JARTE
Journal of Applied Research in Technology & Engineering

3(2): 93-102, 2022
https://doi.org/10.4995/jarte.2022.17408
Received: March 29, 2022; Accepted: June 21, 2022; Published: July 31, 2022

IMPACT OF TOTAL QUALITY MANAGEMENT (TQM) PRACTICES ON SUSTAINABILITY AND ORGANISATIONAL PERFORMANCE

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Abstract:

Total quality management (TQM) has been identified as a key driver of organizational performance in public and private organizations. Organizational culture, along with TQM and sustainability has been investigated to understand its contributions to organizational performance. TQM has become a crucial pillar for growth and development due to the growing expansion of manufacturing sectors of the world. TQM practices, which may differ in manufacturing firms, are said to be important for effective TQM adoption. However, it was found that organizational performance can be achieved if TQM practices in manufacturing businesses are well managed. Therefore, this study is carried out and the purpose of the study is to propose a conceptual model to investigate the relationship between TQM practices, sustainability, and organizational performance and to demonstrate the impact on organizational performance. The data underlying this study was collected by using a questionnaire survey in the manufacturing industries. The tool of analysis was used for the study through Factor analysis and confirmatory factor analysis (CFA). The findings of the study revealed that total quality management and sustainability are the most important approaches to the success of the performance of manufacturing industries. The results show that TQM and sustainability have a positive impact on organizational performance. In the radiance of these outcomes, a framework was created in view of relationship between significant practices of TQM, sustaibanility and organistaional performance. Generally, it is accepted that total quality management can produce a sustainable competitive benefits in organistaiaonal performance.

Keywords: TQM; sustainability; organizational performance; exploratory factor analysis.

Cite as: Wassan, AN.,Memon, MS., Mari, S.I., Kalwar, M.A. (2022). Impact of total quality management (TQM) practices on sustainability and organisational performance. *J Appl Res Eng Technol & Engineering, 3*(2), 93-102. https://doi.org/10.4995/jarte.2022.17408

1. Introduction

Total Quality Management in organizational performance is originated from the idea that performance is achievable in a quality useful environment and This can only be accomplished by everyone in the organization working together to continuously improve processes and for long run sustainability (Dhamasanti and Sudaryati, 2020). For the past two decades, TQM has been a comprehensive quality improvement strategy for associations to increment execution concerning quality and development. Total quality management is a method of planning, understanding, and organizing each task that is different for each person at each stage. The philosophy of total quality management is one of prevention rather than defect detection (Zhu et al., 2020).

Product quality and customer satisfaction are essential parts of an organization's survival in today's highly competitive industry (Anu & Satish, 2019). In recent years, TQM has gained widespread acceptance as an approach known that, when properly implemented, may give a business a competitive advantage (Antunes et al., 2017). Organizations that are implemented Total quality management have lots of advantages, including higher quality products, the satisfaction of customers, lower costs, and enhanced financial, quality, and innovation performance (Zehir et al., 2012). In an economical market, the quality demand is developing as an absolute most basic aspect for organizations to get by in the regularly growing worldwide market. Quality is important in finding the economic success of manufacturing companies. The quality and the customer satisfaction for growing productivity depend upon their motivation and rewards (Cetindere et al., 2015). In this study, the relationship between TQM factors with sustainability and performance has been examined individually to understand the impacts of the managerial, customers, employees, and processes on the organizational performance at the TQM.

Organizational performance is a multidimensional concept that analyzes a company's status with internal and external benchmarks. The most well-known concept for measuring companies is organizational performance effectiveness. The first is used to evaluate private organizations, while the second is used to evaluate public organizations (Alghamdi,

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2018). Performance is very important for the esteemed administration of the companies. Researchers have used various types of performance i.e., quality performance, financial performance, innovative performance, operational performance, business performance, and business performance. However, examining the relationship between these types of performance, and TQM practices. The performance of one organization can be directly recognized by its aptitude to attain its strategic and financial goals. Although, TQM has a positive influence on the performance of the organization in a positive way (Tiwari et al., 2018).

Sustainability is key to the performance of an organization. The importance of sustainability to a company's success cannot be overstated. The organizational goal explains where the company is going to the business environment and the goals of the company. Sustainability provides strategies for pursuing growth while ensuring the economical, social, and environmental resources of current and future generations are conserved (Khoja et al., 2017).

