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The War on Quality and Frontline Soldiers: Post-Covid-19 Challenges for Pakistan's Textile Sector Employees

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Abstract: The recent surge in demand in Pakistan's textile industry coincides with quality control issues. Pakistan's textile industry has successfully received more orders than its competitors during the Covid-19 crisis, thanks to a better government policy that has kept the industry out of lockdown. However, in order to keep up with the increase in demand, the industry faces a major quality assurance challenge as a result of the pandemic. The purpose of this research is to look into the factors that influence quality assurance in the textile industry in Pakistan. Data were collected from 450 front-line quality assurance workers in the textile industry of Pakistan. The proposed research model was empirically investigated using IBM AMOS to apply structural equation modeling. Continuous improvement, communication, and quality check and control are all found to be significant predictors of quality assurance in Pakistan's textile industry. In addition, the study shows that when the extrinsic motivation of front-line workers is high in the pandemic context, the relationship between quality assurance and its determinants is stronger. According to the findings of this study, human resource managers should include extrinsic rewards in employee performance management plans to ensure effective employee outcomes in quality control departments, particularly during crises.

Keywords: Quality Assurance, Covid-19 Pandemic, Extrinsic Motivation; Self-determination Theory, Textile Industry, Continuous Improvement, Performance Management

1. Introduction

Since the COVID-19 hit the major exporters and the lockdown situation affects the manufacturing industries in many countries, Pakistan's textile sector has seen a surge in demand (Hayat et al., 2020). The government of Pakistan managed the economy, particularly the textile industry, well enough to avoid a lockdown situation (Ali et al., 2020). The better policy of Pakistan has become one of the factors that has resulted in increased orders for Pakistan's textile industry, which is the country's second largest contributor to the economy and the world's eighth largest exporter of textiles (Fahim et al., 2021). As a result, it is critical for Pakistan's government and textile industry to maintain this temporary boom in order to sustain economic development and gain a competitive advantage. The textile importers are concerned about quality

management, and as the product's quality improves, the importers continue to do business with the specific organizations (Ashraf et al., 2021). As a result, the Pakistani textile industry must focus on quality management in order to ensure the industry's long-term viability.

When it comes to quality management, quality assurance (QA) is crucial (Allen & Oakland, 1991). Quality assurance is a big and important part of quality management, and without it, you will not be able to meet the quality management standards (Siegmund et al., 2021). QA aids in the reduction of rework, defects, scrape, errors, customer complaints, guarantee, warranty, and process performance (Ali &Shavandi, 2016). Quality check and control is an important part of QA, and continuous improvement aids the organization in achieving low costs and high quality, while communication serves as a link that allows QA activities to flow smoothly (Liyanage et al., 2020). QA, as part of total quality management (TQM), focuses on increasing organizational productivity. Many business owners have been exposed to better production and quality systems, but they lack control over these systems (Hossain et al., 2018). In manufacturing companies, quality assurance is used to ensure customer satisfaction. Inspection of each step-in process is required for 100 percent quality control. According to Evan and Lindsay (1996), proper QA is responsible for 60-90 percent of TQM, and frontline managers or workers (frontline soldiers) are key implementers of the QA (Mukinda et al., 2020). Textile firms will be able to successfully sustain the boom in the sector if frontline soldiers are properly participating and committed to deliver QA, take action on product process specifications, eliminate and detect errors, improve manufacturing processes, and enhance performance. As a result, in order to gain a competitive advantage and ensure the textile sector's long-term viability, it is critical to research how these frontline soldiers in the textile industry can properly perform QA.

Motivation is an important factor, according to the self-determination theory (SDT), if organizations perceive desirable actions from employees, particularly frontline employees (Kuvaas et al., 2017). It means that if the textile industry wants frontline soldiers to do a good job with quality assurance, they must motivate them. Extrinsic motivation (EM) is a component of SDT that motivates employees to do a job effectively and efficiently by providing extrinsic monetary benefits (Davis et al., 1992). As a result, more time is required to investigate the impact of EM on frontline managers performing QA tasks in the Pakistani textile industry.

