



Nexus between Total Quality Management Practices and Construction Firms' Performance in Pakistan

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ABSTRACT

Construction industry of any country plays a dynamic role in the prosperity and development of that country. It contributes more than any other industry in the economy growth and stability. Continual improvement firm performance can be measured through quality of work and services they provide to customers. However, for companies to compete with each other as well as in global markets they must need to adopt such techniques which are applied in the developed countries. One of the techniques is the application and evaluation of total quality management practices. As, this technique is already applied in other sectors such as manufacturing, services, health and development in the developed countries. So, this study and its findings are based on measuring the effects of total quality management practices i.e., organizational leadership, policy, and strategy, customer focus and process management on firm performance based on employee satisfaction and timely completion of projects. To check and measure the impact of TQM practices 100 construction companies were taken as sample/ These TQM practices were implemented on C-2 category construction companies of Khyber-Pakhtunkhwa, Pakistan registered with Pakistan Engineering Council. The findings of this study concluded that all the listed practices have direct and indirect effects on the enhancement of form's performance.

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1. Introduction

Quality gurus focused and worked on different quality management techniques for the

enhancement of quality performance of firms. The globalization of the market places and need of continual improvements have increased the competition worldwide. So, to compete in the market most of the companies worked on revolution in quality and in 1990's quality revolution spread from manufacturing to public and private services industries. Total quality management was considered one of the best techniques used for continues improvement, to meet quality standards, internal and external customers' needs and expectations in developed countries (Lascelles, & Dale, 1989; Ooi et al., 2011; Yazdani et al., 2016). TQM is a management philosophy that tends companies to do things right first and to guide the companies to improve and enhance its competitiveness, effectiveness, quality planning, quality productions and services, reduced costs, increasing customer satisfaction and loyalty (Dotchin & Oakland, 1992). Total quality management is an integrated program of business management which consists of three principles i.e., total - leads to employee/workforce total involvement; quality - meeting standards and customers' needs and expectations; and management providing total quality atmosphere and surroundings (Witcher, 1994). Furthermore, ten (10) different total quality management practices were identified by (Sureshchandar & Rajendran, 2010) in their study that are; top management commitment and involvement, employee's management, continuous quality improvement techniques, improved technical systems and processes, quality information and data analysis, social authorities, employee satisfaction, customer satisfaction, quality culture of services and quality services cape. So, considering the conceptual relation between competitive advantages and firm performance, it may not be too shocking to claim that total quality management or other similar quality management practices can be used to generate a competitive advantage. Competitive advantage is a result of a policy that creates higher value for a business relative to its competitors, whereas sustainability is present if the enhanced value persists as rivals avoid trying to imitate the advantage (Reed et al., 2000). Total quality management was first experimented by manufacturing industries and then by services industries but for construction industry it is relatively new but it had significantly good impact on companies performnace and competitive business environment (Heravi, & Faeghi, 2014). As far as construction sector concern, the construction industry consists of a very wide range different types of projects having distinct professional natures, complexities and uncertainties, and to deal with such challenges total quality management provide construction industry to plan practical schedules which will support to manage all the interrelated activities, processes, workforce, tasks and resources for the benefit of the companies' performance. For all parties in the construction industry, the TQM philosophy is beneficial. It will continue to appreciate long term relationships, strengthen interactions and convey knowledge and competence throughout the construction sector; and help to achieve the goals, objective and benefits of the company (Alhasanat & Altayeb, 2014).

Today's leadership perspective of TQM practices is becoming a fundamental need of today's world in the construction industry in the emerging as well as developed economies to ensure the completion of the project on schedule, within approved and accepted budgets, to improve performance and productivity as well as to mitigate and minimize losses. Construction industries play a vital role in the development and growth of any nation and country, but it has been a problem to achieve quality standards and international specifications in the construction industries. Significant amounts of money, time and resources are lost each year by the construction industry in projects due to inefficient and ineffective quality management systems and processes in companies which led to numerous problems and issues such as project delays, cost overruns, reworks, changes, conflicts and customer and owner dissatisfaction. Most of the corporate leadership and top management relate quality to cost and the resists to introduce TQM culture in the companies but this mindset must be changed and modified by implementing soft TQM practices to economically improve quality culture in businesses. This study will contribute more to understanding and implementing TQM practices in Khyber Pakhtunkhwa, Pakistan's construction industries in the sense of the performance of the company. Therefore, this study consists

of four total quality management practices i.e., organizational leadership, customer focus, policy and strategy and process management as independent variables. Whereas, dependent variable firm performance can be measured through employee satisfaction and timely completion of projects.

