

## Assessment of Total Quality Management Practices and Organizational Development. (The case of Telecom Services Sector of Pakistan)

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**Abstract:** The main purpose of this study is to determine the various benefits an organization can derive from the application of total quality management practices, or the relationship between total quality management and quality outcomes/benefits in services sector of telecom industry of Pakistan. The study is based on primary and secondary data. Eight most important constructs were found through literature review for conceptual framework in this study. Primary data is collected through questionnaires. The same questionnaire was used in comparison of TQM practices in different countries such as India, USA, Mexico, China and Norway. The theoretical framework adopted is by Raghunathan et al. (1999). Findings revealed that TQM practices and implementation have positive effects on quality benefits or outcome (productivity, profitability, competitive position, reduce customer complaints, cost reduction, reduce rework level, reduces scrap level, stay in business) in services sector of telecom industry of Pakistan. Benchmarking also plays a significant role in the development of organizations. In addition to the research data, findings from different field studies and other research works have further supported conclusion drawn from this research, that TQM practices have positive effect on organizational development. The findings based on this empirical research would be useful to both decision makers and researchers.

**Keywords:** total quality management; quality outcomes/benefits; Pakistan; telecommunication industry, TQM variables.

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### 1. Introduction

The TQM approach introduced and started in early 1920s from the “production quality control ideas”. In mid 1980s total quality management (TQM) concept was developed in Japan and can be evidenced in the work of the Juran (1989), Deming (1986), Ishikawa (1985) Feigenbaum (1983) and Crosby (1979) (Hackman and Wageman, 1995).

In TQM system, implementation of performance measurement depends on the TQM principles such as leadership, quality planning training, supplier and process management, continuous improvement and learning. (Claver et al., 2003).

New comprehension of TQM is six sigma, and according to (Jung Lang Chang, 2008) both TQM and six sigma emphasize on evaluation system of quality index and taking correct action to reduce the defect rate of system. According to (Therese A. Joiner, 2007) TQM practices are helpful in improving organizational performance and for the TQM to work well, a culture supportive of TQM practice is crucial. TQM is a management philosophy that combines all organizational functions for the satisfaction of customers’ needs and organizational objectives (Hashmi, 2000 & 2004).

Different researchers have different findings, related to effects of TQM practices and implementation. A number of researchers concluded that TQM implementation has effect on firm’s business performance, whereas others stated that it does not lead to improvements in firm’s business performance. According to (Harnesk and Abrahamsson, 2007), TQM has both avid supporters and strong opponents, on one hand it is supposed to be manipulative, on the other it is believed to be employee empowering, similarly some other conflicting views are that TQM brings collectivism versus TQM brings individualism and TQM leads to standardization versus TQM brings innovative learning. But now days mostly researchers emphasize on quality management programs for organizational development and getting maximum benefits.

During the 1980s and 1990s, TQM was broadly seen as a drastic change in management and began to influence national business systems. TQM is often referred as a “social movement” in the literature. (Hackman and Wageman, 1995).

According to (Samir Baidoun, 2003) factors such as top management commitment, leadership, people management, strategy, policy, partnership, management of processes and resource management are generally considered as the initial inputs to the implementation process of TQM. TQM can be defined as a comprehensive and universal management philosophy aimed at continuous improvement in all functions of an organization and satisfying customer’s need and requirements by providing quality services under the leadership of top management. (Demirbag et al., 2006).

Saravanan & Rao, (2007) studied that effective implementation of TQS, continuously increases quality and performance of an organization. According to (Sharma & Hoque, 2002; Kanji & Sa 2007) public sector organizations adopted and practiced TQM for continuous improvement. To determine the TQM practices and its impact on organizational development, eight basic pillars of TQM have been identified for this study through literature review.

- Top management commitment
- Strategic quality planning process
- Quality information and analysis
- HRD
- Quality assurance
- Customer focus and satisfaction
- Public responsibility
- Benchmarking

To promote organizational commitment, top management commitment will be helpful (Everett, 2002; Buch and River, 2002). In a global market the success of organization will depend on the abilities of quality leader or managers in terms of teamwork, knowledge, skills and problem solving. According to (Karia and Assari, 2006; Chang, 2006) TQM philosophy emphasizes the role of internal and external suppliers, involvement of employees and customers, to seek of continuous improvement.