To fill in the gaps in the literature, this study looked at continuous improvement, communication, and quality check and control as QA predictors to aid textile companies in maintaining a competitive advantage. In order to gain a better understanding and insight into the theory and practice, the study used EM as a moderator across all relationships to investigate the motivational impacts on frontline managers. Gender, age, and education were used as control variables in the study.

2. Theoretical Framework

To investigate the research model, the study used continuous improvement, communication, and quality control variables, as well as the self-determination theory factor (extrinsic motivation). For a better understanding of the study's proposed hypotheses, the study explored the variables in this phase. Figure 1 depicted the study's proposed research model.

2.1. Continuous Improvement

Continuous improvement refers to activities that are carried out on a regular basis to ensure the organization's success (van Assen, 2021). It has an impact on both the design and management of quality in the manufacturing process (Sohal, 1991). Many researchers concentrate on quality control and quality assurance, which are thought to be the best ways to improve production quality (Vachon et al., 2020). Continuous improvement is a key component in gaining a competitive advantage (Khan, 2003). Employee participation in decision-making and organizational empowerment are critical to resolving the problem at all levels of manufacturing. All levels of employees (from top to bottom) are involved in establishing quality standards and ensuring their successful implementation within the organization (Sivasamy et al., 2016). A successful continuous improvement programmer is highly reliant on each individual employee of the company, as it is their responsibility to uphold the quality standards established by their peers.

The most common goals of continuous improvement are to improve creativity, reduce errors, and eliminate waste. Continuous improvement is a crucial way for organizations to adopt different methodologies in order to improve and ensure manufacturing quality (Bhuiyan&Baghel, 2005). Different methodologies are used to reduce defects and achieve a zero-defect quality level, with a focus on reducing quality variation at all levels of manufacturing organizations. Quality ensures that resources are used efficiently and effectively to produce products and services, which is why customers are willing to pay a premium for quality (Khan, 2003). TQMis a management philosophy that covers a wide range of topics, including customer satisfaction, commitment, and requirements, as well as reducing errors, wastages, scrape, and rework through employee participation and teamwork, supplier management, and process design and implementation (Saif et al., 2021).

Different tools and techniques are used to find problems, errors, scrape variation, and develop new techniques to minimize defects in order to achieve continuous improvement. Quality and productivity are improved, and overall production costs are reduced, thanks to the use of the just-in-time design technique (Bhuiyan & Baghel, 2005). The goal of lean manufacturing is to eliminate waste in the production area, which includes supplier relationships, manufacturing process management, product design, and long-term customer relationships (Elezaj, 2019).

Continuous improvement is a lean manufacturing tool that helps to increase productivity, quality, material flow, on-time delivery, and information management at all levels. Customer satisfaction is achieved through a pull strategy (J.P. Womack et al., 1996; James P Womack et al., 1990). A statistical process method is one that is used to reduce the rate of defects and errors in the manufacturing process when developing new products or services (Otero & Otero, 2018).

In the literature review, there is a strong link between continuous improvement and quality in manufacturing firms (Inglis, 2005). The information provided in the continuous improvement and quality management programs explains how to achieve excellence through quality check and control (Bhuiyan & Baghel, 2005). The mission and objectives of the organization provide a better understanding of how to implement continuous improvement in the market's chances of success (Elezaj, 2019). We hypothesizeas follows based on the above-mentioned arguments:

Hypothesis 1: Continuous improvement and quality assurance have a significant positive relationship.

