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QUALITY MANAGEMENT IMPLEMENTATION AND THEIR IMPACT ON OPERATIONAL PERFORMANCE OF PAKISTAN'S FOOD PROCESSING SMEs

Abstract: *SMEs are well-known as the economic backbone of any country. Similarly, in Pakistan, they play a vital role in socio-economic development and income generation. However, some of Pakistan's Food Processing SMEs are reportedly less involved in the country's exports due to their inability to meet the quality of produce required for global markets. Pakistan's food industry is transforming from a traditional food processing system to higher-value-added products due to the demand from lifestyle- and health-conscious customers. This study aims to identify the critical success factors of quality management and analyze their impact on operational performance amongst food-processing SMEs in Pakistan. Previous studies demonstrated that critical Success Factors provide an effective way of focusing strategic direction, and enable management to focus on critical areas. Toward that end a questionnaire was developed and employed for data collection from respondents selected using a snowball sampling technique. A total of 302 food processing SMEs responded the survey. SPSS- Version 23 and Smart-PLS 3 were used for data analysis. It is believed that this study will help food manufacturers in Pakistan to improve their operational performance and product quality by practicing certain critical factors.*

Keywords: *Critical success factors; QM practices; Food processing; Small and medium-sized enterprises; Performance; Pakistan.*

1. Introduction

Small and Medium-Sized Enterprises are an important source of sustainable economic development in any country. In Pakistan, 90% of businesses come within the SME category. The food and beverage industry contributes a significant share of the country's economy and has a great export potential. According to SMEDA (2007), there are approximately 3.2 million enterprises in the country. The SMEs are categorized in three main sectors, namely: the wholesale and retail trades; hotels and restaurants, with a share of 53%; community and social services, 22%; and manufacturing, 20%. The food and beverage sector makes up 20.09% of manufacturing, second only to the textile sector (SMEDA, 2009).

Augustin et al. (2016) highlighted that the world population is growing rapidly and is estimated to be 9 billion in 2050, thus the production of food is believed to be one of the big challenges. The growing population

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needs more food, water, and resources. Chukwu (2009) mentioned that food processing is considered to be one of the solutions to meet this challenge since it reduces food wastage and increases the shelf-life of products, thereby adding value. According to Talib et al. (2014), the demand for processed food is increasing due to demographics, changes in lifestyles, and also increased health consciousness. Moreover, Kafetzopoulos & Gotzamani (2014) highlighted that an increasing number of food companies all over the world have been practicing Quality Management (QM), in order to improve the quality of their products, achieve continuous improvement, and ensure customer satisfaction. Currently, the SMEs are facing different kind of challenges and problems, these problems hindering the performance of SMEs. The main problems and issues are highlighted in Table 1.

Table 1. Main Issues and Problems

Author and Year	Main Problems/Issues
State Bank of Pakistan (2017)	Maintaining quality in food products is a major challenge for food manufacturing industries; manufacturers need to adopt quality standards throughout their supply chains to achieve a competitive environment. A vibrant food processing industry is important for a developing country such as Pakistan since it encourages a sustainable competitive environment and can increase farm incomes by offering a ready market for farm products.
Government of Punjab (2015)	The constraints - such as access to international markets, the low level of standardization of quality assurance, and the issue of corruption are hindering industrial performance. The poor quality control mechanisms and applied standards are creating difficulties in exporting products, whilst firms seeking certification are using labs outside Pakistan in order to meet international requirements for their export orders.
Amjad et al. (2012)	Debating the trade barriers stated that being a signatory country of the World Trade Organization (WTO), the adherence to quality certification is essential for international trade.
Kureshi et al. (2010)	Most of the SMEs in the country have minimal quality systems and their product quality is either not being ensured, or being ensured with some informal practices.
Pinho (2008)	SMEs are somewhat slow in adopting quality initiatives due to a lack of competencies and resources, although intense competition has forced them to increasingly adopt more formal quality systems.

Table 1 has shown the main issues such as maintaining quality in food products, access to international markets (trade barriers), quality assurance in food products, minimal quality systems and lack of competancies and resources are the main issues. Therefore, this study is important since, on the one hand it helps food manufacturers to improve operational performance, whilst on the other hand it helps them to improve product quality and increases trade with the rest of the world.

Numerous studies conducted in the food sector, such as Talib et al. (2014), identified the critical success factors of quality management in food processing SMEs; the study of Kafetzopoulos & Gotzamani (2014) focused on critical factors and food quality management; and Sumaedi & Yarmen (2015) highlighted the importance of quality management in the food manufacturing industry. Similarly, several studies have been conducted on QM practices in different sectors, such as Kureshi et al. (2009) in the manufacturing sector, Kureshi et al. (2010) in the service sector, Awan et al. (2009) in pharmaceutical distribution, and the study of Zubair (2013) in the education sector. There is a dearth of studies in the food processing

sector in Pakistan where quality management remains a grey area.

Highlighting the importance of QM practices, Kumar et al. (2014) stated that manufacturing SMEs should re-examine existing QM practices in order to improve their performance. Thus, the present study is very important because there is a dire need for developing a greater understanding of quality systems in SMEs.

2. Literature Review

Pakistan is an agrarian country with agriculture making up 19.8% of the Gross Domestic Product (GDP) and providing raw materials to industry for processing and value-adding activities (MOF, 2017). The food and beverage industry is considered to be the largest industry with an export potential of 13.2% of total exports (Amir et al., 2014). The country is rich in the production of fruits, vegetables, rice, wheat, sugar cane, mangoes, kinnow [a type of citrus fruit], milk, beef, mutton, and eggs (MOF, 2017). The present study is focused on Punjab province, which is the second largest and most populous province of the country. Punjab has an area of 205,345 square kilometers which is 25.8% of the total area of Pakistan. Punjab's economy is mainly agricultural although industry makes a significant contribution. The province is playing a leading role in agricultural and industrial production (SMEDA, 2010; SMEDA, 2009).

Small and Medium-Sized Enterprises (SMEs) is a common term used world-wide, however, each country has different criteria to describe SMEs, include their sales or assets, number of employees, and levels of capital (Quader et al., 2016). SMEs are considered to be the backbone of economic growth in developing, as well as developed, nations. Like other developing countries, Pakistan's economy is largely based on SMEs (Bhutta et al., 2008). SME policy (2007) defined an SME as having up to 250 employees with annual sales up to of Rs.250 million. According to SMEDA (2009), 65.27% of SMEs are located in Punjab province, 17.83% in Sindh, 14.21% in Khyber Pakhtunkhawa, and 2.10% in Baluchistan province.

