MEASURING PERFORMANCE OF SMES IN PAKISTAN USING PLS-SEM:EVALUATING MBNQA CRITERIA AS TQM FRAMEWORK

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***ABSTRACT:** The purpose of this study is to empirically investigate the impact of TQM framework based on MBNQA criteria on operational and organizational performance of manufacturing SMEs of Pakistan. TQM practices are hypothesized as a platform to enhance both operational and organizational performance of SMEs in Pakistan. This study is twofold, first of all it is investigated that TQM practices helps to increase primary performance measures expressed in terms of operational performance and secondly it is investigated that how an effectively implemented TQM system contributes in increasing organizational performance of SMEs. This study uses PLS-SEM method to check the casual relationship between TQM practices, operational and organizational performance. Sample data was collected from four major cities of Pakistan and these cities are considered to be the hub of SMEs in Pakistan. Results of this study indicates that adoption of TQM practices helps to strengthen the internal processes and increase primary performance of SMEs expressed as operational performance and a effectively implemented TQM has strong influence in increasing organizational performance. This study is helpful for the mangers who intend to achieve organizational and business excellence both at local and international level.*

Keywords: Total Quality Management, MBNQA, Small and Medium Enterprises, Pakistan, Organizational Performance

1.   INTRODUCTION

Small and medium-sized enterprises (SMEs) of a country play a vital role for the national economic growth, a key contributor in the national GDP, and a source of employment generation for human capital of the country.In emerging nations more than half of the employment is generated by SMEs and are the major contributor in the national economic development[67]. Economic development of both developed and developing countries is solely depending on the SMEs success[14] and now economic system of many countries is anchored by highly productive SMEs business[34]. As compared to large companies SMEs with a very small capital are generating employment, meeting product quality, innovations, and contributing in the national economic development. However, to deliver quality products at lowest costs and to compete at local and international level SMEs are at different stage of quality movement in Pakistan. Quality has been recognized as the vital success driver and to meet the export requirements at international level majority of the SMEs in Pakistan have implemented ISO-9000-2008 series of standards as a first step towards total quality management.

The concept of TQM has been developed as a result of intense global competition which was first developed at Japanese manufacturing industry and later on successfully adapted by the US manufacturing companies. Later, TQM got recognition in Europe and other developed countries whereas, developing countries of Asia, specifically Pakistan is late adopter of TQM. Now, TQM has been widely accepted quality management strategy to increase quality and boost organizational performance both for both large and small organization in developed and developing countries.Dahlgaard-Park, Chen [18] concludedthat TQM is

the first comprehensive management approach which embraces both Western and Eastern ways of thinking and covers three major and broad areas of management, *human resource management (HRM)*, *strategic management*, and *operations management*. TQM is an integration of quality tools, techniques, and quality management practices; addressing HRM, strategic management, and operations management and thus TQM can be best understand as '*a management of innovation*', if not a '*management revolution*' [17].

It is evident from literature, TQM practices, critical success factors (CSFs) of TQM quality management practices, statistical quality tools and techniques, principles of ISO 9000-2008 series of standards, and quality awards criteria are considered as TQM implementation framework to increase productivity at all levels in the organization. Since 1990's quality award models has been frequently used in many organizations as a TQM implementation framework [9] and are also considered as operational models for TQM [16, 68].

Plethora of qualitative and quantitative studies had been conducted and showed a positive relationship among TQM implementation and organizational performance [1, 2, 4, 8, 29, 47, 57, 70].Numerous authors made an attempt on the applicability of TQM practices in the manufacturing and services and its impact on organizational performance of SMEs in developing countries [6, 22, 36, 43, 54, 57, 63, 69].

There are about 3.2 million SMEs operating in Pakistan and contributing more than 30% of national GDP, earns 35% export earnings, 78% of non-agriculture employment, and majority of the SMEs are with less than 99 people[4]. About 99% of the SMEs units have employed less than 99 people and this sector is badly affected due to insufficient

managerial skills of its human resource development [4]. Majority of the SMEs has in place a minimal quality standards and thus there is a need to develop an understanding among the SMEs about the importance of quality management [38].Government has established Small and Medium Enterprises Development Authority (SMEDA) in 1998 to improve the performance of SMEs and beside this numerous international agencies; Asian Development Bank, United Nation Development Program, International Labour Organization, are also contributing in the development of SMEs in Pakistan [7].

Pakistan is considered to be a late adapter of TQM, and in 2010, National productivity organization of Pakistan introduce Prime Minister Quality Award (PMQA) based on MBNQA. Only limited studies has been conducted on TQM in Pakistan and there is a lack of systematic empirical research work regarding TQM adoption and its impact on SMEs performance in emerging economies such as Pakistan. Another reason is that Pakistan is among the late adapter of TQM. This study propose an operational TQM and performance framework consisting of six TQM core elements based on MBNQA criteria that includes: leadership, strategic planning, customer focus, information analysis and system, process management, and people management. Moreover, this study adds to current body of knowledge by providing new empirical findings and data by examining the relationship among core TQM practices and organizational performance expressed by operational and quality performance of SMEs in Pakistan. Findings of this study help the SMEs managers' about the increased importance of TQM and how it will be benefited to penetrate in the international market to increase exports and gain sustainable competitive advantage at local and international level.