Organisations measure their perfromance as accomplishing their goals, however efficiently accomplishing the is to sowhow difficult disregarding the total quality management along with sustainability. This impacts on environmental and social perspectives in the organisation and this creates a research gap that should be filled. These reasons create a further sense to focus on the relationship among TQM, sustainability, and performance. Thusly, this study investigates the relationship and impact of TQM and sustainability practices on performance of an organisation,

The propose of this study is to decide the key practices of total quality management (TQM) and sustainability and their effect on OP. The study is centred around getting key practices of total quality management and sustainability to improve organizational performance to meet their goals and objectives. This paper aims to develop a conceptual framework which indicates total quality management and sustainability practices and their influence on organizational performance.

2. Literature review

2.1. Total Quality Management (TQM)

In a competitive market, Quality is becoming a crucial aspect for organizations to succeed in the ever extending worldwide marketplace. TQM is a management strategy that aims to improve customer satisfaction and performance by delivering high-quality products and services with the involvement and collaboration of all stakeholders, as well as teamwork by applying quality management techniques and tools (Ali AlShehail et al., 2021). With the fast development of the worldwide economy, Organizations are trying to achieve and maintain high notches of performance to work on their overall performance and effectiveness. Companies face a fluctuating economical market on a global scale, with a growing focus on quality, customer satisfaction, productivity, economic uncertainty, and organisational culture, technical innovation (Hilman et al., 2020). Quality is vital in determining the economic success of manufacturing companies (Zakuan et al., 2009). The concept of TQM has been established as a result of extreme worldwide competition. TQM principles, methods, tools, and techniques have received a lot of attention from organizations with the international market and global competition (Reed et al., 2000) as defined by (Porter and Tanner, 2012):

> *"Total quality management is methodology which focus around enlightening the company's efficiency, success and responsiveness to the consumers and other partners in order to achieving sustained growth towards organisational performance".*

2.2. Organizational performance

In sixteenth era, the term "performance" had a different implication when it was employed to achieve military instructions and orders (Lawson, 1995). However, today's definition of performance is a point acquired by the implementation of plans aimed at achieving a specific goal. In other terms, performance is the outcome obtained by "an employee by completing a certain mission within a specific time frame (Kaplan and Kaplan, 2018).

Performance measurement is extremely important for the significant management of an organization. Many scholars discovered the relation between quality methods and performance by using several performance types such as innovative, financial, business, quality, and operational performance (Hassan et al., 2012). The organization's performance indicates how an organization reaches its goals and mission. TQM is generally considered to be brunch of aspects. Many studies have analysed the connection among total quality management and performance (Agrawal & Tiwari, 2014). In general, an organization is based on public and social needs. Organizations must establish relationships with other elements to achieve their goals. This is a critical issue, and managers must devise strategies to address it to improve the organization's performance (Taleghani et al., 2013).

2.3. Sustainability

Sustainability performance is characterized as " the blend of its social, environmental and economic performance in all extents and for all elements of corporate sustainability" (Rai, 2018). The term "sustainability" is defined as the development of the business perception which considers economic, environmental, and social aspects (Abdul-Rashid et al., 2017). Sustainability broadly used to define the correspondence of the organisations which impacts on social, economic and environmental performance (Eccles et al., 2014). The activities of the manufacturing industry have significantly helped to boost the economies of many countries, particularly emerging countries, and they show a significant role in the world-wide economy by supplying goods and services. Nowadays, industrial success factors are evolving from economic-centric criteria toward sustainability measures.

2.4. Total quality management & organizational performance

Although the relation among TQM and performance has been widely researched, the results have been varied. The majority of past research has found a positive connection among total quality management and performance of an organisation. In the past, total quality management was only employed in the industrial sector, but it is now widely used in service organizations and the public sector (Al-Dhaafri & Alosani, 2020). TQM can be implemented in all industries including service and manufacturing (Saleh & Hasan, 2015). One of the most important pieces of research on the connection among total quality management and organizational performance was studied by (Mohammed et al., 2014). Various investigations shows a positive connection between implementation of total quality management and performance (Kumar et al., 2009). In today's concurrent marketplace, Firms must focus on enhancing quality and innovativeness. TQM has a significant and favourable relationship with quality performance in general. Firms must focus on improving quality and innovativeness (Hassan et al., 2012). The application of TQM can also be implemented to enhance the relationship between firms and their suppliers. (Ou et al., 2011). Another study was conducted to determine the CFs for total quality management deployment, assess their influence on operational performance, and determine the effect on the performance of (SMEs) in Qatari industrial sector (Ismail Salaheldin, 2009). Hence, this study offers the first hypothesis:

H1: Total Quality Management (TQM) practices have a Positive Impact on performance of an organization.