Discussing the issues, Khan & Khalique (2014) stated that SMEs are in their initial stages and facing many challenges such as shortages of skilled labor, a lack of infrastructure, and a lack of education and training. Moreover, financial support from the government, technology development, and certification issues are underdeveloped whilst an energy crisis and political instability are serious issues (Sherazi et al., 2013). For all these reasons, the SME sector is behind in global trade and is facing fierce challenges.

The food and allied products industry accounts for 27% of value-added production and is considered the largest industry of the country. According to SMEDA (2010), 16% of the total manpower of manufacturing industry is employed in this sector. The food processing industry is growing rapidly as the demand for processed food is increasing. This industry mainly produces dairy products, bakery and confectionery products, beverages, fruit and vegetable products, cereal products, sugar, spices, and edible oils (SMEDA, 2010). This sector needs to be more focused, as the demand for quality food is increasing globally.

2.1 Quality Management

According to Wu (2015), QM provides a paradigm shift in management philosophy for improving organizational effectiveness. QM leads and manages an organization from the quality point of view (Ismyrlis et al., 2015). In addition, the critical success factors are the factors which provide an effective way of focusing strategic direction and investment. They enable management to focus on the most critical areas by using a top-down approach (Freund, 1988). CSFs

have great importance in QM practices (Ismyrlis et al., 2015). According to Saraph et al. (1989), CSFs are defined as critical areas of managerial planning and action that must be practiced to achieve effective quality management in a business unit. Additionally, Ismyrlis et al. (2015) discussed about the "soft" and "hard" factors, and stated that, "soft" factors are associated with management concepts and general principles such as leadership, employee empowerment, culture, and education whereas "hard" factors are usually related to quality improvement tools and techniques, which are easily quantified, accountable, observable, and referred to as technical systems. According to Yusof and Aspinwall (2000), the critical factors of QM are equally important for the SME sector.

Quality has been identified as one of the competitive strategies for improving business performance with intense competition and customer demands. Several authors highlighted the importance of quality management, such as QM meets the customer expectations, fulfills the requirements, acts as an operational tool for organizational success and growth, and helps in preventing faults and defaults (Ismyrlis et al., 2015; Weckenmann et al., 2015; Kharub & Sharma, 2016; Başaran, 2016). Moreover, Quazi & Padibjo (1998) stated that SMEs are often suppliers of goods and services to larger organizations and a lack of product quality from SMEs adversely affects the competitive ability of the larger organizations. Therefore, larger companies insist on their small suppliers adopting their own QM. Hence, QM practices are important for a competitive environment and for business success.

QM practices are important in all sectors and more importantly in the food sector because of health consciousness and increasing demand from customers. According to Talib et al. (2014), quality certification is the basic need and requirement in the food sector. Yusof (1999) mentioned that strong competitive pressure and the need to satisfy customers have forced organizations to adopt QM to achieve business excellence. Therefore, QM is important for an organization's success within a competitive environment. Table 2 highlights the critical success factors of QM such as leadership (LS), employee management (EM), strategic planning (SP), information management (IM), process management (PM), supplier management (SM), and customer focus (CF), as in the literature, along with their related constructs.

Table 2. Construct Measurement and Related Constructs

CSFs	Quality Management
Leadership	The role of management leadership (Saraph et al., 1989), Top Management Commitment (Ahire et al., 1996), Management leadership (Yusof & Aspinwall, 2000), Commitment and support of senior management (Fotopoulos & Psomas, 2010), Leadership (Talib et al., 2014), Leadership (Ismyrlis et al., 2015), Leadership (Sumaedi & Yarmen, 2015), Top Management Commitment (Kharub & Sharma, 2016), Top Management Commitment and Leadership (Aquilani et al., 2017).
Employee Management	Employee relations (Saraph et al., 1989), Employee involvement/empowerment (Ahire et al., 1996), Human resource development (Yusof & Aspinwall, 2000), Employee involvement and commitment (Fotopoulos & Psomas, 2010), Human resources management (Talib et al., 2014), People-workforce management (Ismyrlis et al., 2015), Involvement of people (Sumaedi & Yarman, 2015), Employee involvement (Kharub & Sharma, 2016), Employee involvement (Aquilani et al., 2017).
Strategic Planning	Efficiency improvement (Fotopoulos & Psomas, 2010), Corporate planning (Talib et al., 2014), Strategy (Ismyrlis et al., 2015), Continuous improvement/quality assurance (Kharub & Sharma, 2016), Strategic planning and the role of the quality department (Aquilani et al., 2017).

Table 2. Construct Measurement and Related Constructs (continued)

Information Management	Quality data and reporting (Saraph et al., 1989), Internal quality information usage (Ahire et al., 1996), Measurement and feedback (Yusof & Aspinwall, 2000), Information management (Talib et al., 2014), Data management (Ismyrlis et al., 2015), Information and analysis (Kharub & Sharma, 2016), Information and analysis (Aquilani et al., 2017).
Process Management	Process management (Saraph et al., 1989), Systems and Processes (Yusof & Aspinwall, 2000), Process and data quality management (Fotopoulos & Psomas, 2010), Process management (Talib et al., 2014), Process and data management (Ismyrlis et al., 2015), Process approach (Sumaedi & Yarman, 2015), Process management (Kharub & Sharma, 2016), Process management (Aquilani et al., 2017).
Supplier Management	Supplier quality management (Saraph et al., 1989), Supplier quality management (Ahire et al., 1996), Supplier quality assurance (Yusof & Aspinwall, 2000), Supplier focus (Talib et al., 2014), Supplier quality management (Ismyrlis et al., 2015), Supplier relations (Sumaedi & Yarman, 2015), Supplier management (Kharub & Sharma, 2016), Supplier/Supply chain management (Aquilani et al., 2017).
Customer Focus	Customer focus (Ahire et al., 1996), Customer focus (Fotopoulos & Psomas, 2010), Customer focus (Talib et al., 2014), Customer-market focus (Ismyrlis et al., 2015), Customer focus (Sumaedi & Yarman, 2015), Customer focus (Kharub & Sharma, 2016), Customer focus (Aquilani et al., 2017).

The literature has shown that the factors in Table 2 are the most important for successful quality management practices. Therefore, this study has selected them as the CSFs and their impact on the operational performance of food processing SMEs in Pakistan will be examined.

2.2 Independent variables: CSFs of QM

Leadership: Leadership is one of the significant factors for an organization's success. According to Aquilani et al. (2017), top management commitment and leadership is the first element of the successful implementation of a quality framework. Talib et al. (2014) mentioned that the role of leadership is significant in driving the organization towards total quality. Numerous authors highlighted the important role of top management and leadership (Ahire et al., 1996; Fotopoulos & Psomas, 2010; Sila & Ebrahimpour, 2003; Talib & Rahman, 2010). According to Dora et al. (2015), leadership and top management commitment has an impact on performance, especially in the SME context where management is actively involved in day-to-day operations. Thus, top management commitment, as one of the major determinants for successful QM implementation, acts as a driver of QM implementation and is crucial for achieving organizational goals. Therefore, this study examines the relationship of leadership with operational performance in the food processing SMEs in Pakistan. Our survey questions are mainly focused on vision, future plans, quality improvement, and provision of resources. According to Jabeen et al. (2015), QM empirically recognizes the significance of the relationship between management leadership and a firm's performance. Hence, on the basis of the above literature, the following hypothesis is proposed.

