

Impact of e-procurement on the cost of manufacturing firms in Pakistan

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Article History

Received: 26 December 2022
Revised: 23 January 2024

JEL Classification

H57
R41
O14

ABSTRACT

The analysis in the research is regarding the impact of e-procurement on different costs associated with procurement functions in Pakistan's manufacturing industry. The survey was conducted with the help of a questionnaire designed based on the Likert scale. The analysis was achieved using statistical techniques such as regression and correlation, which can be used to analyze the extent of the relationship between different variables. The chosen statistical methods were applied through SPSS, a specialized software used for this purpose. The rationale behind using quantitative methodology is that they are essential in identifying the presence of association between different variables. A sample of 100 respondents was used for surveys. The respondents were procurement managers working in various Pakistani manufacturing industries, as they were considered relevant to provide authentic findings on this particular issue. The findings demonstrated a positive association between the use of e-procurement and the cost of procurement activities that are part of the supply chain operations of the manufacturing firms. The dependent variables included in the research as part of procurement activities include procurement cost, labour cost, the time incurred in the delivery made by the suppliers, and the purchase requisition cost. The results demonstrated that e-procurement has a significant positive impact on managing firms' labour costs. However, the relationship of e-procurement with other dependent variables, such as supplier timing, purchase requisition, and procurement cost, is positive but insignificant.

Keywords: E-procurement, Manufacturing, SPSS, Regression analysis, Developing economy.

Citation of this article:

Lakhani, A. A. & Maqbul, M. (2024). Impact of e-procurement on cost of manufacturing firms in Pakistan. *South Asian Journal of Operations and Logistics*, 3(2), 152-167. <https://doi.org/10.57044/SAJOL.2024.3.2.2435>

Impact of e-procurement on the cost of manufacturing firms in Pakistan

1. Introduction

The analysis in the research is about e-procurement, which is one of the critical methods of procurement used as part of a firm's supply chain operations. The study has been conducted in the context of manufacturing firms in Pakistan. The application of e-procurement in Pakistan's manufacturing sector is slowly gaining popularity, with more and more organizations intending to establish their capabilities. This is because traditional procurement activities take a considerable amount of time, making the overall process very slow, resulting in an unnecessary increase in the overall cost of procurement. Therefore, it is likely that the use of e-procurement will bring about a general decline in procurement costs, along with making the procurement process a lot simpler than it is at the moment (Mubarak et al., 2019; Baloch & Rashid, 2022). The findings presented within the literature of Khalid et al. (2011) suggest that different factors can determine the application of e-procurement within an organization. These include having the right intent for establishing common processes and moving procurement executives from transactional to strategic levels. Besides, regulatory compliance, obtaining visibility of global spending, supplier qualification and selection, improving payment and invoicing systems, and managing the number of suppliers are all significant factors that can influence the application of e-procurement in a country. Further findings regarding this issue have been presented within the analysis of Faheem and Siddiqui (2019), which suggest that it is essential for the manufacturing firms in Pakistan to seriously consider implementing e-procurement to improve their overall supply chain operations and activities. The key factors involved here include electronic design, electronic evaluation, and performing electronic negotiations (Rashid et al., 2023).

Although e-procurement contributes towards reducing transaction costs and minimizing the cost of purchasing different items, there is limited analysis and understanding available regarding the extent of the cost that can be reduced. This is because specific issues and challenges arise during the process of implementing e-procurement, which includes having the required legislation along with the significant cost needed to be incurred in terms of application and maintenance of the process of e-procurement (Harelimana, 2018; Rashid & Rasheed, 2024). On the other hand, e-procurement is considered necessary to reduce labour costs as the automation of operations increases it. However, further analysis needs to be conducted about the extent to which the factor of internal resources affects the extent to which e-procurement influences labour costs. This is because the skills and capabilities of a firm's labour contribute significantly to executing the process of e-procurement consistently (Oh et al., 2013). The analysis of the literature by Piera et al. (2014) suggests that the introduction of e-procurement has created prospects regarding improving the level of collaboration with suppliers, mainly through information sharing and exchange. Nevertheless, further analysis needs to be carried out about the role of e-procurement in reducing the time incurred in terms of procuring the required materials from the suppliers consistently. On the other hand, Chen et al. (2021) argue that proper infrastructure is significant within organizations in terms of using e-procurement to reduce their overall costs. Therefore, internal capabilities can go a long way in determining the extent to which e-procurement can be applied efficiently. The following were the research objectives that were shaped to address the problem statement:

1. *To determine the impact of e-procurement on labour costs*
2. *To assess the effect of e-procurement on the time incurred in procuring goods and materials from the suppliers*
3. *To identify the impact of e-procurement on procurement costs*
4. *To determine the impact of e-procurement on purchasing requisition costs*

The questions proposed for the research are illustrated below. The questions have been developed with the problem statement in the previous section kept in mind.