Based on the previous literature on TQM adoption in SMEs, purpose of this study is twofold:

1.　　　To evaluate the impact of TQM practices on primary performance measures expressed as operational performance which ensures the effectiveness of TQM implementation.

2.　　　To examine how effective implementation of TQM helps to increase organizational performance.

Remaining part of this paper starts with a comprehensive review of literature, hypothesis development, followed by research methodology and finally results, discussions, conclusions, and managerial implications.

2.　　LITERATURE REVIEW

Since 1981, a rich spectrum of work on TQM has been made but still there is no consensus about the definition of quality or definition of TQM [22]. Definitions on quality in literature provides us insights that there is no global definition for quality but the existed definitions may be appropriate in different circumstances [56]. The term 'quality' advocates different things to different people because defining quality is considered as a first step in almost all type of quality improvement initiatives and also provide a vision and mission to contribute in quality improvement efforts for organization [31]. In spite of all this

debate the existing definitions on quality addresses the core concepts of quality advocated by quality gurus like; "conformance to specifications [13]", "fitness for use [37]", "meeting and exceeding customer expectation [21]".

Similarly same confusion is with the definition of TQM and there is no consensus among the scholars about the definition of TQM and there is no universal list of TQM practices, but core concept and core practices are included in almost all the studies. Core TQM practices that address the teachings of quality gurus includes; management commitment, training and development, employee involvement and empowerment, process management, system and process improvement, leadership role. Today, TQM is a philosophy that aims to change organizational culture from passive and defensive culture to proactive and open culture and the core principles must address, customer satisfaction, continuous improvement, and employees involvement at all levels of the organization [19].

Saraph, Benson [60] are the first who presented eight TQM practices; role of management leadership and quality policy, role of quality department, training, product or service design, supplier quality management, process management, quality data and reporting, employee relations. They are considered as a major contributor for the development of this field and laid the foundation of empirical research in this field. After this a vast amount of literature has been evolved to examine the relationship among TQM practices and performance linkages. Besides this, various studies on TQM has been undertaken and many researchers have developed instruments and empirically tested the impact of TQM practices on different performance measures[like; 2, 3, 5, 25, 26, 42, 44].Besides this, Institutions such as MBNQA, EFQM, and Deming Prize has also developed instruments to address management approaches, techniques, issues, and empirical investigations has been conducted to further enlighten these issues [22].

Initially TQM has been successfully implemented in large manufacturing companies, and later it start penetrating in various service sectors, and SMEs as a strategy to increase efficiency, effectiveness of process and system, and performance at all levels in the organization. Yusof and Aspinwall [69] has conducted a study to analyze the level of TQM practices adopted by SMEs of Malaysia. This study includes; leadership, measurement and feedback, quality improvement tools and techniques, supplier quality, continuous improvement, human resource development, resources, education and training, culture and work environment, and system and processes. Rahman [55] analyzed that leadership, employee empowerment and involvement, training and development, strategy and planning, customer management, and information and analysis are critical for the successful implementation of TQM in Australian SMEs. Empirical results of this study shows that there is a significant association among TQM practices and business outcomes expressed in terms of profitability, increased number of customers, and revenue. It is also observed that human resource and leadership role are critical for business success but little attention has been given to the other TQM factors.

Sohail and Hoong [63] examined the relationship among TQM practices (top management commitment , customer involvement and satisfaction, employee training and development, process management, quality measurement and benchmarking, strategy and planning) and organizational performance with and without ISO-9000 certified Malaysian SMEs. Authors of this study analyzed that TQM practices have significant impact on ISO-9000 certified SMEs performance. Demirbag, Tatoglu [22] also analyze the impact of TQM practices on Turkish SMEs performance and result indicates that TQM practices has strong association with non-financial performance and weak relationship with financial performance. Salaheldin [57] has analyzed the impact of TQM practices on operational and organizational performance in 297 industrial SMEs of Qatar. Author has grouped the TQM practices in tactical, strategic, and operational factors and has observed positive impact on operational and organizational performance. Author further analyzed that strategic factors (leadership, top management support, continuous improvement, benchmarking, organizational culture and quality goals and policy) are critical for successful implementation of TQM in Qatari manufacturing SMEs.

Valmohammadi [67] examine that TQM practices; leadership, communication and quality information system, customer focus, supplier management, process management, employee management, and quality tools and techniques has significant relationship with organizational performance of the Iranian manufacturing SMEs. Author, further investigated that leadership plays a significant role in increasing organizational performance and SMEs to find obstacles by fully utilizing the TQM practices namely; supplier management and tools and techniques.