2.2. Communication

Improved employee communication, employee involvement in problem solving and decision-making, increased productivity, improved quality, reduced costs, errors, wastages, meeting customer expectations on time, and maintaining a competitive advantage are some of the benefits of TQM (Sivasamy et al., 2016). In this regard, many manufacturing companies are putting TQM principles into practice to better serve their clients. The ten most important TQM practices, as described by Black and Porter, are as follows. It is all about managing the relationship between the company's employees and its customers, as well as its suppliers, as well as the flow of information among those involved in the manufacturing process. Management support, employee involvement in problem solving and decision making and employee empowerment are just a few of the ways in which a company can be successful (Sila & Ebrahimpour, 2002). According to many studies, the primary goal of TQM is to improve the overall quality of the manufacturing process as well as the quality of the service (Hossain et al., 2018; Schroeder & Robinson, 1991; Sila & Ebrahimpour, 2002). Many researchers have found that the Quality Management System (QMS) interferes with service quality that is directly related to manufacturing performance, according to the understanding of textile workers (Ashraf et al., 2021; Siegmund et al., 2021). When it comes to the manufacturing process, it has been found that having organizational knowledge and experience is critical to the success of the process (Kim et al., 2020; Plourde et al., 2019).

Hypothesis 2: There is a significant positive relationship between communication and quality assurance.

2.3. Quality Check and Control

There is a continuous quality check and control in manufacturing processes by in line inspectors. They are managing the on the floor workers adding value with customers expectation, identification of process area and doing the product right produce by workers (Fiedler et al,. 2021). TQM practices depend on upper management, employees involve in decision making and problem solving, good relationship with suppliers, and statistical process tool are used to control the quality (Iqbal & Asrar-ul-Haq, 2018; Qasrawi et al., 2017). Consequently, manufacturing process continuous quality improvement strategies are given benefit for implementing on production floor. Many organizations have lately merged strategies used that enhance the production quality (Colledani et al., 2014). Thereis always a continuous check and control in manufacturing process to improve quality by involving employees on the production floor and product improvement.Continuous improvement encouraging multiple skills workers, teamwork to give incentives that properly utilized their skills to control the quality. Employees are motivated to share and transfer knowledge with others and to participate in quality improvement, reduce errors and lead time. Therefore, we hypothesized that:

Hypothesis 3: There is significant positive relationship between quality check and control and quality assurance.

2.4. Extrinsic Motivation

Extrinsic motivation (EM) is the degree to which people are motivated to complete a task in order to receive extrinsic rewards such as bonuses, compensation, or promotion (Shahbaz et al., 2021). Extrinsically

motivated employees perform a specific job for reasons other than job characteristics, such as a better life, a handsome salary, or a stable life (Davis et al., 1992), so extrinsic motivation plays an important role in implementing quality assurance. Extrinsically motivated people, according to Deci (1972), increase the employee's commitment and satisfaction in completing the task. EM has been shown to play a role in employee behavior in the workplace in previous studies (Shahbaz et al., 2021). Extrinsic motivation in mobile commerce usage was empirically investigated by (Kuvaas et al., 2017) and found to have a significant impact. Another study used EM as a moderator to examine the relationship between people's creativity intentions and predictor determinants, concluding that EM is positively associated with them (Sung & Choi, 2013). EM reduces resistance to adopting new technology, resulting in higher employee satisfaction. EM has been extensively researched in a variety of contexts and is widely recommended by many researchers (Miao et al., 2007). As a result, extrinsic motivation is used as a moderating factor between the predictors and quality assurance in our current study.

Hypothesis 4: extrinsic motivation moderates the relationship between continuous improvement and quality assurance.

Hypothesis 5: extrinsic motivation moderates the relationship between communication and quality assurance.

Hypothesis 6: extrinsic motivation moderates the relationship between quality check & control and quality assurance.