H_1: Leadership has a positive and significant impact on operational performance.

Employee Management: Employee management is essential for the smooth running of any organization. Employee management includes employee involvement, the responsibility of employees for quality awareness, and employee participation in quality decisions (Molina-Azorín et al., 2009). According to Ahire et al. (1996), organizations must develop proper systems to encourage and reward employee involvement otherwise there is a

chance of the quality of work declining. Danyen & Callychurn (2015), claim that employee involvement is essential for the successful implementation of QM. Similarly, Fotopoulos & Psomas (2010) mentioned that employee involvement is necessary for the success of any organization. According to Kharub & Sharma (2016), employees' involvement in quality disciplines and having knowledge about quality enables them to acquire new knowledge and leads towards effective implementations of quality practices. Therefore, employee management is considered a critical factor for implementing QM. The present study believes that employee management is an important factor for an organization's success. Our survey questions are related to employees' training, commitment, empowerment, team work, and a safe and healthy work environment. On the basis of the above literature, the following hypothesis is proposed.

H_2: Employee Management has a positive and significant impact on operational performance.

Strategic Planning: Strategic planning is a key factor which examines how a company develops, communicates, implements, and improves its strategy and policy to achieve excellence in company performance. Talib et al. (2014) stated that effective strategic business planning is crucial for the successful implementation of QM. According to Feng et al. (2006), strategic planning has a significant impact on organizational performance. Moreover, Samson & Terziovski (1999) say that strategic planning focuses business planning and is also important for the development of new plans which fulfill customer and operational performance requirements. Therefore, it is believed that strategic planning is an important factor for implementing an effective QM system. To further examine the relationship of strategic planning and operational performance, the present study is interested in this factor. The survey questions mainly relate to quality management planning, objectives and plans, adopting best practices, and continuous improvement. Therefore, the following hypothesis is proposed in this study.

H_3: Strategic planning has a positive and significant impact on operational performance.

Information Management: The availability of quality data is highly important for measurement and analysis. Having quality data helps organizations in the decision-making process and related problem-solving (Molina-Azorín et al., 2009). According to Talib & Rahman (2010), an organization must have a strong information system. Organizations should always analyze the feedback on quality information to improve the quality of a product or service on a continuous basis. Furthermore, Talib et al. (2014) highlighted that organizations must create capabilities, especially in the use of performance measurement and information for business performance, such as quality data and benchmarking. Samson & Terziovski (1999) stated that information management helps organizations to improve their performance. Furthermore, Kharub & Sharma (2016) say that knowledge about data management is one of the dynamic components for managers in a decision-making process and helps in achieving strategic objectives. The present study's questions about information management are mainly related to quality management information, data accuracy, and the use of data for improving operational activities. Hence, on the basis of the above literature, the following hypothesis is proposed.

H_4: Information management has a positive and significant impact on operational performance.

Process Management: Process management mainly involves assuring quality in different processes. Kharub & Sharma (2016) stated that process management provides a systematic approach in which all available resources of an organization are used in the

most efficient manner. Process management emphasizes activities and methodological behaviors such as a preventive and proactive approach towards quality control. Moreover, the study of Talib et al. (2014) highlighted that process management encompasses the systems and procedures for establishing quality in the many shop-floor activities involved in manufacturing. Hence, the literature reveals that process management is an important factor for the successful adoption of QM practices. The study items mainly focused on quality control, process measurement, ensuring quality in the production process, and process improvement. Thus, the following hypothesis is proposed.

H_5: Process management has a positive and significant impact on operational performance.

Supplier Management: Supplier management plays a vital role in an organization's success and is important for continuous quality improvement. The quality of arriving material should comply with quality standards and norms as ordered by the buyer organization; therefore the supplier role is critical in any organization. The quality of the supplied material should comply with buyer needs and result in customer satisfaction (Ahire et al., 1996). Additionally, Talib et al. (2014) mentioned that, the relationship between buyer and supplier is an important factor in achieving an organization's goals by improving organizational performance. Therefore, organizations must treat suppliers as partners, assist them in improving quality, and provide feedback on their performance. The items of supplier management are mainly related to quality assurance, high quality suppliers, collaboration, and feedback on supplier performance. It follows from the discussion that supplier management can affect operational performance and lead to this hypothesis.

H_6: Supplier management has a positive and significant impact on operational performance.

Customer Focus: According to Ahire et al. (1996) organizational plans must be accomplished by improving processes that create quality products. Quality must be incorporated into all activities with a clear customer focus. Talib et al. (2014) stated that customer focus has a direct effect on performance. Moreover; Talib & Rahman (2010) say that customer focus is the essence of success when a business is dealing with intangible services. Organizations that understand what customers really want and provide a product or service to meet these requirements can gain competitive advantage and profit. According to Kharub & Sharma (2016), producing and delivering product *as per* a customer's needs and requirements is the ultimate goal of an organization. Customer feedback should be used for product and process improvement and to maintain a close relationship and communication with customers because customer satisfaction is a major responsibility of any organization. Therefore, this important factor is considered to investigate the impact on the operational performance of an organization. The study instrument is mainly focused on customer needs, expectations, complaints, and satisfaction. Hence, the above arguments led to the following hypothesis.

H_7: Customer focus has a positive and significant impact on operational performance.

2.3 Dependent Variable

Performance: An organization's performance is the way through which it gains a competitive advantage (Choudhary et al., 2013). There are numerous means through which an organization's performance can be evaluated such as profit, cost reduction, and product development. The present study selected operational performance as a measure appropriate for food processing SMEs.

Operational Performance (OP): Operational performance is defined as the capability of a manufacturing unit or organization' to optimize the production process, improve product quality, and ensure on-time delivery (Zhang & Yang, 2016). Furthermore, Ahire et al. (1996) claimed that operational performance is the ability of firms to incorporate quality into their operations. Moreover, operational performance positively relates to financial performance (Kafetzopoulos & Gotzamani, 2014). To analyze the performance of SMEs, operational performance requires close examination. This study focuses on product quality, quantity, process time, and process effectiveness. The previous studies include those of Kafetzopoulos & Gotzamani (2014) in the food sector of Greece, Jabbour et al. (2016) on green manufacturing firms in Brazil, Zhang & Yang (2016) on manufacturing firms in China, and Rasi et al. (2014) who claim that SMEs in Malaysia took operational performance as a measure of organizational performance.