Performance methods and performance measures favored by TQM adopters are studied in eight fields: production, finance. Employee relations, market, quality of product and services, quality of suppliers’ products and services, productivity and customer satisfaction, (V. Kumar, 2008). Different writers and Quality gurus strongly emphasize the importance of strategic planning process based on total quality (Deming, 1986; Sinclair and Zairi, 2001; Dayton, 2001; Sureshchandar *et al.*, 2001; Crepin, 2002; Hitchcock and Willard, 2002). Strategic planning process for TQM is always helpful in implementing and practicing TQM principles effectively.

Dervitsiotis, (2000) states that it is credible that not only consulting firms but also organizations such as the American Productivity and Quality Centre, and the European Foundation for Quality Management are actively devoted in the promotion and training in benchmarking as a fundamental approach of TQM to achieve business excellence.

Due to accelerated technological development in global telecommunication market, large number of changes and transformations has occurred in world economy.

However sudden growth in contributor and sponsor base in Pakistan has caused network blockage or congestion and service quality problems. Large numbers of new subscribers are trying to compete especially in rural areas due to decrease in the cost of handsets. In growing telecom markets of Pakistan, if mobile companies want to get profit and get competitive edge they have to avoid just competing on price, they will have to adopt superior quality services and innovative feature. Mostly, telecommunication organizations in Pakistan just concentrate on marketing strategies and spend large amount of money on advertisement and marketing tools. Marketing strategies are useful but most important and sustainable factor for growth and

profitability is practicing and managing quality programmes. TQM results in innovation and cost reduction thus leading to profitability in the long run.

## 2. Objectives

The main purpose of this research is:

- 1) To assess the effects of TQM implementation on overall business performance in services sector of Telecom industry of Pakistan.
- 2) To analyze the extent of benefits realized by practicing TQM.
- 3) To assess the significance of TQM variables or principles for organizational development

## 3. Hypotheses

In the light of above objectives the following hypotheses are:

- H1:** TQM principles help to enhance performance of an organization in services sector of telecom.
- H2:** The extent of use of benchmarking is significantly related to the quality performance.
- H3:** The extent of implementation of quality assurance is significantly related to the quality performance or benefits of organization.
- H4:** Benchmarking also leads to customer satisfaction

## 4. Research Methodology

In this study, the questionnaire survey was used to obtain information about TQM practices and overall business performance from different telecom companies in Pakistan (PTCL, Mobilink, Telenor, Warid, and U-phone). That data was used to examine the effects of TQM practices on the development and performance of these companies. The type of samples and the number of organizations were determined on the basis of meeting the information and requirements for the research. The survey instrument adopted in this research was a pre-tested questionnaire with some modifications that were suitable for this study. The theoretical framework by Raghunathan et al (1999) was adopted in this survey. The questionnaire was previously used in comparison of quality management practices in different countries such as the India, USA, Mexico, China, and Norway. The questionnaire consisted of 53 related questions in nine categories. These categories correspond to the US Malcolm Baldrige National Quality Award (MBNQA) criteria, which has been used for the evaluation of quality management in many of US organizations (Pannirselvam et al., 1998).

There were 105 respondents and majority were related to top, middle management and supervisory level. The items were written in the form of statements to which the respondents responded using a five-point Likerts type scale (ranging from very high to very low). The research questionnaires were sent to human resource management department in the sampled organizations; because HRM department was dealing with these type of matters in these organizations not a quality management department directly.

A conceptual framework (depicted in figure 1) was designed to test the hypotheses. This framework consisted of eight independent and one dependent variables.

Dependent variable Y = Quality outcomes/benefits of organizations

Independent variables  $X_1$  = Top management commitment,

- X<sub>2</sub> Strategic quality planning process,
- X<sub>3</sub> Quality information and analysis,
- X<sub>4</sub> HRD,
- X<sub>5</sub> Quality assurances,
- X<sub>6</sub> Customer focus and satisfaction,
- X<sub>7</sub> Public responsibilities,
- X<sub>8</sub> Benchmarking