Thus, the following hypothesis is postulated.

2.5. Total quality management and sustainability

TQM views quality as a long-term company strategy aimed at providing products and services that fulfil the explicit and implicit expectations of both internal and external consumers. At the basic, it is the issue of measurement which is the source of continuity, strength, and sustainable performance. Total Quality Management is a management strategy in which organizations work to recognize, improve, and eliminate any flaws in their operating cycle to improve the total quality of their product (Hamdan & Alheet, 2021). On the other hand, sustainability is described as the long-term maintenance of systems based on economic, environmental, and social factors (Abbas, 2020). A conceptual and empirical study of the literature on the connection among sustainability and Quality Management from various viewpoints, models, and methods was studied by (Allur et al., 2018). Zairi (2001) proposed a model, referred to as the TQM capability and Sustainable Performance Model (TQM-MSPM). This TQM Capability and Sustainable Performance Model is founded on the idea that to adopt process management principles, an organizational framework that supports cooperation, learning, and innovation is required.

Hence, from the above argument the second hypothesis is accepted

H2: There is a significant impact of TQM on the performance of an organization.

2.6. Sustainability and organizational performance

Sustainability and organizational performance are the dualistic significant aspects and they need to be considered in current years. A study was conducted to identify the main learning components and recognize learning performance, support effective sustainability and the results are presented in the form of a sustainability learning performance framework (Ofei-Manu & Didham, 2018). The relationship between corporate financial performance and corporate social performance has been heavily discussed, with varied outcomes (Cantele & Zardini, 2018). Another study examines port operational sustainability in depth and critically, with an emphasis on determining the impact of its implementation (Lim et al., 2019). Practitioners and operations management have become increasingly interested in sustainability and its relationship to performance (OM) was studied by (Magon et al., 2018). Hristov and Chirico (2019) studied KPIs that affect company performance and proposed a new view on a way to incorporate sustainability issues in business approaches. Hence, the above discussion proves the third hypothesis:

H3: There is a significant and positive impact of sustainability practices on OP.

3. Research gap

In the time of worlds economical markets, both large and SMEs organizations need to implement a total quality management approach in order to increase the performance in today's increasingly worldwide market. TQM business excellence models and performance in organisations have been the subject of several recent studies. An examination of a literature, however, reveals many research gaps.

Accomplishing targets effectively is one of the main objectives if the successful organisations. However, accomplishment of the performance with limited capitals and production of social products is somehow difficult to achieve. It cannot be accomplished seeing sustainability and Total quality management. There is an absence of research on the achievement of performance by utilization of TQM and sustainability practice. Thus, this study finds it essential to determine the components of TQM and key components of sustainability that influences on the performance of an organization and propose a few managerial visions for improving sustainability and performance.

4. Conceptual framework

See Figure 1.