1. *What is the impact of e-procurement on labour costs?*

2. *What is the impact of e-procurement on the time incurred in procuring goods and materials from suppliers?*
3. *What is the impact of e-procurement on procurement costs?*
4. *What is the impact of e-procurement on purchasing requisition costs?*

The proposed research aims to identify the extent to which e-procurement contributes towards reducing the cost of manufacturing firms in Pakistan. Besides, this research seeks to identify different ways in which the cost of manufacturing companies in Pakistan can be reduced by installing e-procurement.

1.1 Significance of the Study

The study seeks to deal with the gaps identified in the problem statement in one of the earlier sections regarding the role of e-procurement in reducing the cost of manufacturing firms in Pakistan. Therefore, it is expected that the findings of this research will be necessary for the supply chain managers and the decision-makers of different manufacturing firms in Pakistan to know how they can use e-procurement to reduce their procurement costs. In addition, the research findings will be significant in terms of contributing to the existing field of knowledge available regarding the utilization of e-procurement to reduce costs in the manufacturing industry.

1.2 Definition of Terms

1.2.1 E-procurement

E-procurement refers to the business-to-business or business-to-consumer purchase and sale of different products and services through the use of the Internet and the purchase of other information networking systems. Enterprise resource planning is one of the examples of e-procurement facilities used to improve the efficiency of supply chain operations (Brandon-Jones & Kuppi, 2018).

1.2.2 Labor cost

The cost of labour refers to collecting all the wages paid to the employees and the benefits offered. Labour costs in an organization can be categorized into direct and indirect expenses (Cong et al., 2017).

1.2.3 Purchase requisition

A requisition of purchases refers to a document employed when an employer requires initiating a purchase or requesting an order on behalf of their organization. This document provides information to the purchasing department regarding the intention to begin purchasing (Mahendrawathi et al., 2017).

1.2.4 Supplier interaction

Interaction with the suppliers refers to establishing close collaboration and cooperation with them, along with developing long-term associations. Engaging in proper communication with the suppliers is also part of the process of supplier interaction (Glas, 2018).

2. Literature Review

2.1 Empirical Review

2.1.1 The role of e-procurement in Reducing Purchasing Requisitions and Procurement Costs

According to Fernandes and Vieira (2015), e-procurement is how a firm buys products or services electronically. Procurement is a business investment in which a firm buys products or services. The procurement expense can fall into a few distinct classes based on the procurement demand. The competitive offering is typically a piece of the most huge-scope procurement procedure, including different bidders to make a firm cost-effective. It is defined in the study of Zunk et al. (2014) that electronic procurement can reduce expenses in a firm by avoiding duplicate disbursements and utilizing volume purchasing. The role of e-procurement is to save the costs associated with paper-based work or an outdated method of using paperwork in a firm by providing a computerized system and reducing the extra cost and expense. In contrast, as defined by Nyanamba et al. (2013), implementing electronic procurement can be a challenge for a firm as it involves a different new method that users push back, and both the core operators of procurement and some dealers can experience friction and struggle with using the new systems. It can be expensive as the operator is working and wants to use the old procurement method.

Reducing expenses is the main focus of every business, and many firms are searching for approaches to process costs. The best method to manage costs can be done through an e-procurement system. By utilizing an e-procurement system, the firm can gather data about the necessary products and purchase them from suppliers who give the best prices by analyzing the data through an electronic system. Gupta and Narain (2012) also describe that e-procurement can be helpful for an organization in terms of cost management because it can optimize production quickly and lead to long-term savings through primary and constant upgrades in productivity. The workers can avoid wasting time and inventory on less-valued production and mainly focus on high-value production to increase profits.

