Relationship of Total Quality Management with Knowledge Management and Organizational Culture

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Abstract   *The study is an empirical exploration into TQM practices in Pakistani higher education with a focus on determining relationship between the variables: Knowledge Management (KM) and Organizational Culture (OC) in the context of higher education in Pakistan. It employed a quantitative paradigm to the investigation with correlational design. All the university teachers comprised the population of this study. Six public sector universities of Punjab were randomly selected. The results of the analysis showed all the three variables summed mean as 3.41, 3.3, 3.5 respectively all indicating a minor level of the presence of the TQM practices. OC showed relatively higher favorable response. The inferential statistics revealed that the relationship between OC and KM was positive, moderate and statistically significant (r=.491, p<.05). Demographical variables included respondents' gender, qualification, experience. Gender and Qualification was found to have no influence on KM and OC, while experience showed significant effect on the two variables.*

Key Words: Knowledge Management, Organizational Culture, TQM, Higher Education

JEL Classification: J53, M54, I23

Introduction

Zakuan, Muniandy, Saman, Ariff, Sulaiman, and Jalil, (2012, p. 2) described quality as "The word quality itself stems from the Latin *qua litas,* which means "of what kind." To approach understanding from etymological perspective may or may not be useful for practical reasons, however, it seems a good start to unfold the concept of quality from the etymological perspective. Quality thus becomes a prominent characteristic of objects with which the idea of quality is associated. The etymological definition cannot be ignored while equally considering the contextual features of understanding quality is also important

There are studies in different contexts to explore which aspects are highly associated with the success of any organization. Hoang, Igel, and Laosirihongthong's (2010, p. 948) study shows that the TQM principles enhance innovation in the organization. They have also indicated that the company size, industry type and degree of innovation influenced the degree of TQM implementation. Ahmed and Shafiq (2014) found organizational influences shape organizational performance.

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In the context of developing countries, higher education issues are even more challenging especially in terms of equity, equality and quality of education (Claver, Tan & Molina, 2003; Elton, 2018). These challenges have constantly put the policy makers and administration to look for the best ways to meet those challenges by exploring different ways and means, which are sure ways of promoting efficiency in the system (Duran, Cetindere, Sahan, 2014; Elton, 2018).

The education system in Pakistan is struggling to improve its effectiveness and efficiency (Government of Pakistan, 2009). Therefore, many approaches are being practiced in order to achieve the quality of education.

The success stories of the TQM models around the world, especially in developed countries have attracted developing countries also to apply this model of management in their organizations (Ang, Li, Tang, & Chong, 2011; Flynn, Schroeder, & Shakakibara, 1995). Some aspects are already considered but TQM is such an approach which has almost accumulated all the best practices of successful organization (Goetsch, & Davis, 2014). In the context of developing countries few studies suggest the application of TQM practices in those countries is far from satisfactory, in spite of efforts being put to get the fruits of TQM principles and practices (Elton, 2018; Huq & Stolen, 2005).

TQM and its related variables have been studied in advanced countries, and there is an organization that evaluated organizational performance based on the criteria provided by TQM as a management theory (Hung, Lien, Fang, & McLean, 2010: Chang & Lo, 2005).

There is a lack of literature on such studies of TQM in Pakistani context which justified examining the grounds through researcher. The aim of this study was to see TQM in the context of Pakistan. It may validate the scales used to measure the variables of TQM in another context also. A survey questionnaire developed with the help of literature and other scales applied in different context has been suited to the context of Pakistan. The study has focused on how the TQM principles practiced in the institution correlate with the institutional processes of Knowledge Management and the Institutional Culture. The KM and OC are such important factors that can indicate the quality of education in the public sector universities.

The study was based on the assumption that though TQM is not in full use however, some of its component principles may be in use in different forms. This study will bring forth the information on the level of practices that may correlate with TQM in the educational institutions of higher education in Pakistan. Two important questions were sought to answer through this study: (1) to what extent application of the TQM principles are observed within the HE system of Pakistan which seem to struggle to bring its system at par with the international community? (2) Whether TQM has any relationship with other management processes such as organizational culture and knowledge management, under implementation stage in Pakistani context? This research study thus was conducted to add to the body of knowledge by exploring about to what extent TQM practices are being reported in context of Pakistan, the relationship between Total Quality Management, Knowledge Management and Organizational Culture from Pakistani context. The study also aimed to study the effect of demographical variables on the relationship between the three variables. The variables Organizational Culture and Knowledge Management being the dynamic variables of any

organization also provide a justification to establish their role in the overall quality of institution.