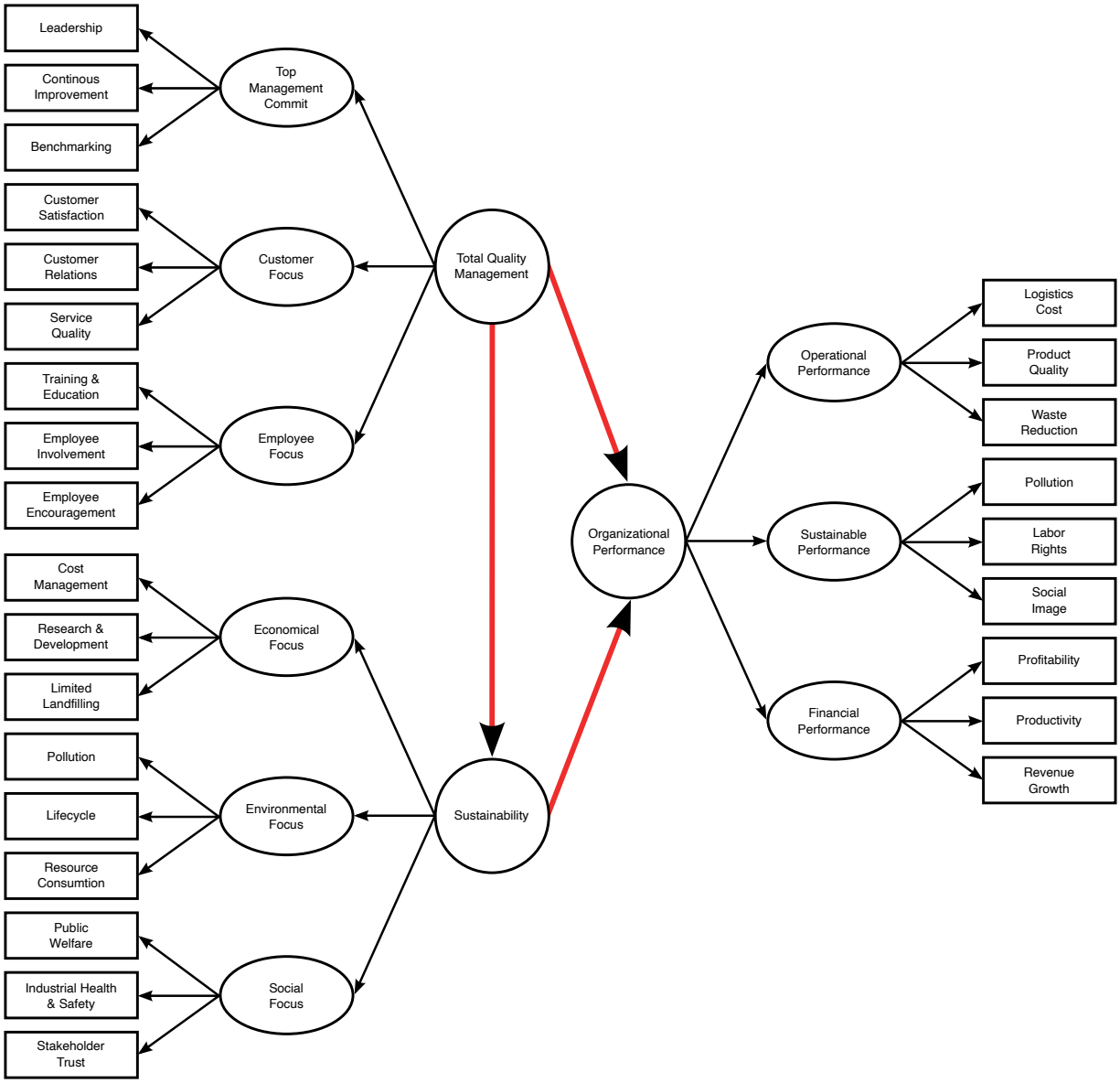

Figure 1: Conceptual Model of this Research.

5. Hypothesis

As indicated by the objectives of this study, there are three (3) hypothesis were intended to find out the relationship between total quality management, sustainability and OP. The intended hypothesis are given as under:

1. Total quality management practices have positive impact on sustainability.
2. There is a substantial influence of TQM on organizational performance.
3. There is a positive effect of sustainability practices on the OP.

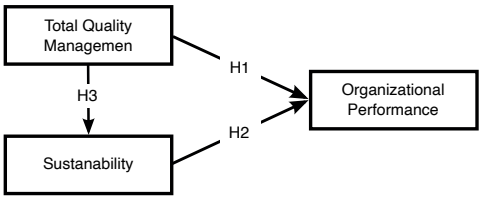

Figure 2: Research Model (Hypothesis Model of the study).

6. Research questions

Which TQM practices have been the highest impact on organisational performance?

What is relationship among sustainability practices and OP containing operational, sustainable and social performance?

Which practices of sustainability are viewed as significant for TQM and organisational Performance.

Is there any connection among Sustainability and TQM practices?