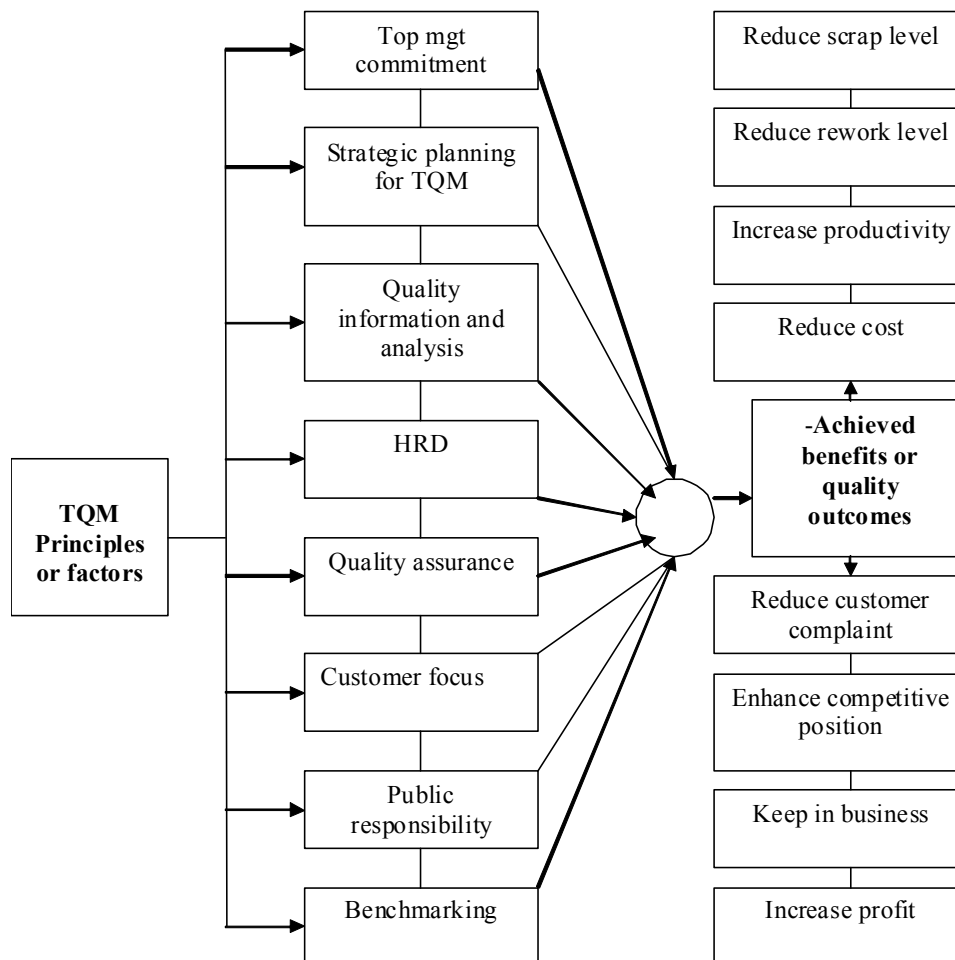
The multiple regression equation estimated from sample data then took the following form

$$Y_i = a + b_1X_{1i} + b_2X_{2i} + \dots + b_kX_{ki}$$

Multiple regressions used to test the model were conducted using SPSS.

Three statistical procedures were used to analyze the data, such as, descriptive statistics, Pearson product-moment correlation coefficients and multiple regressions. In this study descriptive statistics were used to check variables for the violation of normality distribution assumptions. The correlation matrix was calculated to determine the relationship between dependent and independent variables and to determine the multicollinearity is a problem for the model. A multiple regression analysis was used, to determine the effect of each independent variable on quality outputs / benefits or model.

Figure 1. Conceptual Framework for TQM Practices and Benefits in Telecommunication Industry of Pakistan



Source: self-made

## 5. Data Analysis and Results

### 5.1 Relationship Between TQM Principles and Quality Outcomes or Benefits

The relationship between total quality management (TQM)'s principles and quality outcomes of an organization was examined by using Pearson product-moment correlation coefficient. The theoretical model of TQM practices and quality benefits of organizations are, incorporate and four hypotheses was tested simultaneously.

