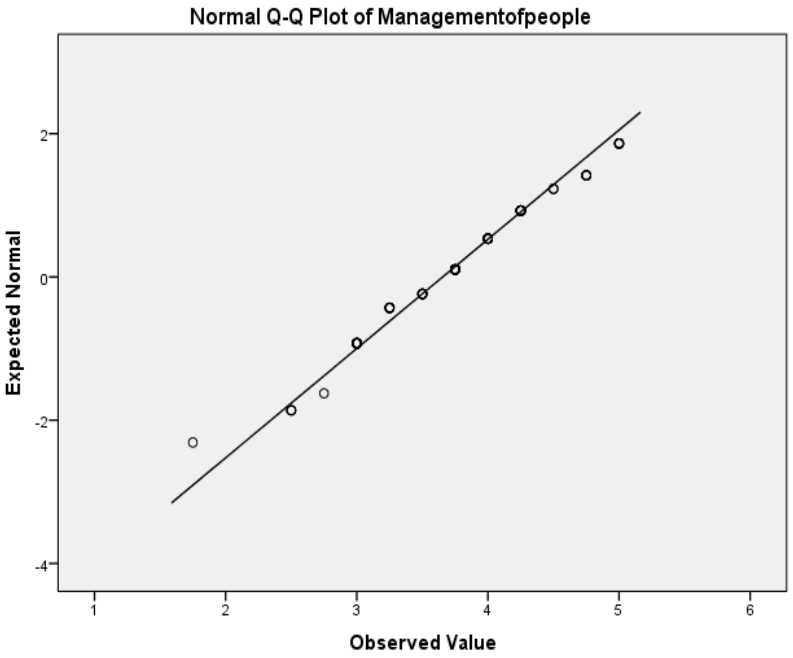
			Statistic	Std. Error
leadership	Mean		3.6816	.06507
	95% Confidence Interval for Mean	Lower Bound	3.5524	
		Upper Bound	3.8108	
	5% Trimmed Mean		3.6776	
	Median		3.7500	
	Variance		.402	
	Std. Deviation		.63418	
	Minimum		1.50	
	Maximum		5.00	
	Range		3.50	
	Interquartile Range		1.00	
	Skewness		-.137	.247
	Kurtosis		.420	.490
Customerfocus	Mean		3.7605	.07612
	95% Confidence Interval for Mean	Lower Bound	3.6094	
		Upper Bound	3.9117	
	5% Trimmed Mean		3.7719	
	Median		3.7500	
	Variance		.550	
	Std. Deviation		.74190	
	Minimum		1.50	
	Maximum		5.00	
	Range		3.50	
	Interquartile Range		1.25	
	Skewness		-.122	.247
	Kurtosis		-.175	.490
Managementofpeople	Mean		3.6553	.06726
	95% Confidence Interval for Mean	Lower Bound	3.5217	