It is believed that the poor operational performance of the SMEs indirectly affects a firm's financial performance and also its company image. Therefore, this study is important to identify the critical factors of QM and analyzes their overall impact on the operational performance of food processing SMEs in a developing country such as Pakistan. After a detailed literature review, the research framework was finalized for this study as shown in Figure 1. The figure shows the overall relationship and hypothesis of CSFs for QM practices uses seven factors: leadership (LS), employee management (EM), strategic planning (SP), information management (IM), process management (PM), supplier management (SM), and customer focus (CF). These CSFs are assessing the SMEs' QM practices and analyzing their impact on operational performance (OP).

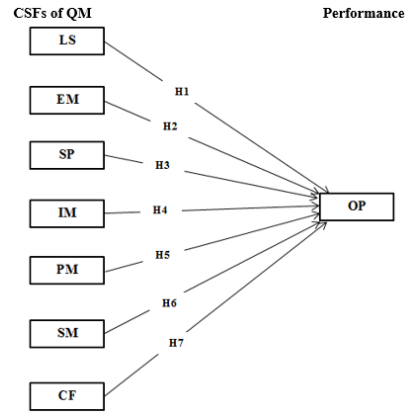

Figure 1. Study Framework

3. Methodology

Primary data were collected through a structured questionnaire. The questionnaire mainly derived from reviewing several conceptual and empirical studies related to quality management, such as the study by Amin et al. (2017), Wu (2015), Hietschold et al. (2014), Lakhal et al. (2006), Valmohammadi (2011), Zhang & Yang (2016), Kafetzopoulos & Gotzamani (2014), Graham & McAdam (2016), and Quazi & Padibjo (1998). The main questionnaire captured aspects of leadership such as top management commitment, provision of resources and visionary leadership; employee management construct covers work attitudes, training and employee relations, team work and provision of safe and healthy work environment; strategic planning covers objectives and plans, development of short-term and long-term plans, focus on continuous quality improvement; information management covers collection of quality and environmental information to improve process and products, process management construct considers practices such as quality control work, prevent errors, regularly monitor the quality of products and processes for process improvement; supplier management construct covers supplier relations in term of product quality, on-time

delivery, and treatment with suppliers as partners, and customer focus construct focuses on customer's need and demands, collection of customer complaints and treat customer's complaints on top priority; and operational performance covers product quality, quantity, process time, and process effectiveness. The content validity of the developed questionnaire was validated by academic and industrial experts. After getting expert opinions, the questionnaire was further improved, modified, adapted, and had ambiguity removed in the context of food processing SMEs. The unit of analysis was the SME through the owner/manager. The answers were given using a five-point Likert scale ranging from "1" strongly disagrees to "5" strongly agree. The initial list of food processing SMEs was acquired from the Small- and Medium-Sized Enterprise Development Authority (SMEDA) and the Pakistan Chamber of Commerce and Industry (PCCI).

The target population of this study was SMEs operating in Punjab province. Data were collected from the Lahore, Faisalabad, Sheikhupura, Multan, Rawalpindi, and Gujranwala industrial zones. Since there was no complete population list or publication containing a complete record of the manufacturing sector SMEs in Pakistan (Kureshi et al., 2009), therefore a snowball sampling technique was employed as in previous studies (Kureshi et al., 2009; Wahga et al., 2018).

"G*Power" calculator was used to calculate the minimum sample size required for this study. By considering the guidelines for a model having seven (7) predictors; the effect size was 0.15, the power needed was 0.95, and the required sample size was 153. A total of 450 questionnaires distributed among the food processing SMEs, the received/collected questionnaires were 302, out of them the final usable responses were 288. Using G*Power for calculating the required sample size is advantageous and is used in the literature, and this study collected more data than the minimum required sample size in line with previous studies (Muhammad et al., 2017; Tehseen et., 2017).

3.1 Common Method Bias

Common Method Bias (CMB) can be considered a threat to the validity of survey research; therefore researchers need to consider this issue (Podsakoff et al., 2012). According to Tehseen et al. (2017), the chances of CMB arise by using the same Likert scale and the same kind of respondents. Thus, Harman's single factor test was employed as suggested by Podsakoff et al. (2003). The result revealed that this was not an issue in this study. Furthermore, the non-response bias was also not an issue, as the data was collected by the researcher through face-to-face interaction with the target respondents.

3.1. Method of Analysis

Partial least squares structural equation modelling (PLS-SEM) is considered as the most suitable data analysis tool, especially for those studies which aim to predict the relationship between constructs (Hair et al., 2017; Muhammad et al., 2017). Therefore, SmartPLS 3 with a two stage approach was used to evaluate the measurement and structural models (Anderson & Gerbing, 1988).

3.2 Assessment of the Measurement Model

In the first stage, the measurement model (outer model) was evaluated for reliability and validity as suggested by Hair et al. (2017). Reliability of the measurement model is assessed by loadings and composite reliability. The outer loading is used for an item's reliability, whereas the composite reliability is used for the construct's reliability. All items in the model are highly loaded on its relevant constructs and their loading exceeded the cut-off value of 0.60

(Chin, 1998). Composite reliabilty also fulfiled the desired criterion of 0.70 and above, as suggested by Hair et al. (2017). The validity of the measurement model is assessed by convergent validity and discriminant validity. Convergent validity is assessed by Average Variance Extracted (AVE), a value of 0.5 and above shows an acceptable convergent validity (Hair et al., 2017). All latent variables of the study fulfill the desired criteria; however, thirteen items were deleted in order to improve the AVE as per the guidelines of Hair et al. (2017) and Memon et al. (2017).

Furthermore, discriminant validity was assessed by using the Fornell-Larcker Criterion as recommended by Hair et al. (2017). In the Fornell-Larcker criterion, the square root of the AVE of each of the latent variables should be greater than its correlation with other latent variables. By using this approach, the results revealed that the square root of AVE was greater than its correlation with other latent variables, as shown in Table 3.

Table 3. Measurement Model

Construct	CR	AVE	1	2	3	4	5	6	7	8
CF	0.863	0.514	**0.717**							
EM	0.866	0.518	0.587	**0.720**						
IM	0.864	0.515	0.605	0.658	**0.718**					
LS	0.858	0.502	0.576	0.567	0.651	**0.708**				
OP	0.867	0.521	0.645	0.627	0.660	0.679	**0.722**			
PM	0.845	0.522	0.544	0.566	0.604	0.595	0.623	**0.722**		
SM	0.882	0.517	0.370	0.325	0.368	0.405	0.370	0.394	**0.719**	
SP	0.859	0.504	0.612	0.629	0.666	0.628	0.685	0.652	0.371	**0.710**

Note: CR=Composite Reliability, AVE=Average Variance Extracted, bolded items are the square root of the AVE.