In correlations analysis, relationship between TQM principles and quality outcomes or benefits was positive. Strategic quality planning ( $r=0.361^{**}$ ), HRD ( $r=.352^{**}$ ), quality assurance ( $r=.449^{**}$ ), customer satisfaction ( $r=.298^{**}$ ) and benchmarking ( $r=.587^{**}$ ) had positive and sufficient effect on quality outcomes or benefits of organizations in telecom industry of Pakistan. These TQM factors play expressive role into the development of telecom companies of Pakistan

Top management commitment ( $r=.145$ ), quality information and analysis ( $r=.151$ ), public responsibility ( $r=.215^*$ ) had also positively related with quality benefits of the organization but had less effect on quality outcomes or benefits of telecom companies of Pakistan. Benchmarking and quality assurance had strong positive effect on business performance of the telecom companies of Pakistan and they play a distinctive role into the development of organization. So conclude from data analysis that there are positive relationship between all TQM principles and quality benefits of the organizations. If TQM principles are implemented effectively more quality outcomes can be de achieve. These results are also supported by the work of (Therese. A. Joiner, 2007), who emphasis the effective implementation of TQM practices into the organizations and elaborate that TQM practices are positively correlated with the performance of the organization.

### 5.2 Relationship Between Benchmarking and Customer Satisfaction

There was strong positive relationship between benchmarking and customer satisfaction, ( $r=.534^{**}$ ). This mean that benchmarking plays a significant role in customer satisfaction, when companies will practice benchmarking as a TQM principle, than enhancement of quality and innovation will occur, as a result customer will satisfied .

**Table 1.** Correlation between TQM principles and quality outcomes or benefits

	Quality outcomes/ benefits	Top management commitment	Strategic quality planning	Quality information & analysis	HRD	Quality Assurance	Customer Satisfaction	Public responsibility	Benchmarking
Quality Outcomes or Benefits	1								
Top management commitment	.145	1							
Strategic Quality planning	.361(**)	.302(**)	1						
Quality information & analysis	.151	.165	.222(*)	1					

HRD	.352(**)	.175	.269(**)	.380(**)	1				
Quality Assurance	.449(**)	.171	.254(**)	.153	.513(**)	1			
Customer Satisfaction	.298(**)	.498(**)	.183	.263(**)	.436(**)	.459(**)	1		
Public responsibility	.215(*)	.324(**)	.216(*)	.081	.268(**)	.271(**)	.452(**)	1	
Benchmarking	.587(**)	.253(**)	.362(**)	.323(**)	.541(**)	.561(**)	.534(**)	.336(**)	1

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

\* Correlation is significant at the 0.05 level (2-tailed).

In this study two questions were trying to answer. How well the eight measures of total quality management identify and influence quality benefits or outcomes and how much variance in quality benefits scores can be explained by scores on these eight scales? Secondly which variable distinctively and significantly influence on quality benefits? To analyze and investigate these questions and test hypotheses; Standard multiple regression was considered an effective statistical technique for data analysis. Initial and basic analyses were performed to confirm no violation of the assumptions of normality, linearity, and homoscedasticity

### 5.3 Quality Benefits Perceived by TQM Variables in Model

Model summary is presented in Table 2, R is called multiple correlation coefficient, measure the degree of relationship between a variable and its estimate from the regression equation. Result shows in the model are that, the R is .62, which mean, strong positive relationship between quality benefits and all TQM principles or practices. According to (Tabachnick and Fidell, 2001), for the best judgment and evaluation of the precise population value, the Adjusted R square statistics is use.

R square is called coefficient of multiple determination and lies between 0 and 1. This tells how much of the variance in the dependent variable (quality benefits) is explained by the model (which includes the variables of Total quality management). Value of R square in this study is .393, and in percentage that become 39.3%, its means that this model explains 39.3 percent of the variance in quality benefits and outcomes.

**Table 2.** Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.627 <sup>(a)</sup>	.393	.342	8.18551

Table 3; present ANOVA, use to determine the statistical significance of the result. This tests the null hypothesis that multiple R in the population equals 0. The model in this study reaches statistical significance of .000, this really means  $p < .0005$ .



Table 3. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4165.022	8	520.628	7.770	.000 <sup>(a)</sup>
	Residual	6432.240	96	67.002		
	Total	10597.262	104			

A Predictors: (Constant), Benchmarking, Top Mgt, Quality inform and analysis, Public responsibility, Strategic Quality planning, Quality Assurance, HRD, Customer Satisfaction

B Dependent Variable: Quality Outcomes or Benefits

#### 5.4 Contribution of Variable in the Model

Another important thing in this research is, to know which variable included in the conceptual frame-work add more influence on dependent variable. That can be determined through the information given in Table 4, labeled regression coefficients.