Kureshi, Faheem Qureshi [38] and Kureshi, Mann [39] conducted a study to check the current level of TQM practices in service sector SMEs of Pakistan. A total 19 quality management practices was selected using Delphi research and a significant gap is reported among the SMEs entrepreneurs about the knowledge of TQM practices. Results of this study also show that there is strong usage of customer relation management practices (employee suggestion scheme, customer survey, quality management systems) while low usage of statistical and supplier development practices.

However, manager perceived that these techniques are helpful in increasing performance and there is strong correlation between TQM practices specifically, six sigma and 5S. Malik, Iqbal [43] identified that; top management commitment, benchmarking, supplier relationship, and customer focus are critical for TQM implementation in Pakistani SMEs and has significant impact on performance of SMEs and further investigated that TQM practices has better impact on performance of ISO-9000 certified SMEs than non ISO-9000 certified SMEs.

Likewise the definition of quality and TQM there is also no consensus about the systematic, comprehensive, or universally accepted framework that put TQM in practice [9, 69]. First TQM framework was based on the teachings of quality gurus such as Deming, Crosby, Juran as discussed by [20]. Second framework was based on the TQM practices or critical success factors of TQM advocated by [like; 2, 26, 46, 47, 60], third TQM framework was based on standardization , i.e. ISO 9000 series of standards and fourth TQM framework was based on quality awards and performance measurement models like Malcolm Baldrige National Quality Award (MBNQA), Deming Prize Award and the European Quality Award (EFQM).

Based on TQM literature, authors of the present study adapted MBNQA criteria as a set of TQM practices for SMEs in Pakistan to measure its impact on organizational performancebased on manger perceptions. Firstly, the major reason for selecting MBNQA framework is that it has not yet been tested in Pakistan and Prime Minster Quality award was established in Pakistan in 2010 and it is based MBNQA criteria. MBNQA framework addresses the major domain of quality management principles advocated and envisioned by the quality gurus as discussed by [16, 20]. Secondly, MBNQA is well accepted model and has been empirically verified by numerous authors around the globe [52, 58, 66] in all major manufacturing, services and also in SMEs. Thirdly, it also includes the 'soft' and 'hard' aspects of TQM which includes human resource focus, customer focus, and leadership and management focus for quality initiatives and improvement whereas, hard aspects are explained through strategic planning, information analysis and process management [68] and these constructs includes the applications of organizational design and statistics [40].

3.   RESEARCH HYPOTHESIS DEVELOPMENT

In order to investigate the relationship among TQM practices, operational and organizational performance, the criteria to measure the operational and organizational performance have to establish to provide outcome measures for the research hypothesis

Organizational performance is considered to be a complex phenomenon but today it is considered as the most vibrant research area. Empirical studies conducted on TQM and performance linkage provides a wide range of performance measures [23]. These performance measures includes; financial and non-financial measures, operational performance, quality performance, innovation performance, employees performance, customer satisfaction, operating performance, market performance, overall business performance. Organizational performance is difficult and complex construct but performance measurement is critical for the effective management [57]. Performance may be defined as the degree to which an operation fulfill the performance objectives both primary (meeting internal customer needs and wants) and secondary performance measure (meeting external customer desires) [62].

Numerous studies has been conducted on TQM to measure the impact of TQM practices on organizational performance [48, 50, 58], quality performance [2, 25, 41, 52, 53], innovation and R&D [51, 52, 64] and operational performance [15, 30, 45, 47, 57, 66].

Operational performance as primary performance measures reflects the internal performance of the