2.1.2 The role of e-procurement in reducing supplier costs

Kumar and Ganguly (2020) define electronic procurement as a computerized tool for buying goods or services from a firm. The role of e-procurement in reducing the cost is that it is a business-to-business dealing with suppliers utilizing the web as the mode for ordering, and there is no need to go for buying or any surplus of products because the firm purchases products when necessary with the help of listing them electronically. Electronic procurement is more than the basic shortening of the inventory network through the Internet, which causes time and distance complications among providers and clients of products or services for the firm. Electronic procurement can avoid the acquisition of unnecessary products and make purchases of the products or services at the time of need, through which the firm can reduce its costs and increase its profits. On the contrary, McCue and Roman (2012) describe that e-procurement is a challenge for an organization as it is a capital-tight climate. The expense of obtaining and handling an electronic procurement method is restrictive for reducing costs in a firm. Electronic and software licensing and business handling expenses can be expensive, depending on the firm's size.

It is stated in the review by Mose et al. (2013) that the impact of electronic procurement is reducing the expense of the organization because if they have different departments settling on a procurement decision, there can be dissimilarities in what and how they buy the products or services. The role of electronic procurement is that it makes buying electronically simpler for the firm to adjust the procurement principles and collaborate effectively with the suppliers. It is described by Iben et al. (2016) that e-procurement can impact productivity in a firm positively, which can reduce expenses as procurement electronically is less time-wasting as compared to the outdated method of procurement. Computerized records of products make it simpler to submit reusable proposals. E-procurement purchases needed products rapidly, so no extra workers should be hired to keep the inventory up-to-date. Instead, as described in the literature review by Ahmad et al. (2019), electronic procurement might be helpful for a firm to reduce their production and other costs. Still, it might have some problems linked with procurement through accurate and figurative investment in an updated system because of a shortage of information, observed restrictions for electronic procurement itself, or a firm culture unwilling to change the old procurement method.

2.1.3 The role of e-procurement in reducing labour costs

Electronic procurement saves the time of purchasing effectively, as procurement electronically will make the buying procedure easy for the firm and increase the speed of transactions. The firm doing procurement electronically will reduce excessive production and the cost of using it, through which the profit and business of the firm can increase. It is described by Chiu et al. (2012) that the electronic system can remove the old method of procurement from the firm because the electronic system can save and store the whole process of buying in an electronic device, which means firms do not need to expend on warehouses. Procurement through an electronic device can also pave the way towards discovering more established tenders. On the other hand, Orina (2013) defines that the main issue with an electronic system in a firm is that it needs to be secured, and anyone can access a procurement system that is not authorized. This frequently prompts the avoidance of electronic procurement systems due to the loss of interaction control, indirect access to purchasing, and data theft.

The procedure for buying these days is practically the same in every business according to their business, area, or size of the firm. The use of paperwork in the firm can result in more spending on daily orders, and if a firm is preparing many orders every year, this can cost them a tremendous amount of money. The firms are using electronic procurement methods to reduce this cost and achieve a rapid return on investment. It is also defined by Oh et al. (2013). The role of e-procurement in cost is that it uses requests for information, which will confirm that the providers are asked explicit standard inquiries because the information is included in the electronic device in a firm's preferred format. The providers would need to place everything similarly, and their orders would go electronically, allowing the firm to save time purchasing products and reduce the expense of extra purchases. On the other hand, it is described by Osir (2016) that the implementation of e-procurement in a firm increases complexity and cost generally because due determination is taken to comprehend the firm's requirements (Rashid et al., 2024).

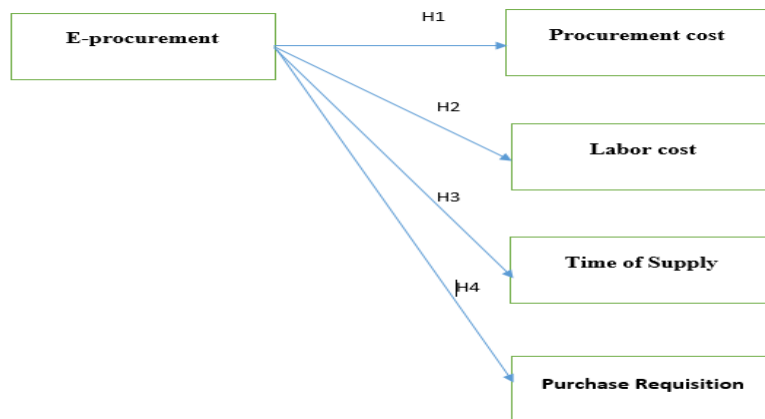


Figure 1: Research framework
(Source: Author’s own creation)