2. Research Objectives

This study focused on below objectives.

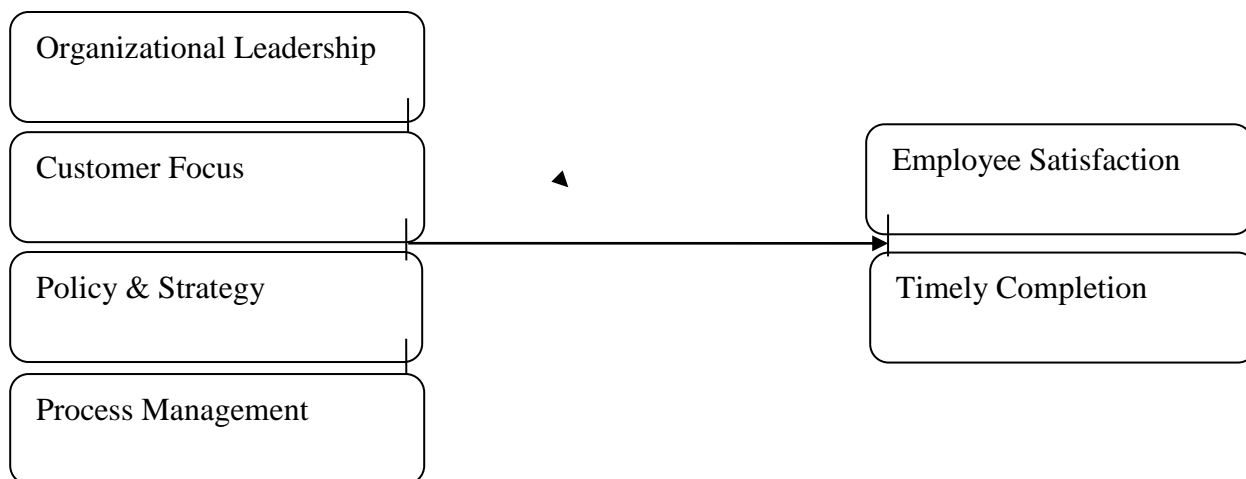
- To examine the firm performance on basis of organizational leadership.
- To examine the firm performance on basis of customer focus
- To examine the firm performance on basis of policy and strategy.
- To examine the firm performance on basis of process management.

3. Research Questions

This study adds to literature the knowledge of following answers to below questions.

- What is the relation/connection between organizational leadership and firm performance?
- What is the relation/connection between customer focus and firm performance?
- What is the relation/connection between policy & strategy and firm performance?
- What is the relation/connection between process management and firm performance?

4. CONCEPTUAL FRAMEWORK



5. Literature Review

During last 4 decades' total quality management and its practices have been focused, accepted and implemented in different sectors like manufacturing, services, health care, public and private sectors, education and banking (Fotopoulos & Psomas, 2009). Seven quality practices of total quality management suggested by Sila and Ebrahimpour (2005) in their study that are top management assistance, human resource management, product design, process management, customer oriented, supplier relationships and quality information. Time and other concern resources will be required for the implementation of total quality management and this will be initiated and managed with the commitment by the upper management of the companies (Jamali, 2010).

Some of the critical success factors of total quality management proposed and recommended in an empirical study that are; top leadership/management involvement, clear organizational vision, quality policies and strategies, proper and realistic planning and scheduling (Baidoun, 2004). Total quality management techniques and practices have been proven one of the basic and beneficial approach to quality management in manufacturing industries and services industries for quality enhancement, firm performance and business profitability in developed countries (Qureshi, & Sharif,

2012). TQM tools is an unified management philosophy that emphasize with other things, such as employee involvement, work as team, fulfilling customer need and requirements, continual improvement, long term quality policies and startegies, minimizing re-work, authentic and valid data and information, restructuring processes and a closer relationship with quality suppliers. And its impact on business performance (Hendricks & Singhal, 2001).