Hypotheses

The following research hypotheses were poised at the outset of the study both in null and alternative form:

Hypotheses

H_01: There is no significant relationship between TQM and Knowledge management and Organizational Culture

$H_0 2$: There is no significant difference between the gender regarding the practices of TQM and Knowledge management and Organizational Culture in their institution

H_04: There is no significant difference between the respondents with different qualification levels regarding the practices of n TQM and Knowledge management and Organizational Culture in their institution

$H_0 5$: There is no significant difference between the respondents with different experience levels regarding the practices of TQM and Knowledge management and Organizational Culture in their institution

Literature Review

TQM as an approach to organizational management has stemmed from the work of many experts for example, Glaser (1993) realized the importance of context in determining and defining quality of schools as educational organization. In educational context, students and their parents are 'customers' who are to specify what quality is. Thus, countries are making efforts to focus on such a quality in educational sector also by measuring students' and their parents' satisfaction with the facilities and services they are provided in their institutions (Gruber, 2010; Khan, 2013; Martirosayan & Saxon, & Wanjohi, 2014). From the definition of quality with customers' perspective, it seems more appropriate to define quality of products especially manufacturing goods from the customers' perspective. The full application of this definition in educational context may not be appropriate as the state takes responsibility of the education system and as producer it has also interest in the 'service' or 'production' of knowledge, in some case, more than the 'customers' want. There are objections to labeling the learners as customers (Goetsch, & Davis, 2014), however there can surely be no progress without some degree of satisfaction by the students even if they are not considered as customers (Aziz, Mahmood, & Bano, 2018; Gruber, 2010; Kanioglu, Altinay, Dagli, Altinay, Soykurt, & Sharma, 2017).

Total Quality Management has its own history of evolution. TQM is a struggle to achieve organizational excellence, which inarguably depends on many dimensions of an organization (Aziz, Mahmood, & Bano, 2018; Ellis, 2018; Goetsch, & Davis, 2014). The roots of TQM as management philosophy come from the idea of quality. Ishikawa (1985) defined quality as customer satisfaction and it includes the "quality of people, processes and all other aspects of an organization" (Goetsch, & Davis, 2014, p. 2; Ellis, 2018).

Robbins (2001) defined TQM as "a philosophy of management that is driven by the constant attainment of customer satisfaction through continuous improvement of all organizational process" (as cited in Suleman & Gul, 2014, p. 124; Ruben, 2018). The level

of emergence and awareness of Total Quality Management (TQM) has, however, increased considerably over the past few years (Prajogo, & Sohal, 2002; Ruben, 2018). There are studies that also reveal that the relationship between TQM and organizational performance is strong and positive (Flyn, Shroeder & Sakakibara, 1994).

The concepts of service quality are even more relevant in the context of education where there are no real products to conceive, as a result, the service provided will be used as yardstick the competitive advantage of educational institutions Higher Education in terms of the quality of the experiences they create in them. Teaching is a service and learning is an experience the quality of which is the aim of higher education (Ellis, 2018; Elton, 2018, Khodyari & Khodyari 2011, p. 38).

Suleman and Gul (2015) indicated another aspect of an organizational development with which TQM has relevance. According to them, the involvements of all workforces need to be given importance in the process of development. Such a development also demands a long-term strategic planning and the strategic action can only be successful if every human and non-human resources of an organization are fully utilized. Such a utilization of resources would bring prosperity to the organization which can be attained when all aspects of an organization develop simultaneously. That is what the TQM philosophy entails. Another such a clear and emphatic dimension of any organization is the role of organizational leadership. TQM not only gives a new concept of leadership but also elaborates on a variety of significant roles a leadership, within an organization can play for the holistic development of an organization (Elton, 2018; Goetsch, & Davis, 2014; Duran, Cetindere, Sahan, 2014).