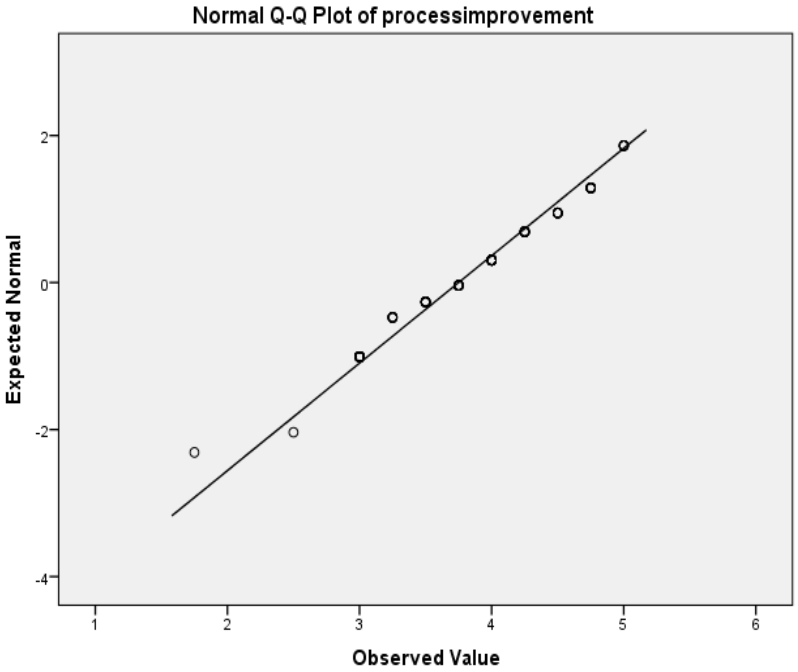
		Upper Bound	3.7888	
	5% Trimmed Mean		3.6513	
	Median		3.7500	
	Variance		.430	
	Std. Deviation		.65556	
	Minimum		1.75	
	Maximum		5.00	
	Range		3.25	
	Interquartile Range		1.00	
	Skewness		.084	.247
	Kurtosis		-.134	.490
processimprovement	Mean		3.7500	.07019
	95% Confidence Interval for Mean	Lower Bound	3.6106	
		Upper Bound	3.8894	
	5% Trimmed Mean		3.7427	
	Median		3.7500	
	Variance		.468	
	Std. Deviation		.68417	
	Minimum		1.75	
	Maximum		5.00	
	Range		3.25	
	Interquartile Range		1.25	
	Skewness		.006	.247
	Kurtosis		-.540	.490
strategicplanning	Mean		3.6737	.06879
	95% Confidence Interval for Mean	Lower Bound	3.5371	
		Upper Bound	3.8103	
	5% Trimmed Mean		3.6579	
	Median		3.5000	
	Variance		.450	
	Std. Deviation		.67050	
	Minimum		1.50	
	Maximum		5.00	
	Range		3.50	
	Interquartile Range		1.00	
	Skewness		.236	.247
	Kurtosis		.245	.490

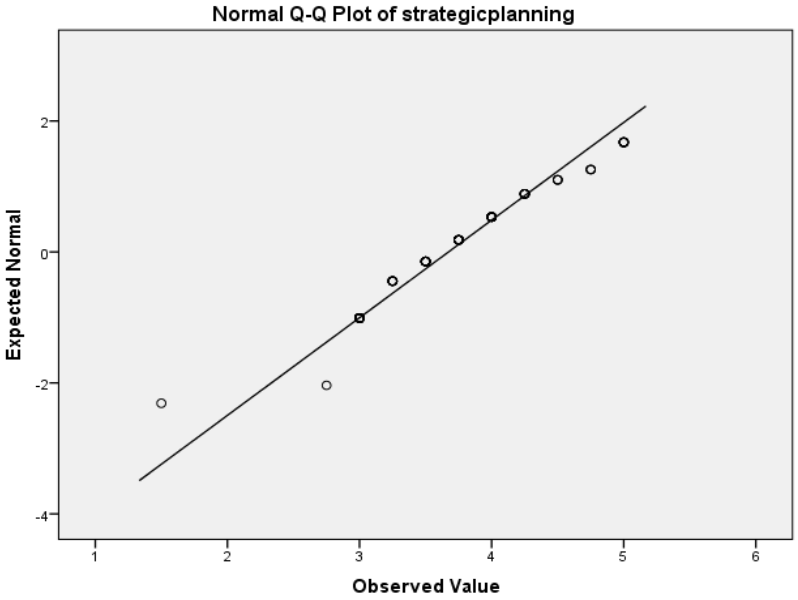
useofinformationandanalysis	Mean		3.6105	.06420
	95% Confidence Interval for Mean	Lower Bound	3.4830	
		Upper Bound	3.7380	
	5% Trimmed Mean		3.5906	
	Median		3.6667	
	Variance		.392	
	Std. Deviation		.62579	
	Minimum		1.67	
	Maximum		5.00	
	Range		3.33	
	Interquartile Range		1.00	
	Skewness		.220	.247
	Kurtosis		.140	.490
operationalperformance	Mean		3.6053	.06863
	95% Confidence Interval for Mean	Lower Bound	3.4690	
		Upper Bound	3.7415	
	5% Trimmed Mean		3.5984	
	Median		3.5000	
	Variance		.447	
	Std. Deviation		.66890	
	Minimum		1.50	
	Maximum		5.00	
	Range		3.50	
	Interquartile Range		1.00	
	Skewness		.237	.247
	Kurtosis		.412	.490