| TQM Practices	Relative Literature from SMEs
Leadership Role	(Prajogo, 2006; Prajogo & Brown, 2006; Rahman, 2001a, 2001b; Salaheldin, 2009; Valmohammadi, 2011)
Information and Analysis	(Prajogo, 2006; Prajogo & Brown, 2006; Rahman, 2001a, 2001b; Valmohammadi, 2011)
People Management	(Prajogo, 2006; Prajogo & Brown, 2006; Rahman, 2001a, 2001b; Salaheldin, 2009; Valmohammadi, 2011)
Process Management	(Prajogo & Brown, 2006; Prajogo & Hong, 2008; Rahman, 2001a, 2001b; Sohail & Hoong, 2003; Valmohammadi, 2011)
Customer Focus	(Prajogo & Brown, 2006; Prajogo & Hong, 2008; Rahman, 2001a, 2001b; Salaheldin, 2009; Sohail & Hoong, 2003; Valmohammadi, 2011)
Strategic Planning	(Prajogo & Brown, 2006; Prajogo & Hong, 2008; Rahman, 2001a, 2001b; Sohail & Hoong, 2003)
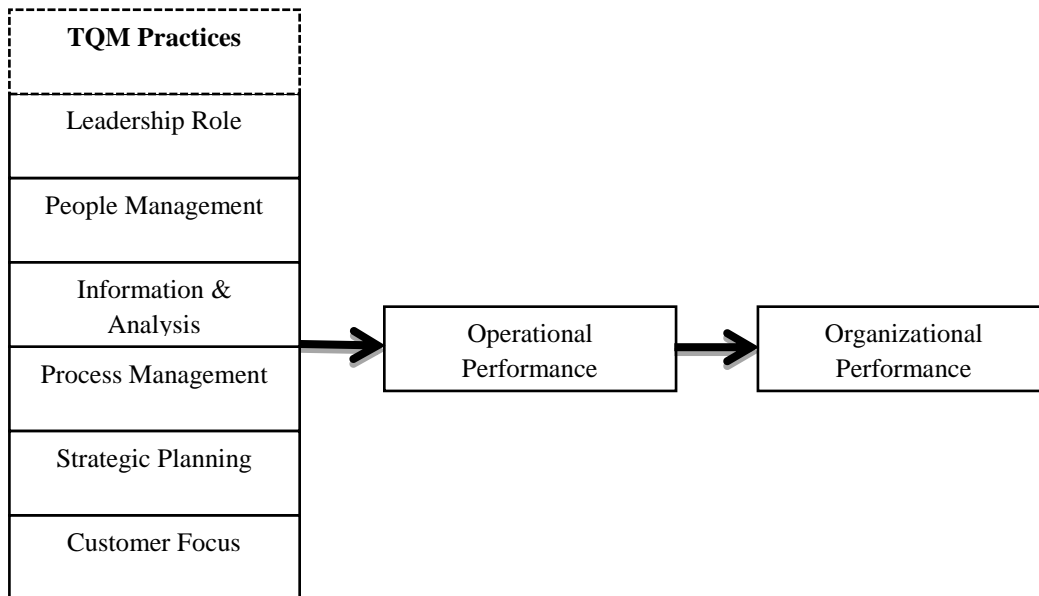
Figure 1: Proposed Model

organization that can be measured in terms of improvement in quality of product, increased performance of delivery, improve productivity, and improve flexibility [57]. Whereas organizational performance is measured in term of financial and non-financial performance measures which help to increase revenue, growth, net profits, return on investment, profit to revenue growth ratio, competitive advantage, market orientation and new product development [57].Proposed operational TQM and performance model is presented in the Figure 1.

Thus based on the above discussion for this study, researchers has adapted organizational performance measure from Valmohammadi [67]measured in terms of increased profitability, customer satisfaction, employee satisfaction, increased sales growth, and increased market share. Whereas operational performance measure is adapted from [57]

expressed in terms of cost and waste reduction, increase efficiency, and improve product quality and delivery process.

Therefore, based on the analysis of past literature on TQM implementation in SMEs, the following hypothesis has been developed:

H1:   Leadership role positively impact the operational performance of Pakistani manufacturing SMEs

H2:   People management positively impact the operational performance of Pakistani manufacturing SMEs

H3:   Information and analysis positively impact the operational performance of Pakistani manufacturing SMEs

H4:   Process management positively impact the operational performance of Pakistani manufacturing SMEs

H5:   Customer focus positively impact the operational performance of Pakistani manufacturing SMEs

H6:   Strategic planning positively impact the operational performance of Pakistani manufacturing SMEs

H7:   Operational performance positively impact the organizational performance of Pakistani manufacturing SMEs

3.1. Research Methodology

This section includes; survey instrument, discussion on sample, data collection procedures and the variables used in the study. This section also includes discussion on statistical methods used to evaluate the relationship between TQM practices and performance of SMEs in Pakistan.

3.2. Survey Instrument

Survey instrument for this study has been adapted from Prajogo [49] and initially the questionnaire includes 37 items from which 6 items were deleted during data analysis and initial interview with the quality assurance mangers at SMEs. The questionnaire was in simple English and was easily understandable to the respondents as these respondents were also involved in dealing with international customers. Each item in the questionnaire was measured on five point Likert scale ranging from "strongly agree" to "strongly disagree". The extent of TQM implementation and the level of organization performance both operational and organizational performance were determined based on the manager's perceptions of how the organization was performing on each constituent item.

3.3. Sample and procedure

The target population of this study was the employees working at managerial level in SMEs in three major cities of Punjab, Pakistan (Gujranwala, Gujrat, and Sialkot). Gujranwala and Gujarat are considered as the hub of SMEs in Punjab, Pakistan and these two cities are famous in manufacturing electric fans, electric motors, washing machines, ceramic, cutlery, leather, and power looms etc. Sialkot is also one of the famous cities of Punjabfor export of sports goods, surgical items, and leather products. Majority of the SMEs in these cities are involved in exports for many years and these SMEs had implemented ISO 9000-2008 series of standards to meet the export requirements and to assure quality of products.

Data was collected using a questionnaire survey and was distributed using personal links of authors, however, a formal permission was taken through HR or Admin department and Chief Executive of each SMEs before conducting this survey. A stratified sampling approach was utilized in order to get heterogeneity among respondents to reduce the common bias in survey. Questionnaire for this study consists of two sections; first section was about the general information of SMEs and the second section is to inquire information regarding implementation of TQM practices in SMEs and third section is about the organizational performance measured in terms of operation and quality performance of SMEs.