The main purpose of knowledge management has been described more vividly by Bollinger & Smith, 2001 as cited in Duran, Cetindere, Sahan (2014, p. 66). They mentioned that the main purpose of knowledge management is to create, develop and promote learning-oriented environment of an organization. They called it 'learning organization' (p.66).

Prajago (2005) described the importance of information and analysis in TQM practices on quality performance stating that information and analysis helps an organization to ensure the availability of high quality, timely data and information for all users like employees, suppliers, and customers. Duran, Cetindere, Sahan (2014) discovered that the performance of organizations with ISO 9000 certification was better than those without ISO 9000 certification. The areas of comparison were: the degree of information about their customers (C) they involved employees for dissemination and understanding the knowledge (K), the quality of process (QP), the quality culture (QC) and quality of performance (Qper).

Another study by Prajago (2002) examined the relationship between Total Quality Management (TQM) with Innovation Performance (IP) and Quality Performance (QP). It was found that TQM had significant positive relationship with the organizations' product quality (PQ), and product innovation. Chen and Marie (2003) conducted study to examine the relationship between the three components of leadership commitment and employee performance. They found that affective commitment (AC) positively correlates with in-role performance and OCB. The continuance commitment (CC) had not associated with in-role performance but negatively correlated with OCB. The normative commitment (NC) had moderate correlations with AC and OCB.

Robinson and Judge (2013) have described the function of an organizational culture, which is to distinguish one organization from others by defining the boundaries of roles and actions, gives a sense of identity and facilitates individuals to go beyond their selves. The level of strong attachment of individuals with the core values differs between strong and weak culture. Nikpour (2017) studied the impact of organizational culture or organizational performance as interdependent variables. Awad and Saad (2013) reviewed literature on the impact of organizational culture and its positive impact on organizational performance.

Glasser (1993) has provided some useful ideas regarding the implementation of Total Quality Management principles in the context of education. Quality education includes quality of work, and quality of work is ensured when such an environment is created which is conducive in terms of physical and social surroundings, and the climate in which the learners have a culture of encouragement, support and warmth.

There are studies in different contexts to explore which aspects are highly associated with the success of any organization. Hoang, Igel, and Laosirihongthong's (2010, p. 948) study shows that the TQM principles enhance innovation in the organization. They have also indicated that the company size, industry type and degree of innovation influenced the degree of TQM implementation. Ahmed and Shafiq (2014) found organizational influences organizational performance (Elton, 2018).

Robbinson and Judge (2013) stated that strong organizational culture, defined as the distinguishing characteristic of an organization based on shared understanding of the organizational environment, provides stability to an organization, but at the same time they also recognize that it may be a strong barrier for certain organization to change. Knowledge management is one of the important responsibilities of organizational management which is also affected by the organizational culture (Honarpour, Jusoh, & MdNor, 2012; Suleman & Gul, 2015). Empirical studies show the TQM has a mild correlation with knowledge management. According to a study by Hung, Lien, Fang and McLean (2010), the magnitude of relationship between TQM and KM is .43. Another study by Molina, Lorens-Monres, and Ruiz-Moreno (2007) found similar magnitude of relationship (r= .48, p<.05). A recent study by Honarpour, Jusoh, and MdNor (2012) has shown that the relationship between TQM and Knowledge Management was .383, while TQM had .517, which seemed coherent with the study of Hung, Lien and Fang (2006).

Maseko (2017) found a strong culture has a strong influence on employee motivation. Zhang and Li (2013) conducted an empirical study to establish whether organizational culture and employee satisfaction were related. The findings of the study showed that the four types of culture and employee satisfaction were not obvious, however strong organizational culture had higher magnitude of relationship with employee satisfaction. The four types of culture included, clan culture, adhocracy, market, hierarchy. Clan and hierarchy culture were indicators of strong culture.

Like any other organization, TQM related studies are also found in context of higher education in which quality is studied from the perspective of students satisfaction on the institutional overall management or a component of management such as organizational culture or time management processes (Khan, 2013;Ruben, 2018; Martirosayan, Saxon, & Wanjohi, 2014; .Kwang-Sing Mung-Ling, Lee, M., 2017).