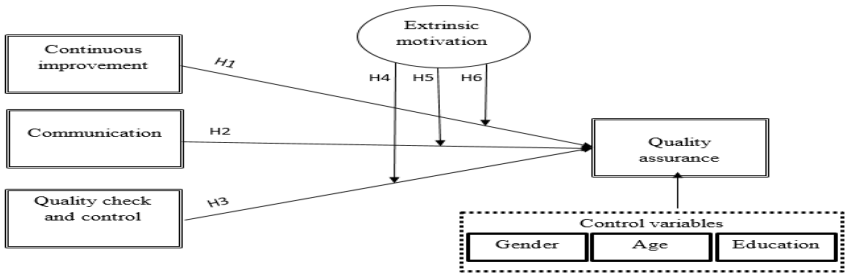

Figure 1: Proposed Research Model

3. Methodology

To restrain the validity of the content all the measures adopted from previous studies of same content. All items were measured on 7-point Likert scale and respondents were given the options from strongly disagree to strongly agree. Four items scale of extrinsic motivation were adopted from (Sung & Choi, 2013), three items scale of continuous improvement were adopted from (Robert et al., 2000), three items scale of quality check and control were adopted from (Nomura, 2021), three items scale of communication were adopted from (Douglas et al., 2000) and three items scale of quality assurance were adopted from (Dodder et al., 1999). Furthermore, demographical information of the respondents will also collect from the respondents as this study considered gender, age, and education as control variables. The research formed a panel of professors and textile experts to deeply analyze the questionnaire and rectify it according to suggestions.

The sample size of this study is front line quality assurance employees of textile and garments sector of Pakistan. The study will use the survey method to collect the primary data and structed questionnaire will be used for data collection because survey method has been proved most suitable method in QA study (Shahbaz et al., 2019) Total 450 questionnaires were distributed in the firms through Google forms and personal visits. Out of which 438 were received and 26 were eliminated due missing values and biasness. 412 responses were selected for final analysis.

4. Results of the Study

The study applied structural equation modelling (SEM) to evaluate the proposed research model by using IBM-AMOS. AMOS has been proved as the best tool to run confirmatory factor analysis (CFA) and SEM in prior literature (Shahbaz et al., 2021). AMOS is a complete package for testing moderating relationship and formative measures. Therefore, current study employed AMOS to run CFA and SEM. Furthermore, the study incorporated SPSS to execute exploratory factor analysis (EFA) for confirm the validity and reliability of data. According to the demographical results of the study presented in

Table 1, 59% of respondents are male, 79% of respondents are well educated and 71 % of respondents are below the age of 39 years which means the respondents of this study are young, educated and equally gender diverse.

Table 1: Demographical Information of Respondents

Category		Frequency	Percentage (%)
Gender	Male	243	59
	Female	169	41
	Total	412	100.0
Age	18-29	92	22.3
	30-39	198	48.1
	40-49	105	25.5
	50 and above	17	4.1
	Total	412	100.0
Education	High School/ Diploma	69	16.7
	Bachelor	178	43.2
	Master	146	35.4
	Other professional education	19	4.6
	Total	412	100.0

4.1. Measurement Model

Bartlett's test of sphericity and Kaiser–Meyer–Olkin (KMO) was employed for measuring the adequacy of sample. The value of KMO is .801 which is between the acceptable range of 0.8-1 and denoted that data is adequate. The data was collected without any gap of time that why the study by using Harman's single factor test to confirm the important concern of common method bias (CMB). After that author divided the items into five subsets, the first factor explained only 29.5% of variance which is below the threshold of 40% (Podsakoff et al., 2003).

Reliability and validity of the data were measured before path analysis and are shown in Table 2. The values of Cronbach's Alpha for all variables were ranged from 0.985 to 0.906, Values of AVE were laying in ranged from 0.698 to 0.765 and values of composite reliability (CR) were ranged from 0.899 to 0.907. Furthermore, the values of factor loadings were ranged from 0.818 to 0.925. all the values of factor loadings, Cronbach's alpha, CR and AVE are in accepted range (Shahzad et al., 2020).