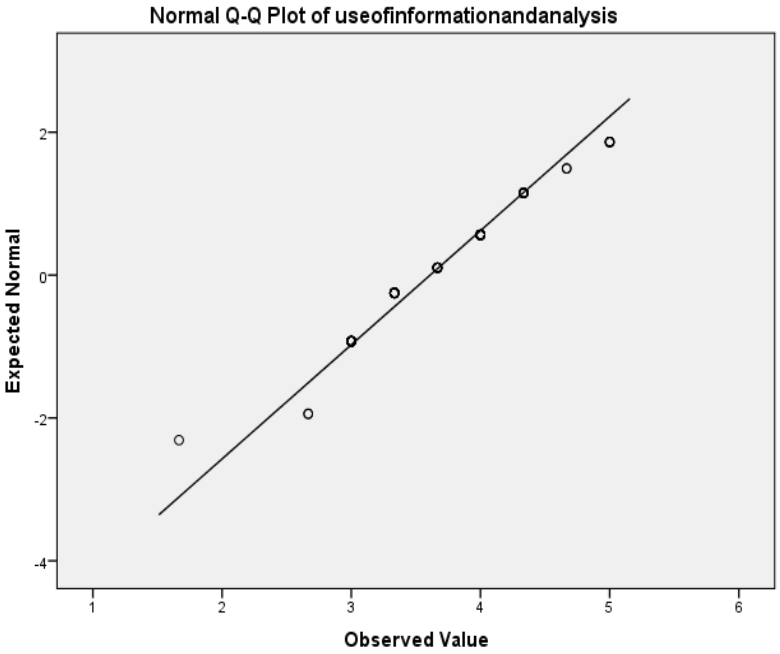

Normal Q-Q Plot of leadership
Expected Normal
Observed Value
2
0
-2
-4
1
2
3
4
5
6

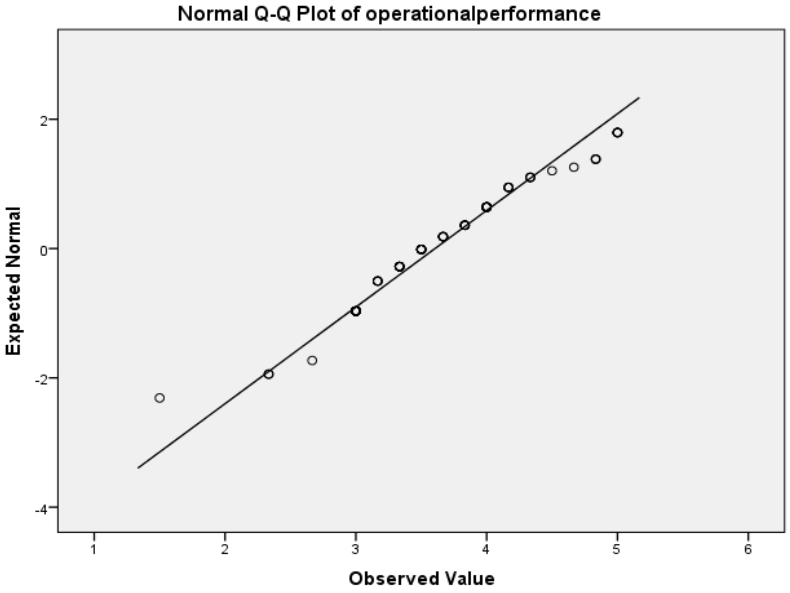

Normal Q-Q Plot of Customerfocus
Expected Normal
Observed Value
2
1
0
-1
-2
-3
-4
1
2
3
4
5
6


Normal Q-Q Plot of Managementofpeople
Expected Normal
Observed Value
2
0
-2
-4
1
2
3
4
5
6


Normal Q-Q Plot of processimprovement
Expected Normal
Observed Value
2
0
-2
-4
1
2
3
4
5
6


Normal Q-Q Plot of strategicplanning
Expected Normal
Observed Value
2
0
-2
-4
1
2
3
4
5
6


Normal Q-Q Plot of useofinformationandanalysis
Expected Normal
Observed Value
2
0
-2
-4
1
2
3
4
5
6


Normal Q-Q Plot of operationalperformance
Expected Normal
Observed Value
2
0
-2
-4
1
2
3
4
5
6