Questionnaire for this study was comprised of 25 independent variables addressing 6 TQM constructs and two dependent variables operational comprised of 4 items and

organizational performance comprised of 6 items. A total 450 questionnaires, almost in equal proportion were distributed in three cities. After a number of personal visits and telephone calls, authors were successful in collecting a total 254 useful questionnaires (101 from Gujranwala, 83 from Gujrat, and 70 from Sialkot and Wazirabad) and thus yielding a good response rate of 56.4%.

4. SURVEY RESULTS

4.1 Profile of the Respondents

Demographic of this study was show in the table 1. There were 231 male respondents representing 90.9% of the total population, whereas, only 23 respondents were female representing 9.1% of the total population. Out of 254 respondents 27 were Matric (10 years education at school) and representing 10.60% of the total population, 16 respondents were Intermediate level (12 years of education) and representing a 6.3% of the total population, 56 respondents were graduates (14 years of education) and representing 22% of the total population, 76 respondents were having master's degree (16 years of education) representing 29.90% of the population, only 2 respondents were having (18 years of education). Respondents with technical education (Engineering Degree)with 16 years of education were 76%and representing 18.90% of the total population and only 29 respondents were diploma holders (13 years of education) representing 11.4% of the population. Regarding employees job position in the organization, there were 112 employees working at managerial position and thus representing a total of 44.10% of the total population, 27 employees were working as manager QC/QA and representing 10.60% of the total population, 66 were working at assistant manager position, and 49 were working at supervisor level. There were 81 (31.90%) employees having less than 5 years' experience, between 6-10 years were 73 (28.70%), between 11-15 years were 66 (26.00%), between 16-20 years were 24 (09.40%), only 10 (03.90%) were having more than 20 years' experience. There were 35 (13.80%) respondents from ceramic industry, 24 (09.40%) respondents were from textile, 22 (08.70%) respondents were from automotive industry, 15 (0.5.90%) were from sanitary fittings, 27 (10.60%) were from home appliances, 31(12.20%) from electric fans, 27 (11.40%) were from surgical instruments, 17 (06.70%) were from cutlery, and 27 (10.60%) were from plastic products manufacturers. There were 195 (78.80%) SMEs having implementation of ISO 9001-2008 and only 59 (23.20%) SMEs were not ISO certified or in implementation process of ISO 9001:2008.

4.2 Results

The theoretical model developed for this study is to examine the casual relationships between a number of latent variables and structural equation modeling provides us a good facility to examine the causal relationship among the studied variables. SEM combines a number of statistical techniques like; factor analysis, ANOVA, and multiple regressions. Thus SEM provides us a facility to simultaneously examine and test the relationship among

Table 1: Demographic of the Study

Profile	Respondents	Category	Frequency	Percentage
Gender	254	Male	231	90.90
		Female	23	09.10
Qualification	254	Matric	27	10.60
		Intermediate	16	06.30
		Graduation	56	22.00
		Masters	78	29.90
		MS	2	00.80
		B.Sc. Engineering	48	18.90
		Diploma holder	29	11.40
Job Title	254	Managers	112	44.10
		Ass. Managers	66	26.00
		Manager (QC/QA)	27	10.60
		Supervisors	49	19.30
Work Experience	254	less than 5 year	81	31.90
		Between 6 to 10 years	73	28.70
		Between 11 to 15 years	66	26.00
		Between 16 to 20 years	24	09.40
		More than 20 years	10	03.90
Industry	254	Ceramics	35	13.80
		Textile	24	09.40
		Auto industry	22	08.70
		Sanitary Fittings	15	05.90
		Home Appliances	27	10.60
		Engineering Goods	31	12.20
		Electric Fans	29	11.40
		Surgical Instruments	27	10.60
		Cutlery	17	06.70
		Plastic Products	27	10.60
ISO Implemented	254	Yes	195	76.80
		No	59	23.20

studied constructs when the investigated phenomenon is complex and multidimensional [24]. To analyze the data collected for this study, structural equation modeling (SEM) using partial least square method (PLS) was used and there are few reasons for using this method rather than using covariance based SEM.

PLS-SEM provides several advantages when compared to co-variance based SEM [10] . It can handle small sample size [32], a flexible technique to draw inference and it involves both measurement and structural model [10]. Smart PLS M2 software for data analysis is used as suggested by Anderson and Gerbing (1988). Uni-dimensionality using Cronbach's Alpha (α) and Dillon-Goldsteins ρ (composite reliability), bootstrapping method (200 resample) was also carried out to determine the significance levels for the loading, path coefficient, and

weights was calculated. Figure 2 demonstrate the TQM and performance research model for this study.