3. Research Methodology

The approach adopted for deriving this study's required findings is explanatory (Rashid & Rasheed, 2023; Khan et al., 2023a; 2023b). The rationale behind applying this approach is that the

aim and objective of the research are to test the association between e-procurement and reducing procurement costs in the context of different organizations operating in Karachi. Considering that there is already a significant degree of information available on this particular issue, it was decided to provide further explanation by conducting this research in the context of Barclays Bank. Quantitative research design is used in the underlying research to obtain numerical evidence regarding the impact of e-procurement on different dependent variables that have been demonstrated through the conceptual framework (Rasheed et al., 2023; Hashmi & Mohd, 2020). As stated by Harrison et al. (2017) and later cited by Rashid et al. (2022a; 2022b), using quantitative design is appropriate for hypothesis testing because it provides specific evidence regarding the impact of one variable over another. Besides, in qualitative research, there is an issue of trustworthiness (Haq et al., 2023). Further, the type that is chosen for this research is causal research (Hashmi et al., 2021a; 2021b). This particular design is applied by identifying the cause-and-effect relationship between e-procurement and different cost-related factors with specific reference to Pakistan's manufacturing sector. The sampling is essential in research because it is only possible to reach out to some of the population group due to time and resource constraints (Rashid et al., 2021; Hashmi et al., 2020a; Haque et al., 2021).

3.1 Target Population

The target population for this research is the procurement and supply chain professionals of different organizations in Pakistan's manufacturing sector. The reason behind including them as target respondents is that they are directly responsible for carrying out other procurement functions and processes within an organization (Agha et al., 2021; Khan et al., 2022). Therefore, they are expected to be able to provide highly authentic and relevant information about the issues raised in this research. According to Asiamah et al. (2017), it is essential to identify and approach the right target population for conducting surveys in research. Data for the research was collected from 100 respondents. Conducting surveys among many individuals will help enhance the authenticity and eventual validity of particular research findings (Khan et al., 2021). In the view of Sim et al. (2018), it is essential to use the kind of sample size that can provide substantial information to complete the research findings effectively. The survey was conducted by personally visiting some procurement managers, and questionnaires were sent to some of them via email. Access to the procurement managers was gained through personal networks. The sampling approach for this research is based on non-probability sampling. Out of the different techniques linked to this kind of sampling, the method chosen for this research is convenience sampling. This particular sampling technique is applied by reaching out to respondents who were readily available and willing to participate in the survey. Therefore, applying the convenience sampling approach was important in saving time and the overall cost of conducting the research (Jager et al., 2017).

3.2 Instrument of Data Collection

Data is collected through a questionnaire developed based on a Likert scale to provide different options to the respondents, such as 1=strongly disagree and 5=strongly agree (Das et al., 2021; Alrazehi et al., 2021). The reason for using questionnaires for data collection is that they assist in acquiring quantitative data, which is a significant requirement of this particular research. Using a Likert scale questionnaire is helpful in a survey to gather quantitative data by providing different options to the target respondents.

3.3 Reliability of the Instrument

The reliability of the questionnaire is intended to be checked by conducting a pilot study, which was applied through the Cronbach alpha test of reliability, which is one of the most valuable tests that can be used to evaluate the reliability of an instrument (Chan & Idris, 2017; Hashmi, 2022).

3.4 Statistical Technique

Different statistical techniques are used to acquire the required findings (Rashid, 2016). These include regression, correlation, T-tests, and ANOVA. The purpose of applying these statistical techniques is to acquire substantial numerical evidence regarding the impact of e-procurement on cost (Stockemer, 2019; Hashmi, 2023).

3.5 Ethical Considerations

Considering that the data is acquired through surveys, different ethical issues are expected to arise, such as confidentiality, privacy, and the fundamental rights of the participants. Therefore, additional steps will be taken to manage these issues. One of these is related to obtaining consent from all the participants through consent forms and respecting matters related to privacy by avoiding the disclosure of their names. Confidentiality will be ensured by storing information securely. Besides, the respondents can leave the survey anytime without facing the consequences (Surmiak, 2018).

4. Results and Findings

4.1 Descriptive Profile of the Data

The descriptive profile was calculated by applying the statistical technique of descriptive analysis, where trends in the responses provided by the respondents were evaluated. The responses regarding all the variables were above 4, which indicates that most respondents agreed with the statements presented in the questionnaire because 4=agree. However, the reactions related to the variable of supplier cost were just below 4, i.e., 3.9, which suggests that the respondents, in this case, might need clarification regarding the impact of e-procurement on supplier cost.