By analyzing the Beta values of standardized coefficients it is easy to determine the contribution of each independent variable. In Table 4, largest value of beta coefficient is .471, and that is for Benchmarking. Its means, when the variance of all other variables in the framework is controlled, this variable has greater influence and makes the strongest contribution to explaining the dependent variable. The Beta value for quality information and analysis is relatively lower (-0.53).

To determine the statistically significant and separate or exclusive contribution of each variable to the equation, will check the value in the column marked Sig. the variable will make significant or distinctive contribution in the dependent variable, if the Sig value will be less than, .05, (.01, .0001etc) . If value is greater than .05 then can conclude, variable is not significantly related to the dependent variable and have no distinctive influence on the dependent variable. That can be due to the overlap with other independent variables in the framework. In this case, benchmarking (.000) make a unique, and statistically significant, contribution to determine the quality benefits. Sig value of Strategic quality planning is 0.057 and that also play a significant role to determine the, quality benefits, at some extent.

Table 4. Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	28.604	9.809		2.916	.004
	Top Mgt commitment	-.034	.108	-.030	-.316	.753
	Strategic Quality planning	.170	.088	.174	1.927	.057
	Quality information and analysis	-.057	.097	-.053	-.592	.555
	HRD	.004	.097	.005	.046	.963
	Quality Assurance	.139	.087	.167	1.607	.111
	Customer Satisfaction	-.040	.130	-.035	-.309	.758
	Public responsibility	.002	.063	.002	.026	.979
	Benchmarking	.439	.105	.471	4.177	.000

A Dependent Variable: Quality Outcomes or Benefits

The results of the analyses presented above allow us to answer the two questions posed at the beginning of this study. Framework of this study, which includes, top management commitment, strategic quality planning, quality information and analysis, HRD, quality assurance, customer satisfaction, public responsibility, benchmarking, explains 39.3 percent of the variance in perceived quality benefits (Question 1) and of these eight variables, benchmarking makes the largest contribution ( $\beta=.471$ ), although strategic quality planning process also made a statistically significant contribution ( $\beta=.174$ ) (Question 2)

## 6. Conclusions

In conclusion, it was also important to assess this study in the context of its limitation. Limitations of this study were; data used to test the hypotheses and model were collected from only five service telecommunication companies. So the generalization is bounded and restricted for manufacturing companies in telecommunication industry.

Research findings can be biased to a certain degree and the data would not be very reliable because customer satisfaction data were collected from respondents not from customer. Primary data (questionnaires) was based on respondent perceptions and views about different factors of TQM. However these limitations and restrictions in the study leave future ground for investigation and analysis on the subject.

All four hypotheses were confirmed by the data. There are some practical assumptions or implications of research findings, obtained from the questionnaire survey. Like TQM practices have positive effects on benefits of organizations or organizational development. Benchmarking and strategic quality planning are the conclusive and crucial factors in determining the success of organizational development. Findings revealed that it is not necessary for all the TQM elements to be contributed equally in the quality outcomes or benefits of organizations. In this study top management commitment was not playing significance role in quality benefits. This situation does not mean that this construct is not important. Instead; organizations should identify and determine the problem areas of this construct and should try to solve that.

TQM practices and implementation often requires a long-term effort and a great deal of energy, money, patience and management attention. Although this study was conducted for telecom industry of Pakistan, organizations in other countries can also use it as reference, since the existing quality management knowledge was used to develop conceptual frame work. Therefore, many principles and practices presented in this study can be used for organizations in other countries. The fact is that the basic philosophy of TQM is applicable to any type of organization. Some principles and practices presented in the study are important and key to the success of any organization.

It was also concluded that the TQM principles and practices framework developed in this study, can also be used in practice and can helpful to improve the TQM programme in organization. The conceptual framework in this study provides detailed information on the elements and practices of TQM and indicators of overall business performance, which can be useful for organizations that are planning TQM. Study can positively encouraging those organizations that have not decided whether to implement TQM, and provide specific benefits of a number of TQM practices for that organizations.

This study was conducted in Pakistan but in present time period almost the whole market had adopted itself to globalization so it will not be surprise to recommend that the research findings have global applicability and it is not just for the use of academics and business environment of Pakistan.



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