In addition, Henseler et al. (2015) introduced a new criterion for assessing discriminant validity called the Heterotrait-Monotrait Ratio (HTMT). This recent approach shows the estimation of the true correlation between two latent variables. A threshold value of 0.85 has been suggested for HTMT (Henseler et al., 2015). Above 0.85 shows a lack of discriminant validity.

Table 4 shows that all values are below the threshold, thus the HTMT criterion has been fulfilled for our measurement model.

Moreover, Figure 2 shows the item loadings and path coefficients that have been obtained through the PLS-Algorithm.

Table 4. Heterotrait-Monotrait Ratio (HTMT)

	CF	EM	IM	LS	OP	PM	SM	SP
CF								
EM	0.721							
IM	0.744	0.806						
LS	0.712	0.697	0.805					
OP	0.790	0.759	0.809	0.832				
PM	0.687	0.713	0.762	0.754	0.784			
SM	0.432	0.387	0.432	0.474	0.428	0.472		
SP	0.757	0.773	0.827	0.775	0.841	0.826	0.442	

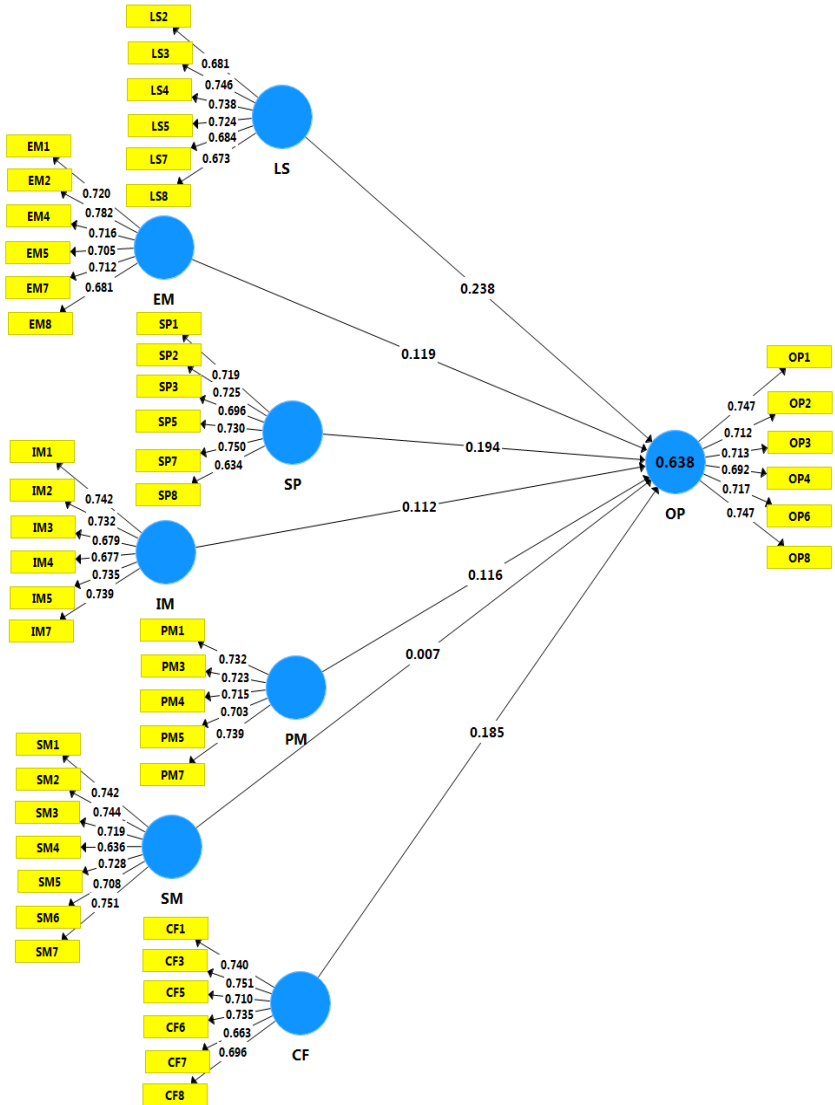

Figure 2. Measurement Model Through the PLS Algorithm

3.3 Assessment of the Structural Model

The structural model represents the theoretical relationship between the latent constructs in the inner model (Mohammad et al., 2016). According to Hair et al. (2017) the most commonly used measure to evaluate the structural model is the coefficient of determination R^2. The R^2 value represents the combined effect of the exogenous latent variables on the endogenous variables. The rule of thumb is that R^2 values of 0.75, 0.50 and 0.25 for endogenous latent variables are substantial, moderate, and weak respectively (Hair et al., 2017). Figure 2, displays an R^2 value of 0.638, which shows a 63% variance thereby showing that the endogenous variable for this model is substantial. Furthermore, to obtain the t-values, p-values, and to demonstrate the significance of all path coefficients (β), a bootstrapping procedure

with 5,000 replications was employed, as recommended by Hair et al. (2017). The bootstrapping procedure produced path coefficients and their corresponding t-values and p-values. Since all hypothetical relationships developed in the present study was positive and in direct relationship, therefore the one-tailed test was applied (Mohammad et al., 2016). Critical t-values for the one-tailed test are 1.28($p < 0.10$), 1.65($p < 0.05$) and 2.33($p < 0.01$) (Hair et al., 2017; Mohammad et al., 2016). Table 5 shows the results of the PLS output for the structural model.

Table 5. Summary of the Structural Model

Hypothesis	Path	Path coefficient	SE	t-values	p-values	Decision
H1	LS → OP	0.238	0.059	***4.009	0.000	Supported
H2	EM → OP	0.119	0.063	**1.899	0.029	Supported
H3	SP → OP	0.194	0.059	***3.280	0.001	Supported
H4	IM → OP	0.112	0.066	**1.699	0.045	Supported
H5	PM → OP	0.116	0.060	**1.933	0.027	Supported
H6	SM → OP	0.007	0.038	0.192	0.424	Not supported
H7	CF → OP	0.185	0.064	***2.896	0.002	Supported

Note: t-values ***2.33 ($p < 0.01$); **1.65($p < 0.05$)

The results from the bootstrapping output show that leadership was found to be significantly associated with operational performance (β=0.238, $p<0.01$), employee management was significant (β=0.119, $p<0.05$), strategic planning was also found to be significant (β=0.194, $p<0.01$), information management was significant (β=0.112, $p< 0.05$), process management was significantly associated with OP (β=0.116, $p< 0.05$), and customer focus was found to be significant (β=0.185, $p< 0.01$). Thus H_1, H_2, H_3, H_4, H_5, and H_7 were supported. However, supplier management was not found to be significant. Therefore H_6 was not supported.

