Evaluating the Effect of Total Quality Management Practices on Business Performance: A Study of Manufacturing Firms of Pakistan

M. Waqas Raja
PhD Scholar COMSATS Institute of Information Technology
Chak Shahzad Campus, Islamabad, Pakistan
E-mail: mwaqasraja@hotmail.com

Dr. Mahmood Ahmad Bodla
Director COMSATS Institute of Information Technology
M. A. Jinnah Building Defence Road, Off Raiwind Road , Lahore Pakistan
E-mail: director@ciitlahore.edu.pk

Dr. Shahab Alam Malik
Assistant Professor, COMSATS Institute of Information Technology
Chak Shahzad Campus, Islamabad, Pakistan
E-mail:shahabmaliks@gmail.com

Abstract

The present study has evaluated the effect of TQM practices on business performance of manufacturing firms in Pakistan. A sample of 65 managers working in the quality assurance department was taken from these manufacturing firms and their responses were collected using a structured questionnaire. Descriptive statistics were used to demonstrate the effect of different levels of TQM practices on business performance in terms of financial performance, product quality performance, customer satisfaction. The study had also considered organizational level variables like size of firm, year of existence, top management commitment as moderating variables, the results have shown that TQM was implemented only at the first three levels i.e. quality control ,quality assurance and continuous improvement in the selected firms and that top management commitment is the most important variable effecting on TQM implementation which then directly effect on business performance in these manufacturing firms.

Key Words: Total Quality Management, Business performance, Manufacturing Firms.

1. Introduction

Total quality management is one of the most popular and durable management concepts and it has passed through a number of phases since 1920,s. The roots of Total Quality Management (TQM) go back to the teachings of Drucker, Juran, Deming, Ishikawa, Crosby, Feigenbaum and countless other people that have studied, practiced, and tried to refine the process of organizational management. TQM is a collection of principles, techniques, processes, and best practices that over time have been proven effective. In today's businesses there is a growing recognition with in the manufacturing sector that isolated improvements in particular aspects of business are no longer adequate and that a holistic strategy is needed to bring competitive advantage in the market place and this can only be achieved by adaptation of total quality management which is not just concerned with services and process development and customer delivery but also with the relationship with suppliers, customers, commercial and managerial processes and the contribution of all employees no matter where ever they work in the organization.

2. Empirical Researches on TQM

Christos B. Fotopoulus & Evangelos L . Psomas (2009) and Kumar, Dixit Garg and T.K Grag (2009) discussed the impact of TQM practices on quality management results and explains the relationship between different soft TQM practices like leadership, strategic quality planning, employee management & involvement , supplier management, customer focus, process management, continuous improvements and their effect on quality management results in the form of market benefits like increase in profits, improved competitive position, improved performance and increased sales. While customer satisfaction is measured by decline in customer complaints, increase in loyalty, and customer retention rate.

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[*] M.Waqas Raja is PhD student at CIIT Islamabad Campus Pakistan and supervised by Prof Dr. Mahmmod. A. Bodla at CIIT in Lahore, Co-Supervisor Dr. Shahab Alam Malik CIIT Islamabad Campus Pakistan.

Esin Sadikoglw , Cemal Zehir (2009) and Alessandro Brun (2010) investigate the relationship between TQM practices with innovation and employee performance. The theoretical model developed for the study explains how different TQM practices i.e. leadership, training, employee management, information and analysis, supplier management, process management, customer focus, and continuous improvements effects on employee performance which leads to innovation performance and this in later stages effects the firm overall performance.
Ebrahim Soltani, Adrain Wilkinson and Prakash J. Singh, Damien Power and Sum Chee Chuong (2010), Salaheldin Ismail Salaheldin (2009), Ali Bayati (2007) discussed the effect of incongruency of senior and middle managers orientation on TQM programs. They explain the effect of incompatibility between senior managers orientation and assumptions of TQM and middle level managers own thinking about TQM and identify four major assumptions of TQM i.e. emphasis quality, people, organization and the role of senior managers. They concludes that despite TQM being around for many years it is being still driven by an inspection approach and quality control approach, secondly TQM is still a top to bottom approach based on culture of procedure dominated with heavy bureaucratic base, thirdly senior managers focus on control especially of the work form rather then long term continuous improvements.