Table 2:Results of Factor Loadings, Validity, and Reliability

Variables	Items	Loadings	Cronbach's Alpha	CR	AVE
Continuous Improvement	CI1	.917	0.902	0.903	0.756
	CI2	.898			
	CI3	.888			
Communication	C1	.881	0.902	0.904	0.759
	C2	.883			
	C3	.925			
Quality Check and Control	QCC1	.924	0.895	0.899	0.748
	QCC2	.915			
	QCC3	.818			
Extrinsic Motivation	EM1	.847	0.901	0.902	0.698
	EM2	.916			
	EM3	.886			
	EM4	.836			
Quality Assurance	QA1	.851	0.906	0.907	0.765
	QA2	.895			
	QA3	.884			

Furthermore, the study addressed the important issue of discriminant validity.

Table **3** described that all inter-construct correlation is lower than the square root of AVE of respective variable which ensured no concern regarding discriminant validity.

Table 3: Correlation Matrix and Square Root of AVE

	EM	C	CI	QA	QCC
EM	**0.836**				
C	0.094†	**0.871**			

CI	0.028	0.291***	**0.870**		
QA	0.276***	0.282***	0.218***	**0.875**	
QCC	0.073	0.172	0.171	0.407	**0.865**

Bold values represent the square root of the AVE of each variable
Significance of Correlations: *** $p < 0.001$
EM = Extrinsic Motivation, C = Communication, CI = Continuous Improvement, QA = Quality Assurance, and QCC = Quality Check and Control

To ensure the validity and consistency of the variables of proposed study framework current study conduct CFA through AMOS. The values of CFA are root mean square error of approximation (RMSEA)=0.054, CMIN/DF=2.187, with a PCLOSE value of 0.258, and comparative fit index (CFI)=0.975. The results showed the exact fitness of the model as all values are laying under the acceptable range.

4.2. Structural Model

The research to validate the hypothesis, conducted the path analysis through AMOS. The study firstly checked the goodness of model fit. According to results, CMIN/DF=1.494, RMSEA=0.035 with a PCLOSE value of 0.901, and CFI=0.959 which concluded that the model is good fit.

Furthermore, Figure 2 presented the results of SEM in which CI (Path coefficient=0.121, P-value=0.005), Communication (Path coefficient=0.148, P-value=0.000), and QCC (Path coefficient=0.351, P-value=0.000) have significant relationship with QA.

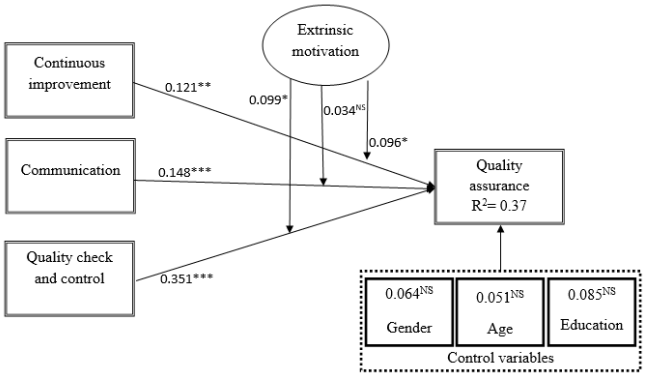

Figure 2:Path Results

Furthermore EM (Path coefficient=0.096, P-value=0.026) significantly moderate the relationship between CI and QA (See Figure 3). EM (Path coefficient=0.099, P-value=0.040) significantly moderate the relationship between QCC and QA (see Figure 4). EM (Path coefficient=0.034, P-value=0.295) not moderate the relationship between Communication and QA. Moreover, control variables gender (Path coefficient=0.064, P-value=0.450), age (Path coefficient=0.051, P-value=0.331), and education (Path coefficient=0.085, P-value=0.106) have not significant relationship with QA which means control variables

did not influence the QA. The results also indicated that value of R^2 is 0.37 which means there is 37% change in QA caused by predictor variables.