4.2 Validation of the Model

The first part of the validation of the model is about evaluating the reliability of the data, which was done through the application of Cronbach alpha reliability statistics.

Table 1: Reliability Statistics

Cronbach's Alpha	N of Items
.813	16

As per Table 1, the reported value of Cronbach alpha was 0.813, which indicates that the scales used in the questionnaire were consistent, and therefore, further research was conducted on this basis. According to Zhang et al. (2020), the value of Cronbach's alpha between 0.7 and 0.9 can be considered desirable because it reflects the optimum value of consistency within the scales used in the questionnaire (Rashid & Amirah, 2017).

The other method through which validation of the model was carried out was related to deriving the values of ANOVA.

Table 2: ANOVA for Labor Cost

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	68.395	1	68.395	59.737	.000 ^b
	Residual	112.204	98	1.145		
	Total	180.599	99			

a. Dependent Variable: Labor Cost
 b. Predictors: constant, E_procurement

Table 3: ANOVA for Supplier Cost

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.036	1	18.036	18.435	.000 ^b

Residual	95.880	98	.978
Total	113.916	99	

a. Dependent Variable: Supplier Cost
b. Predictors: constant, E-procurement

Table 4: ANOVA for Purchase Cost

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.404	1	11.404	11.193	.001 ^b
	Residual	99.852	98	1.019		
	Total	111.257	99			

a. Dependent Variable: Purchase Cost
b. Predictors: constant, E-procurement

Table 5: ANOVA for Purchase Requisition

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.253	1	16.253	15.664	.000 ^b
	Residual	101.864	98	1.038		
	Total	117.938	99			

a. Dependent Variable: Purchase Requisition
b. Predictors: constant, E-procurement

The sig values of all the tables of ANOVA 2,3,4 and 5 are 000, which is within the threshold value.005, suggesting that the regression models developed for this research are valid (Campbell et al., 2018; Rashid et al., 2019).

4.3 Hypotheses Testing

The analysis regarding hypotheses was carried out by applying regression analysis through SPSS. The study regarding regression was performed separately for every variable.

Table 6: Coefficients of Labor Cost

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.657	.392		1.661	.100
	E-procurement	.732	.095	.615	7.729	.000

a. Dependent Variable: Labor Cost

The first part of the regression analysis was about identifying the impact of e-procurement on the labour costs of manufacturing firms in Pakistan. As you can see in Table 6, the sig value that was extracted was 000, which suggests that the hypothesis developed concerning the impact of e-procurement on labour costs is accepted, and therefore, it can be stated that e-procurement has a positive effect on the labour costs of the manufacturing companies operating in Pakistan.

Table 7: Coefficients of Supplier Cost

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.418	.362		6.676	.000
	E-procurement	.376	.088x	.398	4.294	.000

a. Dependent Variable: Supplier Cost

The other part of the regression analysis was about determining the association between e-procurement and suppliers' costs. As you can see in Table 7, the signed value obtained regarding these variables is also below. 005, suggesting that e-procurement does have an important role to play in terms of reducing suppliers' costs.

Table 8: Coefficients of Labor Cost

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients Beta		
1	(Constant)	2.601	.370		7.037	.000
	E-procurement	.299	.089	.320	3.346	.001

a. Dependent Variable: Labor Cost

The third part of the regression analysis was about identifying the impact of e-procurement on the purchase costs of manufacturing firms. Similar results were also obtained in this regard. As you can see in Table 8, the sig value is 0.001, which suggests a positive link between e-procurement and purchasing costs within the manufacturing firms operating in Pakistan.

Table 9: Coefficients Purchase Requisition

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients Beta		
1	(Constant)	2.527	.373		6.776	.000
	E-procurement	.357	.090	.371	3.958	.000

a. Dependent Variable: Purchase requisition

The final variable of the regression analysis was identifying the impact of e-procurement on reducing the purchase requisition cost of manufacturing firms in Pakistan. As you can see in Table 9, the reported sig value was .000, which illustrates that the hypothesis regarding e-procurement and purchase requisition cost is acceptable (Hashmi et al., 2020b; Rashid et al., 2020).