Wen Yi Sit (2009), Maria Letica S.V (2007), Anand Nair (2006) explains how TQM effects customer satisfaction in the service sector" in their studies the researchers investigate the relationship between TQM practices and customer satisfaction as perceived by manager's perspectives in the service sector. The different TQM constructs considered include leadership, human resource focus, process management, customer focus, strategic planning, and information and analysis and their effect on customer satisfaction is measured for both internal and external customers. The results have shown that leadership commitment has a strong effect on customer satisfaction while the effect of strategic planning and process management has an insignificant effect on customer satisfaction, while customer focus, information and analysis, and human resource focus are found positively related to customer satisfaction.

3. Main Objectives

1. In the current literature huge gaps were identified between the actual practice and implementation of TQM in firms and the desired level of TQM implementation so this study had highlight the current scenario of TQM implementation in the manufacturing sector firms operating in Pakistan.
2. To identify key business performance indicators for measuring business performance in the selected manufacturing firms.
3. The study will be very useful for future researches in the area of TQM implementation in the manufacturing sector of Pakistan.

4. Scope of Study

The study was conducted under the following conditions.

1. The study include firms only from the manufacturing sector i.e., medical equipments, sports goods, electrical equipment, auto manufacturers.
2. The business performance as a result of TQM implementation will be checked only on the basis of three main dimensions i.e. financial performance, product quality performance, customer satisfaction process quality.
3. The study includes both ISO certified and non certified manufacturing firms.
4. The study will categorize firms on the basis of size in three main types i.e. small, medium and large.
5. Data was collected from managers working in functional areas of quality management and operation management in the selected manufacturing firms.

5. Levels of TQM Implementation

Different firms implement TQM in different ways but in general we can classify its implementation in the following five categories.

5.1 No customer concern / No inspection: (Zero Level)
These companies do not focus customers and incorporate management systems to measure or control the quality characteristics of their product and services. According to Kamran Moosa (1999) in countries like Pakistan in many firms usually there is no accountability for poor performance and in some firms its up to the level of torturing the customers.

5.2 Quality Control: (Level 1)

These organizations consider laboratory and testing of products as a main activity of quality management and invest in and develop their products/services management systems, these firms usually have quality control labs and departments testing and measurements make them react to non conformities. Researchers like Prakash J. Singh, Damien Power and Sum Chee Chuong (2010), Shewhart (2000), Dodge (1999) have identified that most companies use statistical process controls for such measurements. While according to Kamran Moosa (2000) most manufacturing firms in Pakistan use quality controls for implementing TQM in their organizations.

5.3 Quality Assurance: (Level 2)

These companies understand that a product is a result of many processes and unless these are controlled effectively quality can not be delivered therefore they try to control all these processes that effect product/service quality. According to Hale Kaynak (2004) and Alessandro Brun (2010) most companies assure quality by using quality programs like ISO 9000, ISO 9000-2000, and other quality tools like Deming prize, affinity diagrams, Pareto charts. While according to Hayat Awan and Ishaq Bhatti (2003) in Pakistan the popularity of ISO 9000 is making companies upgrade their processes from quality control to quality assurance however the degree of implementation varies considerably among different industries and firms.

5.4 Continuous Quality Improvements: (Level 3)

The companies which come under this category do not just confer to the quality assurance but they realize that process improvements are directly proportional to competence, commitment and team work of employees, such organizations mobilize company wide campaigns for continuously developing skills of quality management at all levels and give assignments on weekly and monthly basis in cross functional teams. Researchers like M. Madi Bin Abdullah, Jegak Uli and Juan Jose Tari (2008) and Esin Sadikoglu , Cemal Zehir (2010) identified that companies in the manufacturing industry in Australia use different approaches for continuous quality improvements like just in time (JIT), zero defect mentality and quality circles. While according to Jamshed H. Khan (2000) there are very few firms operating in Pakistan which fall under the category of continuous quality improvements.