5.1 Organizational Leadership

Organizational leadership is one of the primary techniques of total quality management consisting top leadership, upper management and managing directors which is reponsible for the execution of all managerial elements. Organizational leadership and top management of total quality management practices plays a role of a bridge between organizational vision and missions whereas acts as a facilitator for end users and workforce towards the same organizational vision for quality improvement (Lakshman, 2011). However, there is very less work done in the implementation of total quality management practices in construction industry. Furthermore, the responsibility of organizational leadership/top management is to provide such a quality atmosphere and culture in the company where employees have a clear understanding of company policies and its execution for achieving productive business objectives (Rahman, 2002).

5.2 Customer Focus

Customer focus is one of the salient features of total quality management in which customer-oriented policies are made and formulated by management of companies. The success of all businesses is driven by customers and end users, and for this, companies must consider customers focused policies, suggestions, ideas, needs and requirements into account for customer satisfaction and business success (Powell, 2014). Customer focus as a total quality management practice has a potential to lift the companies and its businesses; if think tanks management of the company make customer-oriented policies and strategies to optimize firm performance. For accomplishing and keeping up quality models, customer criticisms and client grievances must be recorded. Further, its investigation and evaluations must be done at standard interim of time for further improvement (Verhoef, 2013).

5.3 Policy and Strategy

Policy and strategy element of total quality management consist of organizational and company's strategic policies and planning directing quality development and outputs. Strategic planning is the ability of the company to consider and evaluate its positivity and negativity by identifying and predicting its internal strengths, weaknesses, external threats and future opportunities. Moreover, on this base, to make decisions, policies and plans that will enable the companies to move in the right direction in line with its vision. Further stated that for a company to get competitive advantage and edge over rivals they must make effective plans, policies and strategies regarding quality works and outputs (Castaner & Ketokivi, 2004). Quality decision making is associated and related with effective policies and strategies and that every company must have policy making department where critical policy makers will help in making clearer policies regarding company quality development, its goals and objectives. Strategic planning is a structured way to devise, execute, and manage plans and policies that systematically document company's expectations (Arasa, 2012).

5.4 Process Management

Process management is also one of the essential elements of total quality management. Process management of TQM practices is considered a fundamental approach for continual quality achieving, as it not only deals with developing and implementing process with ease but also provide facilitation to manage, evaluate and optimize all the processes in the system of the company (Palmberg, 2010).

Construction industry is one of the vigorous sector which consists of services quality, processes quality and product quality. All these must be managed for the better performance as the process quality will lead to development process with less wastage of resources and product quality will lead to quality and advanced technologies, equipments, machineries and materials (Chou, & Yang, 2012).

6. Research Hypotheses

Main hypotheses of the study are as under;

H1: Organizational leadership has impacts on construction firm performance.

H2: Customer focus has impacts on construction firm performance.

H3: Policy and strategy have impacts on construction firm performance.

H4: Process management has impacts on construction firm performance.

7. Impact of TQM on Sustainability Of Firms

Sustainability is one of the tough challenges for company/organization. Sustainability is comprised of meeting both present and future needs of any business and supported by three piers i.e., social, economic and environmental. Total quality management practices are used in organizations to achieve and attain business excellence in which many of the practices and factors succeed but some of them still need conformance for long term sustainability (Aquilani et al., 2016). Sustaining long term competitiveness and profitability of a business is one of the major issues but with the implementation of total quality management practices in companies. Nowadays this concept has been under serious considerations because quality enhancement and sustainability of economy have changed business nature, culture and perspectives to social, economic, financial and environmental strategies (Tasleem et al., 2015).

For achieving sustained favorable results of organization, long term objectives must be set first and then maintained for keeping business environment upgraded on continual improvement basis (Zairi, 2005). For sustainable organizational development, there is enough literature available on social and environmental piers but there is hardly any detailed information available on economic sustainability (Mishra, & Napier, 2015). However, economic performance and sustainability are fundamental aspects of sustainable business development. So, according to TQM practices, variables such as information and analysis can be helpful in understanding the financial and economic status and this information could be found through annual business reports and financial accounts of companies which will help in maintaining the long-term performance policies (Busu & Nedelcu, 2018).