4.4 Hypothesis Assessment Summary

Hypothesis	Value	Stated
E-procurement has a positive impact on procurement costs in Pakistani manufacturing firms.	0.00	Accepted
E-procurement has a positive impact on labour costs.	0.00	Accepted
E-procurement positively impacts minimizing the time incurred in terms of the supply of materials.	0.00	Accepted
E-procurement has a positive impact on purchase requisition costs.	0.00	Accepted

The analysis regarding all the hypotheses in Table 10 above suggests that all of them have been taken. This means that e-procurement has a vital role in managing procurement costs by reducing supplier costs and purchase requisition costs, along with lowering purchasing and labour costs. The results of the hypothesis have been significant at a confidence interval of 95%.

5. Conclusion, Discussion, Implications, Limitations, and Recommendations

5.1 Conclusion

Conclusions for the research have been derived mainly in light of the questions. About these questions, the findings depict that e-procurement positively impacts labour costs and time incurred in procuring goods and materials from suppliers and ensures efficient management of purchase requisition costs. All these findings were derived through the application of regression and correlation analyses. The findings, therefore, can be considered important in contributing to the existing body of knowledge regarding the influence of e-procurement on different aspects related to the procurement of goods and services. The findings of this research can be considered significant because they can contribute towards improving the performance of manufacturing firms in Pakistan in terms of procurement and the overall supply chain. In addition, the findings can enhance the performance of procurement managers and individuals working in the Pakistani manufacturing industry.

5.2 Discussion

The first question that was raised in the research was about identifying the impact of e-procurement on reducing labour costs. The questions that were asked from the respondents regarding

this particular variable include using e-procurement to reduce the number of staff needed to manage procurement activities and to reduce the wages required to be offered to additional staff that were performing non-value-added activities for the organization. Besides, the hiring cost of labour due to implementing e-procurement was also identified as a significant benefit to be achieved. The regression analysis findings indicated that the hypothesis regarding this particular variable is acceptable, suggesting a positive relationship exists between the application of e-procurement and reducing labour costs. The findings in this respect can be further supported through the analysis of Zunk et al. (2014), which suggest that the effective application of e-procurement within an organization can be viewed as a source through which extensive labour costs can be reduced. However, achieving these benefits can be linked to the employees' capability to make efficient use of e-procurement.

The other hypothesis regarding the analysis was about identifying the impact of e-procurement on the time that is incurred in terms of the procurement of goods and the required materials from the suppliers. Two variables were linked to this question: procurement cost and improving collaboration with the suppliers. The questions included in this part of the questionnaire were concerned with e-procurement being considered a source of reducing delays within the purchasing orders, along with using e-procurement for tracking the products in transit. With the issues of delays and reducing time through e-procurement, it was deemed essential to ask the procurement managers about the role of e-procurement in reducing procurement costs. Most of the respondents regarding this particular issue agreed with the statements included in this part of the questionnaire. The positive nature of the respondents' responses highlights the reason behind the acceptance of the hypothesis regarding this particular variable. Therefore, it is stated in the literature that the application of e-procurement within procurement and supply chain operations ultimately contributes towards minimizing procurement costs and reducing the delays that occur within procurement activities.

The other variable linked to this question was supplier service, which can be affected by the effective utilization of e-procurement services. The statements included in this respect involve using e-procurement to improve the quality of communication maintained with the suppliers, along with bringing about improvements within the function of e-procurement. The other aspect discussed here was using e-procurement to improve the quality and effectiveness of sharing information with suppliers. The procurement managers who provided responses to this particular variable agreed that supplier-related issues are dealt with efficiently by strategically using e-procurement service facilities. Since suppliers are the key stakeholders in a firm's overall supply chain and procurement process, operating e-procurement to improve collaboration with them can be of strategic significance in improving the supply chain capabilities of the manufacturing firms in Pakistan. According to Kumar and Ganguly (2020), e-procurement enhances collaboration between the buyer and supplier organizations. This is because it facilitates the process of supplier collaboration and provides an opportunity for the organization to improve the suppliers' capabilities. However, suppliers must develop the capabilities necessary to execute e-procurement facilities. This is because integrating e-procurement within operational activities and processes is complex.