5.5Quality Award Models: (Level 4)

These companies are global champions and dominate markets with their products/services. They set bench marks to others and for these companies quality means complete satisfaction of their customers and publics.
Henrick Eriksson & Jonas Hansson (2003), K.A.S.P Kaluarachchi (2010) studied the effect of quality award models in service firms , and identified that these firms use approaches like process reengineering, and computer software packages to enhance quality performance. According to Kamran Moosa and Jamshed H. Khan (2000) in Pakistan no such company exist which fall under this category.

6. Business Performance

Since in this study all four levels of total quality management will be evaluated that's why the effect of TQM implementation will be measured in terms of business performance, after a detail literature review the following dimensions of business performance were considered.

6.1 Product Quality Effectiveness

The quality of a product or service is dependent on the customer expectation in contrast with other suppliers, so when judging product quality it depends who is the customer. According to Mehmet Demirbag and Ekrem Tatoglu (2006), Mahour Mellat Parast (2010) when companies' judge product quality effectiveness internally they measure it in terms of defects rate, rework cost, scrape cost. While Daniel I. Prajogo (2008) have measured product quality effectiveness in terms of the level of reliability it offers and the fitness of use and conformance with expectations.

6.2 Customer Satisfaction

The focus on customer has become a part of quality movement. According to Jarrod M Haar and Chester S. Spell (2008) successful implementation of TQM include customer retention and increase in market share. While according to Carlos Bou Liusar, Ana B. Escrig Tena (2009) customer focus leads to customer loyalty which can be achieved by providing customers with reliable, durable product/service. So customer focus in firms incorporates customer satisfaction, confidence, loyalty and reduction in complaints.

6.2 Financial Performance

The previous researches have shown strong positive relationship between quality improvements and financial performance of a firm Wisner and Eakins (1999).

According to Mehmet Demirbag (2005) and Christos B Fotopoulus and Evangelos L.Posmas (2009) firms that focus on improving the quality of their product and processes leads to improve revenues and reduction of costs.
So the financial performance of a firm as a result of quality initiatives can be measured by the increase in the level of sales, revenue produced, and level of cost performance, the return on investment and assets and by the increase in market share.

7. Firms Characteristics

According to many researchers like Daniel I. Prajogo (2006), Juan Tari and Jose Francisco (2007) and Bowmen (2004) the firms characteristics like size of firm, year of existence and top management commitment play a vital role in quality implementation initiatives in different firms , the bigger the size of the firm the better are the chances of successful implementation but according to the age of firm different researches have shown both positive and negative relationships with successful implementation of TQM. The role of top management commitment has become so important in successful implementation of quality initiatives in firm that most quality models take top management commitment as a separate variable effecting quality performance.

8. Research Questions

The study had checked the relationships different constructs on the basis of the study objectives and previous empirical researches.

1. What is the level of awareness that exist in the manufacturing firms about TQM practices?
2. Which specific techniques of TQM are used in these manufacturing firms?
3. Is there any relationship between the size of the firm and the level of TQM implemented?
4. What is the contribution of top management commitment with the quality management initiatives practiced in the selected firms?

9. Methodology and Research Design

This is a descriptive research study explaining in detail the concepts, theories and researches to identify the different TQM practices implemented and their effect on business performance. Primary data was collected by using a detail research questionnaire having 43 questions which are derived from 18 constructs. The questionnaire was divided in to different parts the first part will determine the level of TQM implementation and kind of TQM practices in the selected firm i.e. (zero, 1^{st} , 2^{nd} , 3^{rd} , 4^{th}) level then the second part will determine the effect of moderating variables identified in the study and the third and final part will determine the effect of implementation of different TQM practices on firms performance (Product Quality Effectiveness , Customer Satisfaction, Financial Performance).

The data was collected from various manufacturers including firms involved in medical equipments and sports goods, electrical equipment and automobile manufacturer. The respondents were managers of these firms working as quality assurance managers, and operation managers. The sample size taken for this study was 65 and a mean score of three to four responses from managers of each firm will be taken as a single response for the firm.
The interference by researcher in this research was minimal, as the researcher had made no manipulations in the actual work setting of the firms and the data was collected from actual organizations operating in the manufacturing sector of Pakistan so the study setting was non-contrived.