Economic sustainability of company can be measured with permanently maintaining the need of income for the betterment of humanity taken from the progressive capital stocks and this can be easily managed with the implementation of TQM practices under the leadership and top management in the light of quality policies and strategies made (Spangenberg, 2005). Whereas, for organizational sustainability and some highlighted drivers for economic sustainability were identified which can improve as well as deteriorate business performance, these were Cost and risk, innovation, work satisfaction, turnover, price and profit and company's reputation (intangible and brand values) (Nawaz & Koc, 2018). Khan et al. (2020) and Khalid et al (2020) purported that practices such as HR, TQM and training & development etc. enables organizations to cope effectively in the market and thus efficiently compete in the market.

8. Research Methodology

In our research, a detailed questionnaire is used adopted from works of Honarpour et al. (2018),

Miyagawa and Yoshida (2010) and Nouban and Ghaboun (2017). A sample of 100 construction companies of uniform size and category and the questionnaires were on Likert scale ranges from 1 to 5 i.e., (1-Very low, 2-Low, 3-Medium, 4-High, 5-Very high). 90 out of 100 companies responded and gave answers to all questions. After the completion of data collection, the data was then screened through SPSS.

8.1 Data Analysis

For field work and studies, the internal consistency method works quite well and productive as it refers to the degree to which items in the sets are homogeneous. The Cronbach’s alpha values of all variables are analyzed and shown in table below;

Table 1.1: Cronbach’s Alpha Values

Variables	Cronbach’s Alpha	No. of items
Independent Variables		
Organizational Leadership	0.736	5
Customer Focus	0.823	5
Policy and Strategy	0.737	5
Process Management	0.733	5
Dependent Variables		
Employees Satisfaction	0.816	8
Timely Completion	0.870	11

8.2 Factor Analysis

Factor analysis, also known as dimension reduction is a technique carried out to summarize data and to reduce data by identifying and then eliminating the underlying factors present in variables that are small in size than the measured variables because these underlying factors causes covariance among the measured variables. The factor loadings of items with values equal to 0.5 or above were considered for further analysis (Hair, et al., 2010; Pallant & Manual, 2007). Similarly, sample adequacy for each variable is also checked with the help of Kaiser-Meyer-Olkin (K.M.O) as the values closer to 1.0 specify the more effectiveness of factor analysis with the data but less than 0.5 specify unproductive factors. Bartlett’s test of sphericity is also checked for significance level, i.e., 0.000 to 0.05 (Seber & Lee, 2012).

All the above assumptions of factor analysis are checked for all variables and the findings are shown in table 1.2 as under;

Table 1.2 Factor Analysis Summary

Variables	K.M.O	Bartlett's test	Communalities table values	Deleted items
Independent Variables				
Organizational Leadership	0.778	$P = 0.000$	0.423 (Minimum value found)	2 items
Customer Focus	0.795	$P = 0.000$	0.473 (Minimum value found)	1 item
Policy and Strategy	0.729	$P = 0.000$	0.590 (Minimum value found)	No items
Process Management	0.724	$P = 0.000$	0.241 (Minimum value found)	2 items
Dependent Variables				
Employees Satisfaction	0.864	$P = 0.000$	0.355 (Minimum value found)	6 items
Timely Completion	0.817	$P = 0.000$	0.279 (Minimum value found)	2 items

8.3 Multicollinearity

The multicollinearity was checked and no issue of multicollinearity was found as all the values were in acceptable ranges for Tolerance and VIF values. Tolerance values greater than 0.1 and VIF values less than 10 shows that there is no issue of Multicollinearity.

Table 1.3 Multicollinearity

Model	Collinearity statistics	
1	Tolerance	VIF
Policy and Strategy	.445	2.247
Customer Focus	.590	1.696
Process Management	.412	2.426

Table 1.4 Organizational Leadership

Model	Collinearity statistics	
1	Tolerance	VIF
Process Management	.435	2.297
Organizational Leadership	.655	1.527
Policy and Strategy	.355	2.814

Table 1.5 Customer Focus

Model	Collinearity statistics	
	Tolerance	VIF
1		
Customer Focus	.609	1.643
Process Management	.581	1.721
Organizational Leadership	.846	1.182

Table 1.6 Policy and Strategy

Model	Collinearity statistics	
	Tolerance	VIF
1		
Organizational Leadership	.669	1.495
Policy and Strategy	.496	2.017
Customer Focus	.636	1.572