7. Research methodology

The quantitative analysis technique was applied to analyse the relevant correlations among the variables in this study to test the suggested theoretical framework. A questionnaire survey was used to collect data from the manufacturing sector of study for this purpose. The design of this research defines a genuine image of quality in manufacturing companies in Karachi and Hyderabad. The questionnaire survey was utilized as a research instrument for collecting the responses from manufacturing enterprises. The main part of questionnaire incorporates the demographics information (Age, Gender, Position, Education, ISO certification, Firms, and Types of industries. the response from manufacturing industries.

7.1. Survey instrument & measurements:

The questionnaire survey had 45 components for calculating TQM, sustainability, and organizational performance. In this study there is dependent and independent variables, total quality management (independent), sustainability and performance (dependent) which were dignified with scale. The responses were logged on a Likert scale. It involves five (5) points (Strongly agree (SA), Agree(A), Neutral (N), Disagree (D), Strongly Disagree (SD)) and used as a measure of the questionnaire. Responses were collected from the carious manufacturing organisations of Karachi and Hyderabad Pakistan.

7.2. Sample & data collection

The objective of this work contained of those employees who works in various manufacturing industries in Sindh Pakistan. All employees at various managerial levels served as the study's unit. The protocol specifies how personal information is acquired, kept private and maintained for all participants, including confidentiality for all participants. The purposive sampling method was used to choose the study's sample. The questionnaire was set into Google form and sent to industries about 300 questionnaires were dispersed to the various industries. A total of 82 responses were returned, which were useful for analysis.

8. Data analysis

To summarise the data, descriptive statistics were used. For evaluating the data and determine the internal consistency reliability exploratory factor analysis and Cronbach. The current study looked at the relationship between TQM, sustainability practices, and organizational performance using Pearson Correlation. For investigating the hypothesized moderating relationship in the line was investigated using Multiple regression analysis and ANOVA techniques were applied. To summarise the data and test the first, second, and third hypotheses, reliability, the researchers used SPSS and MS Excel software. The hypothesis was tested, and the results shows significance at $P<0.01$ and $P<0.05$.

9. Results

The findings of this study illustrate the value of implementing TQM methods by demonstrating their positive and significant influence on various aspects of sustainability and organizational performance. Organizations can improve all of these performance areas by effectively applying TQM methods. Research allowed to know the link between Total quality management, sustainability, and OP in manufacturing sector. The results of Pearson correlation show a substantial relation. Pearson correlation outcomes (r=0.746, *p*0.000) discovered an adequate positive connection between total quality management and sustainability. TQM shows there is 55 percent the variation in sustainability, according to regression analysis (R-square =0.557). The Pearson correlation between TQM and an organization's performance reveals a positive association between these two variables. The findings (r=0.919, $p>0.000$) shows that TQM and OP have a strong positive relation. according to Regression analysis (R-square=0.770) TQM is responsible for 77% of the variation in performance. The results of Pearson correlation reveals a significant relationship among sustainability and OP. The findings of Pearson correlation (r=0.877, $p>0.000$) demonstrated a strong relation between OP and sustainability. The 84 percent variation in performance due to sustainability is revealed by regression analysis (R-square =0.843). Hypotheses were tested using regression analysis, which suggested that our hypotheses are accepted.

The final section demonstrates the influence of total quality management and sustainability practices on OP, which indicates that they have a positive effect. The values (r=0.963 and r^2=0.928) are also significant. This study suggests that the manufacturing industries in Karachi and Hyderabad need massive improvements. In conclusion, the findings reveal that all TQM approaches have a statistically substantial impact on organizational performance (OP) and sustainability. This suggests that implementing total quality management and sustainability practices can improve an organization's performance

Table 1 shows the demographic information of the participants. Males made up the majority of the participants (88%). The majority of the participants were between the age of 25 and 30 and the percentage is (78.05%). The majority of the other categories were represented among the postgraduate participants (63.41%). Participants with work experience ranging from assistant managers to general managers had the largest percentage of participants (69.9%). Large number of data collected by firms consist more than 100 employees (98.8%). The responses (36%) were collected from the steel industries (43%). highest response rates are collected from the industries that are ISO 9001 certified (52.44%).