9. Data Analysis & Discussion

Demographic variables such as type of firm, area of responsibility, size of firm and whether the firm is certified or non-certified are directly observable so this information is summarized in tale 1 in the demographic profile.
As shown in table 1 the data was collected from sports goods ,automobile, electrical equipment and medical equipment manufacturing in which 26% belong to sports goods manufacturing and 17% from automobile manufacturers, 34% electrical equipment and 15% firms from the medical equipments manufacturers, while 72% respondents where quality managers and 20 % were operations managers and the rest 8 % were working in other departments of the selected firms. In the selected manufacturing firms 66% were small to medium firms having number of employees less then one thousand and 34% were large firms and have more then one thousand employees. As shown in the table 1 the study has taken both certified and non certified firms and 78 % were certified by ISO while nearly 22% were non certified firms. Table-2 explains the different levels of TQM implementation and in level one data shows that 83 % of the selected firms use flow charts and 15 % firms use statistical process control to maintain quality, while 54% firms were using ISO 9001 certificate and 18% were using ISO 9002.

According to the respondents 82% believe these ISO certificates had helped in improving overall quality while 18 % believe it has no effect on quality improvements. Similarly in level 3 86 % respondents think that continuous improvement is fostered in their firm while only 14 % firms there are no continuous improvement initiatives taken in their firms. In nearly 100% of the selected manufacturing firms the respondents believe that there is no quality excellence model followed by the management.

Table-3 explains the relationship of top management commitment and business performance with TQM and the total mean score of 4.7 for question one according to the five point scale clearly indicates that according to respondents top management commitment is vital for TQM implementation. While the total mean score of 3.0 and 3.2 indicates that currently top management is not putting much effort to improve TQM implementation in the selected manufacturing firms. While the total mean score of 4.3 for product quality performance according to the five point scale indicates that TQM initiatives adopted by firms has improved the overall product quality performance.

Similarly the total mean score of 4.5 according to the five point scale indicates that overall customer satisfaction has increased as a result of TQM implementation in the selected manufacturing firms.
While the total mean score of 3.0 for financial performance according to the five point scale indicates that respondents can not clearly relate TQM initiatives with the financial performance of the selected manufacturing firms.

10. Conclusion

The following conclusions were drawn on the basis of above discussion.

1. Most firms in the sports goods , electrical equipments and medical equipments manufacturing are small and medium size firms having less then one thousand employees.
2. According to the managers top management commitment is vital for successful implementation of TQM in the manufacturing sector.
3. The effect of TQM initiatives on financial performance can not be directly measured due to their indirect relationship.
4. Data has confirmed that customer satisfaction and product quality performance has increased due to different quality initiatives adopted in the selected manufacturing firms.
5. Flow charts are the most widely used quality tool used to enhance product quality in the selected manufacturing firms.
6. ISO 9001 quality assurance certificate in mostly used in the selected manufacturing firms.

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Figure 1: Development of Theoretical Framework