In addition, the predictive relevance Q2 assesses the predictive validity through the blindfolding procedure in which data is omitted for a given block of indicators and then the omitted part is predicted based on the calculated parameters (Tehseen et al., 2017). According to Hair et al. (2017), evaluating the predictive relevance value, Q2, indicates that values of 0.02, 0.15, and 0.35 represent small, medium, and large relevance for a specific endogenous latent variable. The Q2 value for operational performance was 0.303 which represents a large relevance for the endogenous construct as presented in Table 6.

Table 6. Q^2 of the Operational Performance

	SSO	SSE	Q^2 (=1-SSE/SSO)
CF	1,728.000	1,728.000	
EM	1,728.000	1,728.000	
IM	1,728.000	1,728.000	
LS	1,728.000	1,728.000	
OP	1,728.000	1,205.060	0.303
PM	1,440.000	1,440.000	
SM	2,016.000	2,016.000	
SP	1,728.000	1,728.000	

4. Discussion

The demographic details of the SMEs and respondents are presented in Table 7. Amongst the 288 SMEs, 45 were working on partnership, 173 were under sole proprietorship, 7 were registered as a public limited company, and 63 were private limited companies. Out of 288 SMEs, 137 were involved in food processing such as, bakery items, breads, biscuits, cakes, nuggets, candies, toffees, spices, pickles, meat processing, patties, samosas, shami kebabs; 77 were involved in beverages processing such as, fruity malts, soft drinks, tetra pack juices, squashes, sauces, vinegar, and dairy products like ice cream, butter, cream, flavored milk, tea whiteners; and 74 SMEs were manufacturing both food and beverage products.

Amongst the 288 respondents, 102 were from the quality department, 27 from the engineering department, 83 from the production unit, and 76 were the owners/managers. Most of the respondents were experienced persons with 89 having 1-5 years' experience, 80 had 6-10 years' experience, 67 had 11-20 years and 52 had more than 20 years' experience in SMEs.

Table 7. Demographics details (SMEs and Respondents)

Demographics	Frequency	Percentage
About SMEs		
Nature of ownership:		
Partnership	45	15.6
Sole proprietorship	173	60.1
Public limited	7	2.4
Private limited	63	21.9
SME engagement:		
Food processing	137	47.6
Beverages processing	77	26.7
Food and beverages processing	74	25.7
About Respondents		
Current working department/unit:		
Quality	102	35.4
Engineering	27	9.4
Production	83	28.8
Others (Owner/ CEO/ MD)	76	26.4
Experience in SMEs:		
1-5 Years	89	30.9
6-10 Years	80	27.8
11-20 Years	67	23.2
More than 20 Years	52	18.1

This study found leadership, strategic planning, and customer focus to be the most important success factors with employee management, information management, and process management also identified as critical factors, especially for the food processing SMEs of Pakistan. The study also tested their impact on the operational performance of SMEs. All the above-mentioned CSFs were found to be significant, except for supplier management. That supplier management was not significant, may be due to the cultural differences, the developed and developing country scenario, a lack of cooperation from the owner and supplier, lack of trust, a

communication gap between buyer and supplier, and on-time delivery issues. However, supplier management was also found to be non-significant in the study by Tangus et al. (2015).

According to Su & Gargeya (2016), on-time delivery, trust, product quality level, price/cost of product, quick response time, and truthful and frequent communication have been regarded as the most important supplier selection criteria. Organizations and suppliers need to collaborate and cooperate for a successful relationship. According to the SME owners'/managers' point of view (during discussion during data collection), if a supplier provides good quality products but does not deliver on-time or communicate frequently, ultimately the organizations will suffer and lose their customers. Therefore, collaboration, communication, and cooperation are important for a successful partnership.

On the one hand, the owner/managers should assist their suppliers in improving product quality by keeping them aware of their customers' needs and demands, providing continuous feed-back on their performance, and treating suppliers as partners. On the other hand, suppliers also need to ensure on-time delivery, provide high-quality products, and fulfill buyer demands and expectations for a successful partnership. In many cases, SMEs supply products to large organizations and their basic demand concerns the need for high quality products. Therefore, high-quality products, on-time delivery, and trust are considered to be essential criteria for a successful partnership. Thus, supplier management is a very important factor for organizational success and for a win-win situation for all involved. Supplier management practices need to be improved and kept a top priority by the manufacturers, especially for a developing country such as Pakistan.

5. Conclusions and Recommendations

This study has focused on identifying CSFs of QM, especially in food processing SMEs in Pakistan, and analyzed their impact on operational performance. On the one hand, this study can help policy makers and food manufacturers by considering the CSFs identified to help implement successful QM, on the other hand, it can help food players by improving their operational performance, which also have an impact on financial performance. Secondly, by adopting successful QM practices, food players can enhance their trade with the rest of the world where Pakistan currently faces serious obstacles due to quality concerns. However, the food sector has a great export potential and is an important segment of the economy, therefore, food manufacturers need to focus more on quality matters and produce high-quality products in order to achieve maximum benefits. Furthermore, by practicing CSFs such as visionary leadership, employee's involvement in decision-making process, by planning short-term and long–terms goals, through information sharing, process improvement, good relationship with suppliers and more focus on customers, food manufacturers not only get competitive advantages also positive image in market. Moreover, by practicing certain factors food players can improve their product quality, quantity, and process effectives by producing less waste with more efficient way.

Due to the time and resource constraints, this study only focused on the Punjab province of Pakistan. However, future studies may include the data from other parts of the country to further validate the results. Secondly, similar kinds of studies may be conducted in different sectors and different countries. Future researchers can look into the hard factors of QM, such as quality assurance, accreditation, etc. to measure their impact on OP.

References:

Ahire, S. L., Golhar, D. Y., & Waller, M. A. (1996). Development and Validation of TQM Implementation Constructs. *Decision Sciences, 27*(1), 23-56. https://doi.org/10.1111/j.1540-5915.1996.tb00842.x

Amin, M., Aldakhil, A. M., Wu, C., Rezaei, S., & Cobanoglu, C. (2017). The structural relationship between TQM. employee satisfaction and hotel performance, *International Journal of Contemporary Hospitality Management, 29*(4), 1256-1278. https://doi.org/10.1108/IJCHM-11-2015-0659

Amir, D. H., Moiz, J., & Baig, F. N. (2014). *The food processing sector in Pakistan.* Institute of Business Administration (IBA) Karachi.

Amjad, R., Ghani, E., Din, M., & Mahmood, T. (2012). Export Barriers in Pakistan: Results of a Firm-Level Survey. *The Lahore Journal of Economics, 17*, 103-134.

Anderson, J. C., & Gerbing, D. W. (1988). Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach. *Psychological Bulletin, 103*(3), 411-423.