8.4 Regression Analysis

Table 1.7 Regression Analysis of IVs with Employee Satisfaction

Model Summary			
Model	R	R-Square	Adjusted R-Square
1	0.803	0.645	0.630

Table 1.8 ANOVA

Model	Sum of squares	Df	Mean squares	F	Sig.
Regression	40.042	4	10.011	43.193	0.000
Residual	22.018	95	.232		
Total	62.060	99			

Table 1.8 Coefficients

Model	Unstandardized Coefficients		Sig.
	B	Std. Error	
1 Constant	.492	.362	.178
Organizational Leadership	0.389	.095	.000
Customer Focus	-.285	.082	.001
Policy & Strategy	1.042	.129	.000
Process Management	.264	.097	.008

Table 1.9 Regression Analysis of IVs Timely Completion

Model Summary			
Model	R	R-Square	Adjusted R-Square
1	0.828	0.686	0.673

Table 1.10 ANOVA

Model	Sum of squares	Df	Mean squares	F	Sig.
1 Regression	29.904	4	7.476	51.983	0.000
Residual	13.663	95	.232		
Total	43.567	99	.144		

Table 1.11 Coefficients

Model	Unstandardized Coefficients		Sig.
	B	Std. Error	
1 Constant	.159	.285	.579
Organizational Leadership	.261	.074	.001
Customer Focus	.054	.065	.405
Policy & Strategy	.342	.102	.001
Process Management	.316	.076	.000

9. Discussion and Conclusion

In the above tables 1.3 and 1.4, the values of R show that all the independent variables i.e., organizational leadership, customer focus, policy and strategy and process management and the dependent variables i.e., employee satisfaction and timely completion of projects varies together with 80% and 82.8% of the time respectively. Similarly, values of R-Square shows that 64.5% of total variation in employee satisfaction is due to the listed variables and 68.6% of total variation in timely

completion of projects is due to the listed variables of the current study. In ANOVA F-test tells us the overall relationship of variables in the model, consisting F-values of 43.193 of employee satisfaction and 51.983 of timely completion. Coefficients consisting of un-standardized coefficient (B) representing the variation of dependent variables caused individually by independent variables are found significant at $P < 0.05$, except customer focus relation with timely completion at $P = 0.405$.

Firm performance is strongly associated with the quality management of the firm so the current study investigated and contributed the effects of total quality management practices on construction firm performances of KPK, Pakistan. Based on relevant literature review and after data analysis and findings, we concluded a no. of conclusions which are discussed variable wise as under;

Organizational leadership/top management of the firms was found positively and significantly related to employee satisfaction and timely completion of the projects in such a manner that it will increase employee satisfaction and chances of timely completion of projects to 38.9% and 26.1% respectively which will result in enhancing the construction firm performance.

Policy and strategy of the firms was also found most significant and positively related to employee satisfaction and timely completion of the projects and will increase employee satisfaction and chances of timely completion of the projects to 104.2 % and 34.2 % respectively which will increase construction firm performance.

Customer focus or customer-oriented practice of TQM was found significant to employee satisfaction but had negative impact on employee satisfaction while on the other hand customer focus has weak significance relation but positive impact up to 5.4% on timely completion of projects which will intensify construction firm performance.

Process management practice of TQM was found significant to employee satisfaction and timely completion of projects and had a positive impact up to 26.4% on employee satisfaction and 31.6% on timely completion of projects which will definitely intensify construction firm performance.

10. Research Limitations

This study is limited to a specific category of construction companies, i.e., C-2 KPK, Pakistan and hence the findings cannot be generalized to the entire construction industry. This study is restricted to public sector companies only. In current study we target only 100 construction companies due to time and other resources limitations.

11. Future Research Directions

Current research work can be extended by other researchers to a wide range area in the future. Pakistan engineering council should direct registered public companies to establish research and development departments and then they should allow researchers to thoroughly examine and analyze their companies for better performance. Current research work is restricted to public sectors but for future research work should include private sectors so that to magnify scope of work and performance. Some other variables may be included in total quality management practices such as human resource management, knowledge management, quality culture, project management, scheduling projects and quality innovation. Final recommendation is the implementation of current research work in other sectors like manufacturing, services, design and development etc. which will boost their businesses in the market.

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