A survey of literature into the relationship study of TQM principles with other dimensions of any organization has been well established however, it was observed that even in the literature from advanced countries the studies relationship of TQM with KM and OC has been established separately but there is a lack of studies on their relationship of the three variables together. This gap in the literature leaves a gap for the present study to be conducted. In Pakistan, there is scarcity of research on the problem of organizational culture with the integration of TQM especially in the field of higher education. Therefore, the study will add to the literature related to quality management practices in the country.

Research Methodology

The main purpose of the study was to examine the application of TQM principles in Pakistani context with a focus on the relationship of TQM principles in higher education in the public sector universities of the province of Punjab in Pakistan. Following quantitative approach, a questionnaire was developed measuring TQM, KM and OC, on a Likert scale. University teachers of the general type public sector in the province of Punjab were the accessible and specific population of the current research. Six universities were randomly selected initially. Next through stratified random sampling 600 public sector university, teachers took part in the study as a final sample.

With the help of literature (Anderson, 1995; Enterprise Ireland, 2015), the three scales were reshaped in the light of the advices of an expert supervisor of this research study. Two other experts also validated the instrument. For reliability, analysis it was piloted tested before the actual study. The results of reliability analysis are shown in table 1.

Table 1. Reliability analysis.

Main Scale	Dimensions Scales	No of items	Cronbach's α
TQM (.899)	1. Leadership	8	844
	2. Supplier Quality Management	5	.790
	3. Vision and Plan Statement	4	.767
	4. Evaluation	2	.711
	5. Process Control Improvement	2	.724
	6. Employee Participation,	2	.712
	7. Recognition and Reward,	1	….
KM (.910)	1. KM Process	4	623
	2. Leadership in KM	5	.834
	3. KM Culture	5	.773
	4. KM Technology	6	.764
	5. KM Measurement	4	.821
OC (.837)	1. Dominant Characteristics	4	852
	2. Organizational Leadership	4	.834
	3. Management of Employees	4	.723
	4. Organizational Glue	4	.777
	5. Strategic Emphasis	4	.756
	6. Success Criteria	4	.721

Data Analysis Procedures

The analysis included both descriptive and inferential statistics. The descriptive statistics included exploring mean and SD values. The inferential statistical tools included bivariate linear correlation, independent sample t-tests, and one-way ANOVA. Table 2 shows the characteristics of the respondents which help in further understanding of the nature of findings.

Table 2. Characteristics of the Research Participants (University Teachers)

Gender	Age	Qualification	Experience
Male=190	20-30=212 31-40=234	Master=139 M. Phil=224	1-5=251 5-10=144
Female=337	41-50=67 50<= 19	PhD=158	10-15=87 15<=23
Total=527	Total=532	Total=521	

Descriptive Analysis: Interpretation of the mean and SD values

A simple description of the mean values of the three variables has been presented which can be seen in each table in the correlational analysis section in the upcoming section. The mean response values are calculated from the total summed responses (against each item with 5-point response level from strongly agree to strongly disagree). Then, to get the mean response value the number of respondents divided the sum of responses. The mean value above 3 indicates a positive or favorable response to the presence of TQM principles and the other two variables of the study. The mean value below 3 indicates an absence of unfavorable response; while around or approximately 3 indicates a neutral response. The SD values reveal variation in mean response value.

Relationship among TQM, KM and OC

After examining the nature of score distribution which though was not perfectly normal in strict statistically sense, however having the data from a large sample, it was expected that some observation in the set of scores would be at the extreme ends Having removed those few extremes cases, it was decided that scores can be used for inferential statistics. Scatter plots had also indicated the linear relationship between each pair of variables. Table 3 shows the relationship matrix between TQM, KM and OC.

Table 3. Relationship Matrix of TQM, KM & OC

Variables	Mean	SD	1	2	3
1.TQM	3.41	631	--	.445*	.491*
2. KM	3.36	.642		--	.593*
3. OC	3.50	.577			….