9.1. Normality of a data

Normality test of the data is shown in the Table 2. The normality of data is measuring by Skewness and kurtosis. Skewness is a measure of symmetry, while kurtosis is a measure of normal distribution. Skewness and Kurtosis have a range of values between (=1, -1 and +3, -3). The normality of variable values is shown in Table 2.

Table 1: Demographic Table.

Variable		Percentage%
Gender	Male	88%
	Female	8%
Age	25-30	78.05%
	30-35	2.44%
	35-40	9.75%
	Above	8.54%
Education	Masters	63.41%
	Ph.D.	1.22%
	Diploma	2.44%
	other	31.71%
Position	Managers	69.9%
	Others	9.76%
	Trainee engineer	2.44%
	Project engineer	1.22%
	Quality engineer	1.22%
Size of Industry	21-30	14.63%
	31-50	4.8%
	51-100	4.88%
	Above 100	71.95%
Type of Industry	Steel	43.90%
	Automobile	31.71%
	Textile	18.29%
	Chemical	1.22%
Certification	ISO 9001	52.44%
	ISO 2000	7.32%
	ISO 9003	4.85%
	ISO 9002	3.66%

Table 2: Normality Test of Data.

Variables	Skewness values	Kurtosis values
TQM	-0.063	0.897
Sustainability	-0.272	-0.439
OP	-0.312	-1.014

The normal values of these variables, which are connected to skewness and kurtosis (+1, -1 and +3, -3) are shown in Table 2. The results indicate that the data is symmetric and normally distributed.

9.2. Variables' reliability and validity tests

The reliability analysis was initially performed by determining the Cronbach's Alpha for each scale to investigate the internal consistency of TQM components and performance indicators individually. The reliability coefficients of the items included in the study are higher than the 0.70 criterion). Cronbach's coefficients range from 0.736 to 0.937, indicating that scales are extremely reliable.

9.2.1. KMO (Kaiser-Meyer-Olkin) value of TQM, sustainability & organisational performance

Table 3: Cronbach's Alpha value for TQM, Sustainability elements, and OP.

Variables	KMO and Bartlett's Test	Results
TQM	0.806	Valid
Sustainability	0.833	Valid
Organizational Performance	0.803	Valid

9.3. Co-relation analysis and regression analysis

The Pearson correlation coefficient has a range of possible values (+1 to-1). A value of 0 confirms that the two variables have no relationship. A positive relation is indicated by a value greater than 0, That is the value of one variable increases, so the evaluation of other variable does (Atari et al., 2015).

Table 4: Shows the correlation and impact values of TQM, Sustainability, and Organizational Performance.

Variables	Pearson correlation R	R^2	Std. error of estimate
TQM & Sustainability	0.746**	0.557	0.30929
TQM & OP	0.877**	0.770	0.18530
Sustainability & OP	0.919**	0.845	0.15183

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

9.4. Correlation and impact of TQM, sustainability on OP

The impact of total quality management and sustainability on OP is seen in Table 4. The positive results between these variables are shown by the values of r=0.963 and r^2=0.928, p<0.000.

Table 5: Summary of model 2.

Summary of Model				
Model	R	R^2	Adjust R^2	Std. Error of the Estimate
1	0.963[a]	0.928	0.926	0.10448

[a]Predictors: (Constant), mean_sus, mean_tqm

10. Final framework of total quality management (TQM), sustainability, and organisational performance (OP)

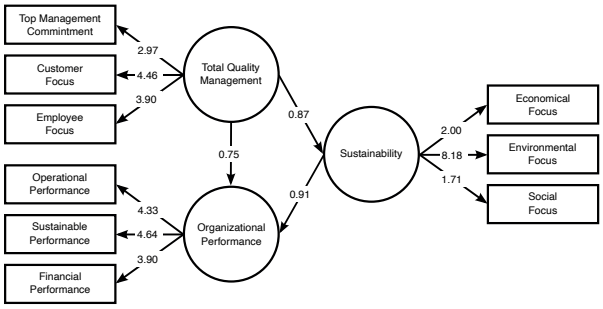

Figure 3: Research framework.