5. MEASUREMENT MODEL
5.1 Validity of the measurement model
Validity of the measurement model is off great importance while analyzing data using PLS-SEM and it represents the quality of the measurement model. In this study convergent validity and discriminant validity is conducted as suggested by Hair, Ringle [33], and, Chin and Dibbern [11]. Convergent and discriminant validity are the subtypes of construct validity.
5.2 Convergent Validity
Convergent validity is the degree to which multiple items that are used to measure the same concept are in agreement used to be tested. To check the convergent validity, factor loadings, average variance extracted, and composite

reliability are the main indicators [11, 33]. The reliability of each manifest variable is measured on the basis of loadings and how much each item load on the studied latent variable [33]. There is a disagreement about the minimum accepted value of manifest variable loadings in PLS-SEM literature. Chin, Gopal [12] suggested that loadings of each item must exceed a value of 0.6, Sarkar, Echambadi [61] suggested that loadings of manifest variables exceed or approaches to 0.70, whereas Hulland [35] investigated that loadings above 0.40 or 0.50 of a manifest variables appropriate. Further, Hair, Ringle [33] recommended that loading between 0.40 and 0.70 of manifest variable may be removed in case if this removal effects the composite reliability and no loss of validity. Authors further concluded that it is better to eliminated loadings of manifest variables below the value 0.40. Thus, results generated from this study provides us insights that all the loadings are well above 0.50 and thus satisfying the optimal level of defined manifest loadings. Results depicting the convergent validity
are given in the Table 2.

5.3. Discriminant validity
Discriminant validity can be confirmed or examined when AVE is greater than its correlation with all the other constructs [28] and is known as Fornell-Larckers criteria. Results reported in Table 3, provides a satisfactory level of discriminant validity as squared correlation coefficient for each construct is less than the square root of AVE. Hence, the overall results shows measurement model of this study confirmed an adequate discriminant and convergent validity.

5.4 Quality of the Structural Model
After evaluating the quality of the measurement model, main focus of the statistical analysis using PLS-SEM is to check the significance of the structural model. The structural model in PLS-SEM is representing the relationship between the latent variables included in the studied model and enables the researchers to accept or reject the proposed hypothesis. Three major indicators are examined to test the hypothetical model which includes;

Table 2: Results of the Measurement

Latent Variable	Items	Loadings [a]	CR	Cronbach α	AVE
Customer Focus (CUF)	CUF1	0.741690			
	CUF2	0.786627	0.788073	0.596237	0.554009
	CUF3	0.702240			
Information and analysis (IAA)	IAA2	0.943869			
	IAA3	0.943869	0.902636	0.829813	0.758848
	IAA4	0.703012			
Leadership Role (LRD)	LRD1	0.711977			
	LRD2	0.630622			
	LRD3	0.613578	0.793858	0.676840	0.435762
	LRD4	0.671949			
	LRD5	0.667999			
People Management (PMT)	PMT2	0.700581			
	PMT3	0.753621	0.792295	0.613352	0.560343
	PMT5	0.788841			
Process Management (PRM)	PRM1	0.769707			
	PRM2	0.735964	0.788190	0.597305	0.553807
	PRM3	0.726173			
Strategic Planning (SPP)	SPP1	0.660601			
	SPP2	0.758247			
	SPP3	0.820494	0.883726	0.819010	0.659738
	SPP4	0.976940			
Operational Performance (OPRP)	EFC1	0.742201			
	EFC2	0.749800	0.814920	0.661173	0.595262
	EFC3	0.820199			
Organizational Performance (ORGP)	ORG2	0.735275			
	ORG4	0.865946			
	ORG5	0.649086	0.815046	0.777954	0.515667
	ORG6	0.578938			
	ORG7	0.728945			

Models

CR (Composite Reliability), AVE (Average variance extracted), [a] (Standardized loadings)

Table 3: Discriminant Validity of the Constructs

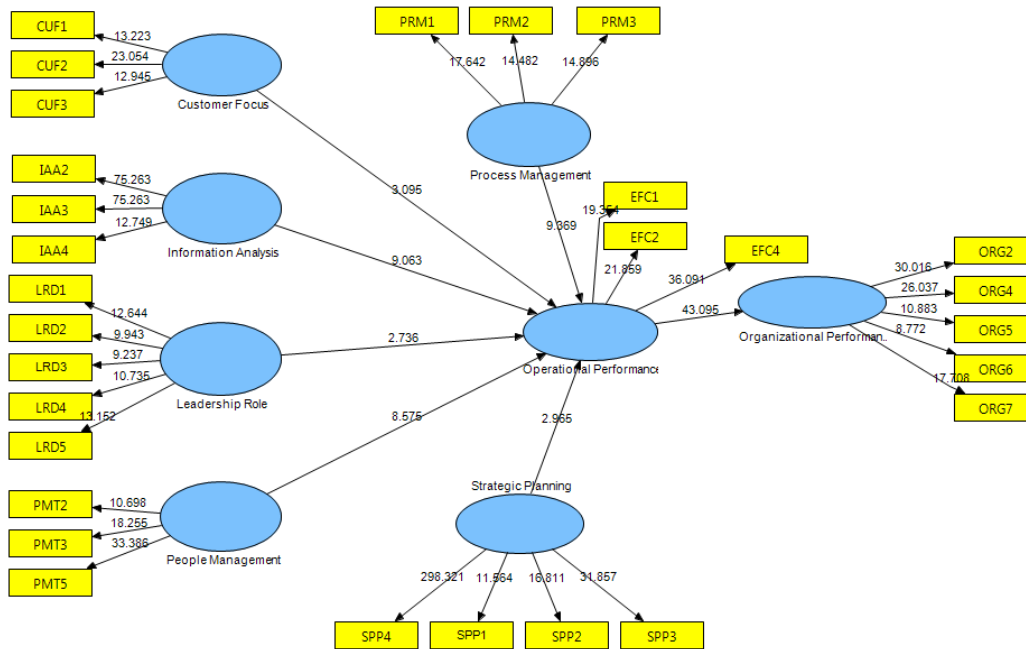|	CUF	IAS	LRD	OPRP	ORGP	PMT	PRM	STP
CUF	*0.74*							
IAS	1.000000	*0.87*						
LRD	0.299152	0.429448	*0.66*					
OPRP	0.434466	0.652765	0.657124	*0.77*				
ORGP	0.574202	0.509251	0.582158	0.747219	*0.72*			
PMT	0.505327	0.391667	0.494730	0.709853	0.699869	*0.75*		
PRM	0.429197	0.369172	0.452355	0.681822	0.415519	0.384899	*0.74*	
STP	0.455469	0.346269	0.682022	0.523949	0.513955	0.350252	0.304571	*0.81*