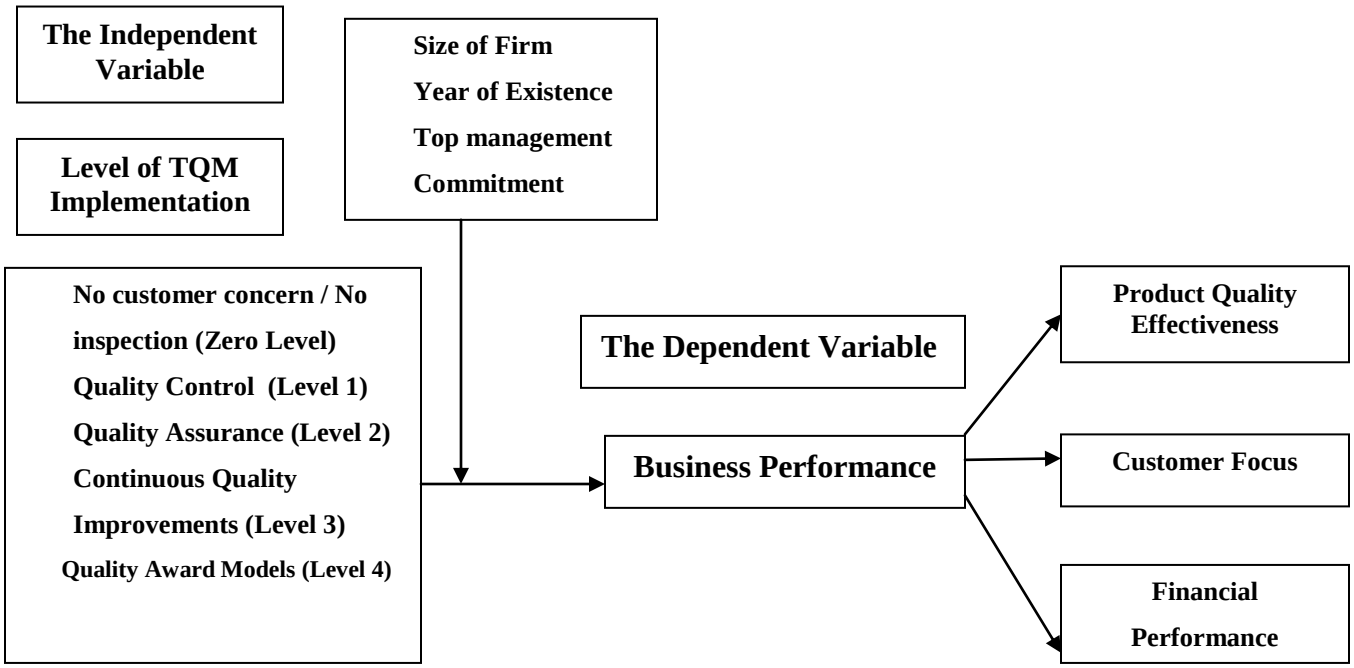

Table 1: Demographic Profile

Type of Firm	**Frequency**	**Percentage**
Sports Goods	17	26%
Auto manufacturers	11	17%
Electrical Equipments	22	34%
Medical Equipments	15	23%
Total	65	100%
Area of Responsibility	**Frequency**	**Percentage**
Quality Management	47	72%
Operations Management	13	20%
Others	5	8%
Total	65	100%
Size of Firm	**Frequency**	**Percentage**
Small & Medium	43	66%
Large	22	34%
Total	65	100%
Certified or Non Certified	**Frequency**	**Percentage**
Yes	51	78%
No	14	22%
Not Responded	0	0%
Total	65	100%

Table 2: TQM Implementation

1st Level		**Frequency**	**Percentage**
Which quality tool is used in your firm	Flow Chart	54	83%
	Statistical Process Control	10	15%
	None	1	2%
Total		65	100%
2nd Level (Quality Assurance Certificate)		**Frequency**	**Percentage**
Which certificate your firm had	9001	35	54%
	9002	12	18%
	9003	4	6%
	None	14	22%
Total		65	100%
Do you think ISO had improved over all quality	Yes	53	82%
	No	12	18%
Total		65	
3rd Level		**Frequency**	**Percentage**
Is CI for quality fostered in your firm	Yes	56	86%
	No	9	14%
Total		65	100%
Which area of CI is concentrated	Product Quality	35	54%
	Process Improvement	18	28%
	People Mgt	4	6%
	Supply Chain Mgt	8	12%
	None	0	0%
Total		65	100%
4th Level		**Frequency**	**Percentage**
Which quality excellence model your firm use	MBNQA	0	0%
	EQA	0	0%
	Others	0	0%
	None		100%
Total			100%

Table 3: Top Management Commitment & Business Performance

Top Management Commitment	**Total Mean Score Agreeness Rating**
According to your opinion how important is top management commitment for quality improvement	4.7
Top management takes on responsibility toward quality improvement	3.0
Top management allocate resources towards quality improvement	3.2
Total	**3.6**
Business Performance	
Product Quality Performance	
Due to different TQM initiatives adopted by your firm the overall product quality performance has increased	4.3
Customer Satisfaction	
Due to different TQM initiatives adopted by your firm the overall customer satisfaction has increased	4.5
Financial Performance	
Due to different TQM initiatives adopted by your firm the overall financial performance has increased	3.0

* Five point Likert Scale where 1= "Strongly Disagree" to 5= "Strongly Agree"