The other issue considered and discussed in this research was determining the impact of e-procurement on reducing purchase requisition costs. It was essential to consider this particular issue because the purchase requisition cost is regarded as a necessary part of the overall procurement cost that a firm incurs. The statements included in this part of the questionnaire include using an e-procurement service to reduce the need for traditional purchasing requisitions and the overall procurement cost. Besides, the statement in the questionnaire asked the respondents about the role of a purchase requisition in reducing overall purchase costs. Considering the potential benefits of using e-procurement for a firm, most of the survey respondents agreed with the statements included in the questionnaire. The positive nature of the responses can be seen from the mean values derived through descriptive statistics, which were above 4 for all the independent and dependent variables. Although some respondents did not agree with the statements in this part of the questionnaire, the responses of the majority of the individuals demonstrate that they are happy with the use of e-procurement for reducing purchasing requisitions.

5.3 Implications

The problem intended to be studied in this research was identifying the extent to which e-procurement contributes towards improving the procurement processes and activities of the manufacturing firms in Pakistan. The detailed findings that have been derived can have practical, theoretical, and policy implications for different stakeholders in Pakistan's manufacturing industry. The theoretical implications of this research are linked to contributing to the available knowledge related to e-procurement in terms of improving supply chain and procurement processes. On the other hand, the practical implication is about the increase in the focus of the management of the manufacturing industry to adopt e-procurement practices even more. Similarly, the positive nature of the findings is also expected to play a role in the policies developed about the application of e-procurement. Since the findings depict that the application of e-procurement assists in reducing procurement costs and delays, along with lowering requisition costs and improving collaboration with suppliers, it positively influences the policies that are developed in this respect.

The findings of the research also have different implications for different stakeholders. One of these stakeholders is the top management and the procurement managers of the manufacturing firms. The usefulness of e-procurement gives them the option to incorporate online procurement services and improve efficiency. The other stakeholders significantly influenced by the findings related to e-procurement are the employees who are needed to execute the related processes. The employees must be able to demonstrate the required level of understanding regarding the application of e-procurement practices. This is because the application of e-procurement can be considered a complex process and procedure, and the organization may be required to train its employees to use e-procurement productively. The other stakeholder in these findings is the supplier of the firms, as they are the ones from whom the organization procures goods. Since the collaboration with the suppliers can be improved due to e-procurement, it is essential to consider the influence of the findings on the kind of collaboration that can be developed between the buyers and the suppliers. In addition to the different stakeholders highlighted above, the other stakeholders that can be affected by the application of e-procurement policies and practices are the customers of the organizations. The customers can be positively affected, as the implementation of e-procurement can increase the speed at which the organization manages the delivery of its products.

5.4 Limitations

Different limitations can be linked to the findings of the current research. One of these is that the findings are primarily based in the manufacturing sector, which cannot be generalized to other industries because of the differences within the dynamics of different industries. The other significant limitation of this study is that the responses were extracted from professionals working in Karachi. Therefore, applying them to organizations operating in other cities in Pakistan is challenging. This is because the quality of infrastructure for e-procurement can be different in different cities. The other limitation was extracting the required findings by mainly focusing on quantitative data and ignoring the use of qualitative data. The limitation is essential because using qualitative data would have been important in obtaining a detailed analysis of the benefits and challenges of using e-procurement in the manufacturing sector.

5.5 Recommendations

5.5.1 Recommendations for change

It is recommended that policymakers in Pakistan's manufacturing industry use the study's results to improve the quality and effectiveness of their internal infrastructure regarding the use of e-procurement. The infrastructure can be improved by providing training to the employees and installing the right kind of equipment so that e-procurement can be applied with the maximum degree of efficiency. Both the management of the organizations in the manufacturing industry and the suppliers need to collaborate effectively with each other so that the process of applying e-procurement

can be completed without having to face many challenges and disruptions. For the employees, it is recommended that they strive towards improving their capabilities in using e-procurement. They can do so by coordinating with the management and participating in any training and development programs initiated in this respect within their workplace. The rationale for implementing this suggestion is that it will improve the overall worth of the employees who can contribute towards securing a long-term future with their respective organizations.

5.5.2 Recommendations for future research

In the future, researchers can conduct further research about how employees' capabilities can be increased in a manner through which they can apply e-procurement efficiently. The future findings within this particular area would be important because employees are the organization's key stakeholders and are directly involved in the execution of the processes related to e-procurement. The other area that can be explored in the future concerning the topic of e-procurement is identifying how the challenges associated with it can be avoided. The rationale for researching this area is that there are numerous benefits and challenges linked to e-procurement. Therefore, it is crucial to avoid these challenges to maximize the benefits of online procurement that can benefit manufacturing firms in the long run.

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