11. Discussion

The relationship between total quality management (TQM), sustainability and organisational performance (OP) was tested in this study. The first objective was to identify the relationship between TQM and sustainability and impact of TQM on organisational performance. The findings reveal a positive connection between total quality

management and sustainability. In the literature, the outcomes of this study showed the importance of TQM and its impact on sustainability (Elhuni, 2014; Abusa, 2011, Tena et al., 2001, Jasiulewicz Kaczmarek, 2014, Mendez & Vila-Alonso, 2018). The findings also reveal a significant link between total quality management and performance of an organisation. The outcomes of TQM and OP settle the several previous studies i.e., (Cetindere et al., 2015; Singh et al., 2018; Rat et al., 2020; Sadikoglu & Olcay, 2014; Abusa, 2011; Saleh & Hasan, 2015; Abu-Alain, 2018; Shafiq et al., 2017. The findings of this study are important for managers in Karachi and Hyderabad's manufacturing sector. It advices supervisors to the best actual components that deliberate in a quality program and which programmes they should adopt because of the cost of quality failure and high cost of re-establishment (Hilman et al., 2020). These findings also help to answers the study's research questions. The second objective was to examine the impact of sustainability on organisational performance. The results demonstrate that these two variables have positive and effective relationship. According to the findings of this study, manufacturing sector try to focus on competitive tactics that are real way to achieve their desired outcomes. The results demonstrates and optimistic an positive impact of sustainability on organisational performance. To achieve high quality managers must focus on the organisations sustainable environment. The final goal was to develop a TQM, sustainability and performance framework. This research also answers the research questions.

12. Conclusion

This study gave a useful data of TQM and sustainability practices and organisational performance. According to this study, TQM has a positive impact on sustainability and performance. In this study, the relationship among TQM and sustainability as well as sustainability and performance was examined. According to this findings, manufacturing business should pay greater attention to TQM aspects and sustainable culture. TQM practices have a direct impact on sustainability and OP, according to this study. The findings highlight the importance of TQM and sustainability practices in manufacturing organisations as well as their implementation. This research also establishes a framework that helps in the financial performances of the industries. Findings revealed that the leadership, customer satisfaction, continuous improvement, training and education and customer relation are the high impact practices and must have concentrated on these practices to achieve success. Similarly, research and development, social image, cost management and waste reduction are the important practices of sustainability that organisations must follow with TQM to achieve corporate success. The idea of conceptual model is also supported by this research. This model confirms that total quality management (TQM) practices have a positive relationship with sustainability and organisational performance.

This research provided answers to the research questions.

1). Which TQM practices have been the highest impact on organisational performance?

The answer is leadership, continuous improvement, customer satisfaction, training and education and customer relation are the core practices that have the greates impact on organizational performance.

2). What is relationship among sustainability practices and OP containing operational, sustainable and social performance?

The answer is that there is a positive relation among sustainability and organisational performance (r = 0.877) as indicated in Table 3.

3). Which practices of sustainability are viewed as significant for TQM and organisational Performance.

The answer is that cost management, social image, research and development, waste reduction and pollution are the high impact practices of sustainability.

4). Is there any link between sustainability performance and total quality management practices?

TQM and sustainability performance have a positive relation as demonstrated in table 4.26 with a r value of 0.919 indicating a strong relationship.

The first objective is to discover the relationship amongst TQM and organizational performance. The findings reveal a strong and significant association and impact on TQM organizational performance.

The second objective was to examine the impact of sustainability on performance of an organisation. The findings reveal a significant and positive relationship between these two variables. According to the findings of this study, manufacturing companies try to focus on competitive tactics that are beneficial in achieving their strategic goals.

Third objective was to establish a framework for TQM, sustainability, and organizational performance, the values in the final diagram show the significant impact and the positive relationship among these three variables.

13. Limitations and Future Suggestions

The study's limits are confined to manufacturing industries in Karachi and Hyderabad. For this investigation, sample size was limited to 82 responses. This would lead to more investigation by doing comparable studies with a larger sample size in order to expand the findings of this study. If the number of responses increases, the study's outcomes in the industries will give the better results.

The current study contributes to several research ideas for the future:

1. This study was conducted in the manufacturing industries of Karachi and Hyderabad; if relpicted in other cities of pakistan cities; it could yield useful results.

2. This study analyzes the relationship between TQM, sustainability and performance by using Exploratory factor aalysis (EFA). Furthermore, this research should focus on the study of structural equation modelling (SEM), which deleivers superior results for the organisation.

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