Figure 2: Structural Model

values of R^2 accounting for the variance explained, effect size accounting for the impact of exogenous variables on the endogenous variables and finally, Geisser's Q^2 measure of predictive relevance. These all indicators help the researchers to examine how well data supports the proposed hypothetical model [10, 59]. According to Hair, Ringle [33], R^2 values of 0.75, 0.50 or 0.25 for endogenous latent variables in the structural model can be described as substantial, moderate, or weak, respectively, critical t-values for a two-tailed test are 1.65 at 10% significance level, 1.96 at 5% significance level, 2.58 at 1% significance level, and Resulting Q^2 values of larger

Table 4: VIF Values of the Exogenous Variables

Latent variables	VIF
CUF	1.423
IAS	1.424
LRD	1.522
PMT	1.709
PRM	1.389
STP	1.366

This study includes two dependent variables and the values of R^2 are 0.831 and 0.558. The first dependent variable is operational performance and purpose of this construct is to measure the effectiveness of the six constructs. This construct provides 0.831 value of R^2 which shows that six independent variables are capable of explaining 83.1% of the variance in the dependent variable and this construct further capable of explaining 55.8% of the variance in the

than zero indicate that the exogenous constructs have predictive relevance for the endogenous construct under consideration.

Hair, Ringle [33] also suggested that before examining the above criteria to check the significance of the structural model, collinearity of the model constructs must be checked by considering calculating the variance inflation factor (VIF) values and it should be less than 5.

Values of VIF is given in the Table4, which shows that all the values of the exogenous latent variables are less than 5 as suggested by [33].

dependent variable organizational performance. Thus values of R^2 considered to be well satisfactory when evaluated in reference to examine the impact of TQM practices on operational and organizational performance.

The results of the structural model obtained from PLS output are reported in Table 5. The structural model given in the Figure2indicates the casual relationship among the constructs in the model and it indicates the values of path coefficients and R^2 values which help to determine the predictive power of the model. These values are helpful in determining how well this model supports the proposed hypothesis. Figure 2 and Table 5 shows the values of path coefficients, standard error and the t-values of the structural model. Customer satisfaction is found significantly satisfactory with operational performance ($\beta=0.118$, $p=0.01$) and thus satisfying the hypothesis H1, information and analysis significantly affects the operational performance

Table 5:Summary of the Structural Model

Path	Hypothesis	Path co-efficient	Standard Error	t-value	Results
LRF -> OPRP	H1	0.110	0.043	2.577***	Accepted
PMT -> OPRP	H2	0.339	0.041	8.325***	Accepted
IAA -> OPRP	H3	0.291	0.034	8.604***	Accepted
PRM -> OPRP	H4	0.313	0.033	9.405***	Accepted
CUS -> OPRP	H5	0.118	0.034	3.419***	Accepted
STP -> OPRP	H6	0.090	0.030	2.989***	Rejected
OPRP -> ORGP	H7	0.747	0.017	42.919***	Accepted

(β=0.291, p=0.01), leadership role has a significant impact on operational performance (β=0.110, p=0.01), people management has also significantly impact on operational performance (β=0.339, p=0.01), process management has a significant impact on operational performance (β=0.118, p=0.01), strategic planning does not have a significant impact on operational performance ((β=0.090, p=0.01), and finally operational performance has significant positive impact on organizational performance of SMEs (β=0.747, p=0.01) and thus satisfying our hypothesis H7. A closer examination of these results reveals that people management is the key predictor of effectiveness of TQM programs followed by process management, information analysis and system, customer satisfaction, and leadership role. Also the effectiveness of TQM program measured in terms of operational performance is a strong predictor in increasing the organizational performance.