*Relationship is significant at .05 level of confidence

Table 3 shows that TQM has a moderate significant correlation with KM (r=.445, p<.05); the relationship matrix shows a stronger correlation of TQM with different sub-dimensions, which also indicates the validity of the scale. TQM had the highest level of relationship with TQM7. In other words, the null hypothesis developed by the research was rejected. The relationship matrix was further studied for the variable TQM and

with the sub factors of KM. KM had five factors. The TQM had the highest magnitude of relationship with KM1 (r=.536, p<.05), followed by KM4 (r=.520, p<.05). The KM1 measured Knowledge Management Process.

The highest magnitude of relationship explains that since the nature of educational institutions is more concerned with knowledge production and process, thus the respondents found this aspect to be more in action in their educational institution. The KM 4 dimension was about measuring the employees' perceptions of technology management. The lowest magnitude of relation of TQM is with KM2 indicating lack of leadership role in the quality improvement process. The relationship matrix of TQM with the third variable of the study Organizational Culture and its sub factors were also studied. TQM had an overall high relationship with the overall OC (r=.593, p<.05). Some of the OC factors are in strong correlation with TQM such as OC1 (Dominant Cultural Characteristics) has the highest level of relationship with TQM (r=.492, p<.05); while relatively lowest relationship of TQM is with the OC6 (r=.364, p<.05).

Partial Correlation and Predictive Analysis

After establishing a significant and moderate correlation, the researcher thought whether one variable effect on the nature of relationship between the other two variables. For this purpose, partial correlation was run on SPSS. The results showed that the relationship between TQM and KM with controlling for OC decreased considerably from r .442 to r .220. Similarly, the relationship between TQM and OC also decreased however slightly (decreased by one point only) when controlled for KM. It was observed that organizational culture seems to be a more relevant factor in the context of higher education that could support TQM principles to become into practice.

One additional analysis that emanates from the results of a significant correlation was to see the predictive power the variables. For this purpose, regression analysis was run on SPSS. The result showed that TQM (IV) was a significant predictor of KM. the R-square value suggested that 45% variation in KM could be explained by TQM. TQM was a significant predictor of OC as R-square value showed that TQM explained 49 % of variability in OC.

Impact of Demographical variables

It was hypothesized at the outset of the study that the demographical variables may affect the responses in favor or against the perceived absence or presence of TQM, KM and OC. The results are presented in tables for an explicit view of the results. The demographical variables included gender, qualification and experience of the respondents. The second demographic variable under consideration was respondents' qualification, which had three
Categories One-way ANOVA was used to determine the significance of mean differences of the study variables based on qualification. There was found no statistically significant difference between the mean values on each of the variables. All the F values indicated to be above the threshold value of .05. Thus, null hypothesis was accepted in each case except the third variable experience.
The third demographical variable, 'experience' however showed some effect. The mean difference can be used as an indicator of effect size. The results are presented in table 4 in detail for more clarity.

Table 4. Mean Difference of TQM, KM, OC Based on Experience

Variables	Experience	N	Mean	SD	F	df	P
TQM	1-5	251	3.39	.627	4.424	2	.004
	5-10	144	3.47	.534			
	10-15	84	3.62*	.648			
	15<	38	3.27	.527			
KM	1-5		3.49	.767	7.329	2	.000
	5-10		3.51	.841			
	10-15		3.41	.699			
	15<		2.98*	.676			
OC	1-5		3.57*	.640	.880	2	.451
	5-10		3.63	.400			
	10-15		3.62	.552			
	15<		3.59	.549			

The results of one-way ANOVA in table 4 showed the results for the experience variable. Experience was measured in years in their current job of the respondents. Experience was measured at four levels; therefore, one-way ANOVA was run to find out whether the respondents who were grouped based on their years of experience show any significant difference.

The results of the one-way ANOVA, as shown in table 4 indicate that the first two variables TQM and KM mean values significantly differ on the basis of respondents' years of experience. The number of respondents for the age group 1-5 is the highest of all while the mean values in each case is highest for the age group 5-10 which indicates the age of experiences does influence the respondent's views on their institutional practices. However, for Organizational Culture the mean difference was not significant.

Discussion

The study aimed to determine to what extent TQM principles are being used as reported by the respondents with a focus on the relationship between TQM implementations practices, Knowledge Management Practices and Organizational Culture in the public sector universities in the province of Punjab, Pakistan. The results of the analysis showed that TQM had a moderate significant correlation with KM (r=.445, p<.05); Similarly, TQM has a stronger correlation with OC than KM (r=.593, p<.05). The relationship between OC and KM was also positive, moderate and statistically significant (r=.491, p<.05).