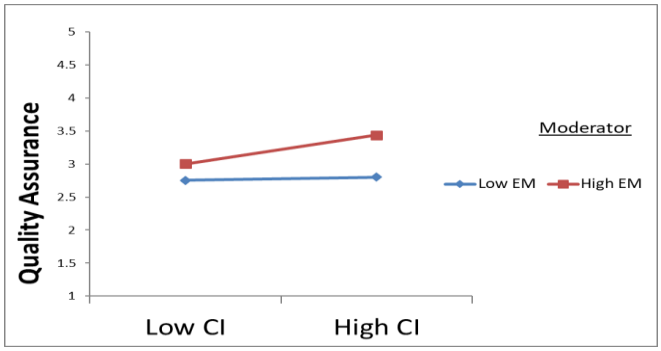

Figure 3: Moderating Impact of EM between the Relationship of CI and QA

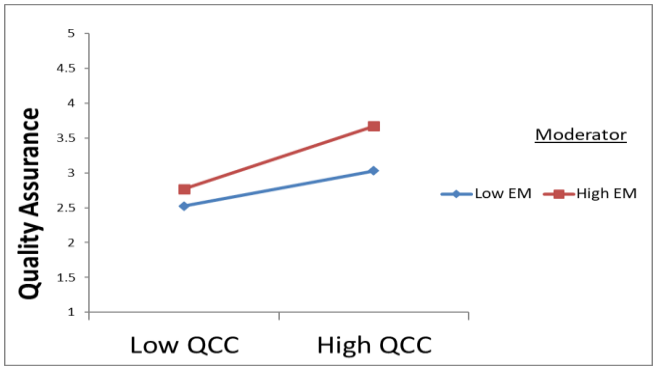

Figure 4: Moderating Impact of EM between the Relationship of QCC and QA

5. Discussion on Results

In the business world quality assurance is a management philosophy that is to satisfy the customers by superiority of the firm's offerings. Quality assurance in an organization reflects the standards, practices and principles of the organization which is aim to meet the satisfaction level of their customer enhance the productivity. In order to ensure the quality there are several codes that are helpful in meeting the quality standards appropriately. In this regard, current study develop a basic framework of for identifying these codes which may have profound impacts on QA. Empirical results of the study demonstrated that CI have significant positive impact on QA, which means that the increase in CI would be helpful in QA. Therefore, firms should regularly examine the CI and should reinforce the CI activities. Furthermore, the results have showed the significant positive relationship of communication with QA. It proved that effective communication within and outside of the organization facilitates QA. In effective communication employees feel more comfortable and have less ambiguity in their job task which ultimately improves QA. Moreover, results also proved the positive association of QCC with QA. Which reflects that an effective execution and control on the quality at each stage of the production and process will aids the QA. Therefore, management should consistently check and control their quality measure to ensure the proper

execution of overall quality. Furthermore, the study also demonstrated the moderating impact of EM on the relationship between predicting variables and QA. The results of the study proved that EM significantly moderate the relationships of CI and QCC with QA. Which means that the higher EM makes the employees more inclined to meet the standards of QA. On the basis of this, it can be said that the higher EM will more strengthen the relationship of CI with QA and QCC with QA. In this regard, management of the firm should incorporate those activities which will boost the EM such as monetary rewards, bonuses and promotions etc. Moreover, the results revealed that EM does not impact the relationship of communication and QA. Which reflects that EM have insignificant impacts on communication and QA relationship. The reason behind this is, communication standards have already set in any organization and it is the responsibility of the management to convey the required information to their employees. The presence or absence of EM does not impact the communication because, managers have to communicate the information with employees in order to complete the job task.

6. Conclusion

The study confirms based on results that continuous improvement, communication, and quality check and control are the significant predictors of the quality assurance. The study also explicates that extrinsic motivation also significantly moderated the relationships among continuous improvement, quality check and control and quality assurance. If the textile firms of Pakistan are to sustain the boom in the demand, then they must focus on quality assurance through frontline managers. The quality assurance is possible only with the help of frontline employees putting special focus on continuous improvement, communication, and quality check and control. The study concluded the special role of extrinsic motivation among the relationships of all existing relationships except the relationship of communication and quality assurance, which means as the textile firms improve the extrinsic motivation in the employees of textile industry through extrinsic benefits, they will perform the quality assurance job more effectively and efficiently.

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