Aquilani, B., Silvestri, C., Ruggieri, A., & Gatti, C. (2017). A systematic literature review on total quality management critical success factors and the identification of new avenues of research. *The TQM Journal, 29*(1), 184-213. https://doi.org/10.1108/TQM-01-2016-0003

Augustin, M. A., Riley, M., Stockmann, R., Bennett, L., Kahl, A., Lockett, T., ... & Cobiac, L. (2016). Role of food processing in food and nutrition security. *Trends in Food Science & Technology, 56*, 115-125.https://doi.org/10.1016/j.tifs.2016.08.005

Awan, M. U., Raouf, A., Ahmed, N., & Sparks, L. (2009). Total quality management in developing countries: A case of pharmaceutical wholesale distribution in Pakistan. *International Journal of Pharmaceutical and Healthcare Marketing, 3*(4), 363-380. http://doi.org/10.1108/17506120911006056

Başaran, B. (2016). The effect of ISO quality management system standards on industrial property rights in Turkey. *World Patent Information, 45*, 33-46.

Bhutta, M. K. S., Rana, A. I., & Asad, U. (2008). Owner characteristics and health of SMEs in Pakistan. *Journal of Small Business and Enterprise Development, 15*(1), 130-149. http://doi.org/10.1108/14626000810850883

Chin, W. W. (1998). Commentry: Issues and Opinion on Structural Equation Modeling. *MIS Quarterly, 22*(1), 7-16.

Choudhary, A. I., Akhtar, S. A., & Zaheer, A. (2013). Impact of transformational and servant leadership on organizational performance: A comparative analysis. *Journal of Business Ethics, 116*(2), 433-440.

Chukwu, O. (2009). Impacts of food processing industry on some environmental health and safety factors. *Caspian Journal of Environmental Sciences, 7*(1), 37-44.

Danyen, S., & Callychurn, D. S. (2015). Total quality management success factors and their relationships with performance measures in the food industry: a Mauritian case study. *International Journal of Productivity and Quality Management, 16*(3), 249-266. https://doi.org/10.1504/IJPQM.2015.071520

Dora, M., Kumar, M., & Gellynck, X. (2015). Determinants and barriers to lean implementation in food-processing SMEs - a multiple case analysis. *Production Planning & Control, 27*(1), 1-23. https://doi.org/10.1080/09537287.2015.1050477

Feng, J., Prajogo, D. I., Chuan Tan, K., & Sohal, A. S. (2006). The impact of TQM practices on performance. *European Journal of Innovation Management, 9*(3), 269-278. http://doi.org/10.1108/14601060610678149

Fotopoulos, C. V., & Psomas, E. L. (2010). The structural relationships between TQM factors and organizational performance. *The TQM Journal, 22*(5), 539-552.

Freund, Y. P. (1988). Critical success factors. *Planning Review, 16*(4), 20-23.

Government of Punjab. (2015). Punjab Industries Sector Plan 2018: Promoting Industrial Development and Investment, Retrieved from: https://www.theigc.org/wp-content/uploads/2015/04/Punjab-Growth-Strategy-2018-Full-report.pdf/

Graham, S., & McAdam, R. (2016). The effects of pollution prevention on performance. *International Journal of Operations & Production Management, 36*(10), 1333-1358. http://doi.org/10.1108/IJOPM-05-2015-0289

Hair, J. J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*: Sage Publications.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115-135.

Hietschold, N., Reinhardt, R., & Gurtner, S. (2014). Measuring critical success factors of TQM implementation successfully - a systematic literature review. *International Journal of Production Research*, *52*(21), 6254-6272. https://doi.org/10.1080/00207543.2014.918288

Ismyrlis, V., Moschidis, O., & Tsiotras, G. (2015). Critical success factors examined in ISO 9001:2008-certified Greek companies using multidimensional statistics. *International Journal of Quality & Reliability Management, 32*(2), 114-131. http://doi.org/10.1108/IJQRM-07-2013-0117

Jabbour, C. J. C., Jabbour, A. B. L. d. S., Govindan, K., de Freitas, T. P., Soubihia, D. F., Kannan, D., & Latan, H. (2016). Barriers to the adoption of green operational practices at Brazilian companies: effects on green and operational performance. *International Journal of Production Research*, 54 (10), 3042-3058. https://doi.org/10.1080/00207543.2016.1154997

Jabeen, R., Shehu, A. M., Mahmood, R., & Bambale, A. J. (2015). Total Quality Management Dimensions and SME Performance: A Quantitative Approach. *IPBJ, 7*(1), 21-35.

Kafetzopoulos, D. P., & Gotzamani, K. D. (2014). Critical factors, food quality management and organizational performance. *Food Control, 40*, 1-11. http://doi.org/10.1016/j.foodcont.2013.11.029

Khan, M. W. J., & Khalique, D. M. (2014). An Overview of Small and Medium Enterprises in Malaysia and Pakistan: Past, Present and Future Scenario. *Business and Management Horizons, 2*(2), 38-49.

Kharub, M., & Sharma, R. K. (2016). Investigating the role of CSF's for successful implementation of quality management practices in MSMEs. *International Journal of System Assurance Engineering and Management, 7*(1), 247-273

Kumar, M., Khurshid, K. K., & Waddell, D. (2014). Status of Quality Management practices in manufacturing SMEs: a comparative study between Australia and the UK. *International Journal of Production Research, 52*(21), 6482-6495. https://doi.org/10.1080/00207543.2014.948574

Kureshi, N., Qureshi, F., & Sajid, A. (2010). Current health of quality management practices in service sector SME: A case study of Pakistan. *The TQM Journal, 22*(3), 317-329. http://doi.org/10.1108/17542731011035541

Kureshi, N. I., Mann, R., Khan, M. R., & Qureshi, M. F. (2009). Quality Management Practices of SME in Developing Countries: A Survey of Manufacturing SME in Pakistan. *Journal of Quality and Technology Management, 5*(2), 63-89

Lakhal, L., Pasin, F., & Limam, M. (2006). Quality management practices and their impact on performance. *International Journal of Quality & Reliability Management, 23*(6), 625-646. https://doi.org/10.1108/02656710610672461

Memon, M. A., Ting, H., Ramayah , T., Chuah, F., & Cheah, J. H. (2017). A Review of the Methodological Misconceptions and Guidelines related to the Application of Structural Equation Modeling: A Malaysian Scenario. *Journal of Applied Structural Equation Modeling, 1*(1), 1-8

Ministry of Finance (MOF), (2017). Agriculture Sector Report Pakistan, Retrived from: http://www.finance.gov.pk/survey/chapters_16/02_Agriculture.pdf/

Mohammad, J., Quoquab, F., Makhbul, Z. M., & Ramayah, T. (2016). Bridging the gap between justice and citizenship behavior in Asian culture. *Cross Cultural & Strategic Management, 23*(4), 633-656

Molina-Azorín, J. F., Tarí, J. J., Claver-Cortés, E. and López-Gamero, M. D. (2009). Quality management, environmental management and firm performance: A review of empirical studies and issues of integration. *International Journal of Management Reviews, 11*(2), 197-222. https://doi.org/10.1111/j.1468-2370.2008.00238.x

Muhammad, L., Mahadi, B., & Hussin, N. (2017). Influence of social capital on customer's relationship satisfaction in the Pakistani banking industry. *Asia Pacific Journal of Marketing and Logistics, 29*(5), 1036-1054.