Gender can be associated with OC, because male and female responses were statistically different from each other as, t=2.338, df=522, p<.05. While gender-based difference was not statistically significant for both TQM and KM. Similarly, Qualification based mean values were not showing any statistically significant differences in both OC and TQM. However, significant difference was found for the mean score of KM between the three levels of qualification. PhDs had significantly higher mean values than the other two Levels.

Prajago (2005) described the importance of information and analysis in TQM practices on quality performance stating that information and analysis helps an organization to ensure the availability of high quality, timely data and information for

all users like employees, suppliers, and customers. The study of Prajogo and McDemott (2005) found 12 TQM practices out of which are the information system and knowledge management influences the quality of performance of an organization. The current study has also found the results incongruent with their study. Duran, Cetindere, and Sahan (2014) conducted an empirical study by comparing two types of organization: the type one organizations were those who had TQM practices and held an ISO 9000 certificates and the other types of organizations that did not have the certificates. They discovered that the former types of organizations were statistically, significantly different from the latter. The performance of organizations with ISO 9000 was better. Here in this study also TQM practices are indicative of a better Organizational Culture as both were found to be in strong relationship.

Another study by Prajago (2002) had further found that TQM had a significant positive relationship with the organizations' product quality (PQ), and product innovation. The results of the study further revealed that the product quality had higher magnitude of relationship with TQM than product innovation performance. TQM has been found in many studies to have a positive relationship almost with all of the dimensions of an organization; however, its relationship with Organizational Culture and Innovation Performance has been questioned by few researchers (Aminbeidokhti, Jamshidi and Hoseini, 2014).

However, it needs to be understood that only Knowledge Management system may not be useful unless it is used to remove defects from the business enterprise or organization. For example, if organizations have not enough infrastructures the process of quality of knowledge would be negatively affected. There are other studies with a combination of TQM and OC, for example, Nikpour (2017) studied the impact of organizational culture or organizational performance. TQM was found to be a significant mediator between organizational culture and organizational performance. Omotayo and Athonia (2013) found medium level of relationship between organizational culture and human resource development. They also found relationship between training and development of employees' productivity.

The demographical variable of experience and qualification had no significant difference on Organizational Culture in the current study which was found to be congruent with findings of Cameron and Quinn (2006), who mentioned that organizational culture was being ignored, while it is as important as any other aspect that contributes to organizational performance.

Cao and Li (2014) proposed a three-factor model in order to improve the quality of higher education. These factors include administrative quality, academic quality and relationship quality. The major focus of TQM is customer satisfaction. This aspect can be related in educational context by involving students and their parents by taking their satisfaction which can be used to measure the quality of an educational institution (Glasser, 1993). Li & Yingxia (2014) indicated that in order to improve the quality in private institution of higher education in china are more focusing on acquisition of land, facilities and other infrastructure while academic quality, practical training are not focused. The findings of the existing study could also be more strengthened if the parents and other stakeholder had been included in the study (Aziz, Mahmood, & Bano, 2018; Kok, & McDonald, 2017).

Conclusions and Recommendations

Based on the study the following conclusions were made: There was found a moderate positive correlation between TQM and KM, while TQM had strong positive and a significant correlation with OC. Gender had no significant difference in the mean values of TQM overall. Qualification has also no significant influence on the respondents' views about TQM practices in their institutions. For the demographical variable experience, it was found that the two variables TQM and KM mean values significantly differed; While the mean values on overall OC measure show no significant difference.

It can be recommended that the university management needs to spread the understanding of TQM principles in their institution in order to achive the aim of quality performance. Once TQM principles are understood, then it will be easy to implement them in true spirit. It will benefit the institutions by enhancing their performance and productivity. Even within the existing available resources many new strategies can be adopted such as ensuring merit-based recognition and reward mechanism. In future researches qualitative dimension of TQM practices can be explored with a qualitative inquiry in Pakistani with regard to the findings of the problems and issues in implementation of quality measures in the institution of higher education. Extending the sample to parents as a stakeholder would bring more useful findings.

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