The Q^2 "represents a measure of how well observed values are reconstructed by the model and its parameter estimates'' [10]. Resulting Q^2 values of larger than zero indicate that the exogenous constructs have predictive relevance for the endogenous construct under consideration [33]. The sum of the squared observations (SSO) as well as the squared prediction errors (SSE) is used for the estimation of the predictive relevance, Q^2, which is calculated as 1-SSE/SSO. Values larger than zero for a certain reflective endogenous latent variable indicate the path model's predictive relevance for this particular construct. For values below zero, the model cannot be granted predictive relevance[10, 27]. Blindfolding procedure was performed to calculate the predictive relevance (Q^2) of the model fit. Models with values of Q^2 greater than zero shown in the Table 6 provide us insights that model has predictive relevance. For this study, all the values of the Q^2 are greater than zero indicating that the exogenous constructs (organizational performance) have predictive relevance for the endogenous constructs (operational and organizational performance) under consideration.

Table 6: Geisser's Q^2Measure of Predictive Relevance (Blindfolding Results)

Endogenous Variables	CV Red	CV COM	SSO	SSE	1-SSE/SSO
Operational Performance	0.477027	0.595408	95.900280	51.999099	0.457779
Organizational Performance	0.225648	0.515748	204.842990	132.583723	0.352754

The goodness of fit GoF can be interpreted as the average variance in the variables explained by the global model [65].

The goodness of fit (GoF) of the model was also calculated to assess the performance of the model. Table 7shows the result of the GoF. GoF of the studied model is 0.634, which shows that the model is 60.5% of the achievable fit. There are no general criteria for the acceptable values of GOF, however, reference to the above discussion about the values of R the GOF for the studied model is satisfactory.

Table 7:

Latent variables	AVE	R^2
Customer Focus	0.554009	
Information Analysis	0.758668	
Leadership Role	0.435762	
People Management	0.560343	
Process Management	0.553807	
Strategic Planning	0.659738	
Operational Performance	0.595262	0.831069
Organizational Performance	0.515667	0.558336
Average	0.579	0.659
GOF	0.634	

Goodness of Fit

6. CONCLUSION AND DISCUSSION
Main objective of this study is to investigate the impact of TQM practices based on MBNQA criteria on operational and organizational performance of manufacturing SMEs in Pakistan. The results of this study analyzed using PLS-SEM given in Table 5 reveals that TQM practices, leadership, people management, process management, customer focus, and information and analysis significantly contribute in effectiveness of TQM expressed in terms of operational performance. Secondly, operational performance significantly contributes in increasing organizational performance of manufacturing SMEs of Pakistan. Only one TQM practice, strategic planning is found to be insignificant related to operational performance.

The main objective of this study is to investigate the impact of TQM practices based on MBNQA criteria on operational and organizational performance of manufacturing SMEs in Pakistan. The results of this study analyzed using PLS-SEM given in Table 5 reveals that TQM practices, leadership, people management, process management, customer focus,

and information and analysis significantly contribute in effectiveness of TQM expressed in terms of operational performance. Secondly, operational performance significantly contributes in increasing organizational performance of manufacturing SMEs of Pakistan. Thus

results from this study also shows that in order to increase the organizational performance (secondary performance measure) it is necessary that TQM practices should be effectively implemented. These quality management practices are helpful in increasing efficiency, cost and waste reduction and improved quality of the product and these indicators are predictors of organizational performance. In manufacturing SMEs of Pakistan, the majority of the top management positions are owned by the owners or their relatives, therefore, management is well about the important role of quality management.

Majority of the SMEs is making good contribution in national GDP through foreign exports and thus to deliver quality products according to the customer requirements, these SMEs has implemented ISO-9000-2008 series of standards and other than this these SMEs are also adapted quality standards set by the foreign buyers. To deliver products according to customer specifications, quality is considered to be the integral part of the whole manufacturing system. Although majority of the human resources in these SMEs are labour, however, employees at supervisory level are highly skilled and organization involve them in any critical decision making, and has empowered to make decision in any critical situation that affects the quality. Pakistan is among the late adopter of quality management philosophy and in 2010, Prime Minister Quality award has been introduced by the National Productivity Organization (NPO) of Pakistan. NPO also provides training and development facilities to the human resources of the national organizations and major objective is to provide guidance about the implementation of ISO-9000 series of standards, Six Sigma, lean, balanced score card to increase productivity and quality. A number of SMEs both in manufacturing and services has been nominated for Prime Minister Quality award since 2010. Parallel to this SMEDA with a number of international agencies are also making efforts for the development of SMEs in Pakistan, and thus providing energy for SMEs in developing a quality culture in the country.

The operational model developed from this study will also helpful for the SMEs to adopt quality management as a strategic approach to boost their operational and organizational performance. There are some limitations, as this study included only a few manufacturing SMEs as compared to 3.2 million SMEs in Pakistan, therefore, results of this study cannot be generalized.

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