Pinho, J. C. (2008). TQM and performance in small medium enterprises. *International Journal of Quality & Reliability Management, 25*(3), 256-275. https://doi.org/10.1108/02656710810854278

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879-903.

Podsakoff, P. M., MacKenzie, S. B. & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology, 63*, 539-569. https://doi.org/10.1146/annurev-psych-120710-100452

Quader, M. S., Kamal, M. M., & Hassan, A. B. M. E. (2016). Sustainability of positive relationship between environmental performance and profitability of SMEs. *Journal of Enterprising Communities, 10*(2), 138-163. http://doi.org/10.1108/JEC-05-2014-0008

Quazi, H. A., & Padibjo, S. R. (1998). A journey toward total quality management through ISO 9000 certification - a study on small- and medium-sized enterprises in Singapore. *International Journal of Quality & Reliability Management, 5*(5), 489-508. https://doi.org/10.1108/02656719810196225

Rasi, Z. R. M. R., Abdekhodaee, A., & Nagarajah, R. (2014). Stakeholders' involvements in the implementation of proactive environmental practices. *Management of Environmental Quality: An International Journal, 25*(2), 132-149.

Samson, D., & Terziovski, M. (1999). The relationship between total quality management practices and operational performance. *Journal of Operations Management, 17*, 393-409. https://doi.org/10.1016/S0272-6963(98)00046-1

Saraph, J. V., Benson, P. G., & Schroeder, R. G. (1989). An Instrument for Measuring the Critical Factors of Quality Management. *Decision Sciences, 20*(4), 810-829. https://doi.org/10.1111/j.1540-5915.1989.tb01421.x

Sherazi, S. K., Iqbal, M. Z., Asif, M., Rehman, K.-u.-. & Shah, S. S. H. (2013). Obstacles to Small and Medium Enterprises in Pakistan. Principal Component Analysis Approach. *Middle-East Journal of Scientific Research, 13*(10), 1325-1334.

Sila, I. and Ebrahimpour, M. (2003). Examination and comparison of the critical factors of total quality management (TQM) across countries. *International Journal of Production Research, 41*(2), 235-268. https://doi.org/10.1080/0020754021000022212

SMEDA, (2007). Small and Medium-Sized Enterprise Policy,Retrieved from: http://www.smeda.org/index.php?option=com_content&view=article&id=58:sme-policy-development&catid=2/

SMEDA, (2009). SME Sector Genesis, Challenges and Prospects,Retrieved from: https://www.smeda.org/index.php?option=com_phocadownload&view=category&id=46:smeda-publications&Itemid=566/

SMEDA, (2010). World Food Market and Compliance Requirements - Guidelines for Food Industry, Retrieved from: http://www.smeda.org/index.php?option=com_content&view=article&id=69&Itemid=174/

State Bank of Pakistan, (2017). The growth of the processed food industry in Pakistan: Changing trends and key challenges, retrieved from: http://www.sbp.org.pk/reports/quarterly//fy17/First/Special.pdf/

Su, J., & Gargeya, V. B. (2016). Supplier selection in small- and medium-sized firms. *American Journal of Business, 31*(4), 166-186.

Sumaedi, S., & Yarmen, M. (2015). The Effectiveness of ISO 9001 Implementation in Food Manufacturing Companies: A Proposed Measurement Instrument. *Procedia Food Science, 3*, 436-444.

Talib, F., & Rahman, Z. (2010). Critical Success Factors of TQM in Service Organizations: A Proposed Model. *Services Marketing Quarterly, 31*(3), 363-380. https://doi.org/10.1080/15332969.2010.486700

Talib, H. H. A., Ali, K. A. M., & Idris, F. (2014). Critical success factors of quality management practices among SMEs in the food processing industry in Malaysia. *Journal of Small Business and Enterprise Development, 21*(1), 152-176. https://doi.org/10.1108/JSBED-10-2013-0162

Tangus, C. C., Oyugi, L. A., & Rambo, C. (2015). Effect of Supplier Relationship Management Practices on Performance of Manufacturing Firms in Kisumu County, Kenya. *International Journal of Economics, Commerce and Management, 3*(2), 499-512

Tehseen, S., Sajilan, S., Gadar, K., & Ramayah, T. (2017). Assessing Cultural Orientation as a Reflective-Formative Second Order Construct - A Recent PLS-SEM Approach. *Review of Integrative Business and Economics Research, 6*(2), 38-63

Valmohammadi, C. (2011). The impact of TQM implementation on the organizational performance of Iranian manufacturing SMEs. *The TQM Journal, 23*(5), 496-509. http://doi.org/10.1108/17542731111157608

Wahga, A. I., Blundel, R., & Schaefer, A. (2018). Understanding the drivers of sustainable entrepreneurial practices in Pakistan's leather industry: A multi-level approach. *International Journal of Entrepreneurial Behavior & Research, 24*(2), 382-407. https://doi.org/10.1108/IJEBR-11-2015-0263

Weckenmann, A., Akkasoglu, G. and Werner, T. (2015). Quality management - history and trends. *The TQM Journal, 27*(3), 281-293. http://doi.org/10.1108/TQM-11-2013-0125

Wu, S. J. (2015). The impact of quality culture on quality management practices and performance in Chinese manufacturing firms. *International Journal of Quality & Reliability Management, 32*(8), 799-814. https://doi.org/10.1108/IJQRM-12-2013-0199

Yusof, S. M. (1999). Critical Review of Total Quality Management. *Jurnal Mekanikal, 2*, 54-75

Yusof, S. M., & Aspinwall, E. M. (2000). Critical success factors in small and medium enterprises: Survey results. *Total Quality Management, 11*(4), 448-462. https://doi.org/10.1080/09544120050007760

Zhang, H., & Yang, F. (2016). On the drivers and performance outcomes of green practices adoption. *Industrial Management & Data Systems, 116*(9), 2011-2034. https://doi.org/10.1108/IMDS-06-2015-0263

Zubair, S. S. (2013). Total Quality Management in Public Sector Higher Education Institutions. *Journal of Business & Economics, 5*(1), 24-55.

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