

Effects of E-Procurement on Supply Chain Management in the Modern Era

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Abstract:

This study examines the relationship of e-procurement i.e., e-payment, e-tendering, e-invoicing and e-customer relationship management on the performance of supply chain management. It is observed that previously it is quite a time-consuming and energy absorbing activity as well as it is inefficient too. With the introduction of e-procurement in the organization, the overall process can be less time consuming as well as it is also very much efficient in order to do all procurement related activities in a timely manner. In this research it has been analyzed that e-procurement is a key role in future for companies as there are many companies already switching their supply chain management process into e-procurement activities as it can be proved in the previous studies that shows how important e-procurement is on the supply chain management and its performance. Present studies attempt the best possibilities with the effect of e-procurement steps which are in practices in supply chain process in Pakistan and manufacturing sector. Through the help of SPSS software, we are able to find the impact of supply chain with e-procurement variables which has a positive impact on supply chain management and results are agreed with the findings of research. The results show that the four electronic variables of E-Procurement are essential factor which directly reduce uncertainty in supply chain functions increase supply chain activities and practices, fast moving process, fast moving supply chain order, fulfillment of orders with quick and improve supply chain performance.

Keywords: E-Procurement, E-Payment, E-Tendering, E-Invoicing, E-CRM, Supply Chain Management

Introduction

In the present decade of corporate/companies and their Higher management try to make an effort to make their organization effective, fast, updated with the new innovation and efficient to compete in the market (Barngetuny and Kimutai, 2015). For this the main thing is to bring your practices of logistics and purchasing of goods of services towards the most updated side which is now in market is call e-procurement which is considered as an essential source of procurement strategy in the current business environment (Croom and Brandon, 2007). By adopting these practice companies switching from manual practices of procurement to automation/electronic system of procurement to work more in more effective manner and to compete in a one or more market at the same time. (Nelson et al, 2001). E-Procurement method help in digitized the product files/profile and help in to create the automate requests for quotes (RFQ's) which is totally based on the process of purchasing and planning of management system of corporate supply chain resources (Albinkalil, 2021). This kind of planning, practices and flexibility help the organization in create your business more profitable more efficient, also create broader competitiveness between the suppliers and get the best rates quickly and bring market efficiency. They find that the involvement of Internet and the use of organizational networking procedures such as (EDI Electronic Data Interchange) show new types of co-ordination among the distant business giants (Harelimana, 2018).

The present procurement process is based on manual procedures which are slow and also slower the systematic practice of purchasing, tendering, payment of invoices and CRM practice (Hawking et al, 2004). The impact of e-procurement on the B2B sale is more important and more valuable. (Subramaniam et al, 2002), pointed that the procedure of e-business practices has improves business between organization, and which help in reduction of transaction costs. The innovative thinking makes positive changes in the organization, said (Cousins and Spekman, 2003). Adopting of e-procurement improved connectivity and create effective and efficient way to get affordable rates throughout the world. As the statement of (Knudsen, 2003), adopting of e-procurement is not easy to adopt it involves proper ERP systems = E-invoicing activities, e-tendering and e-purchasing need to applies above e-tools in firm, then this works as an important role for the advancement of Supply Chain Management performance.

Research Problem

Traditional procurement is currently running in all organization and which include long process to complete its sourcing activities an selection strategy because of paper-based procurement make the process inefficient in which documents sent to vendor through fax or couriers which include a long process for approval and further actions which make the business transformation cycle such as creating invoice, delay the payments late and reached the product to final consumer after the lead time because in traditional procurement things done manually that's why e-procurement comes up with the solution brings all the process in Online and reduce the risk of Potential frauds, cost, quality, delivery risk and market risk and this study also explore how e-

procurement bring positive change in how e-invoice, e-tendering-e-CRM and e-payment will reduce cost, time and increase market efficiency (Ouko et al., 2009).

Research Objectives

- To find the effects of e-payments on Supply chain management
- To determine the importance of E-tendering on supply chain management
- To study the behavior of e-invoicing on supply chain management
- To find e-CRM role on supply chain management

Research Questions

- What are the effects of E-Payments on Supply Chain Performance?
- What are the ways of E-Tendering effects of Supply Chain Performance?
- What is the role of e-Invoicing on Supply Chain Performance?
- What is the importance of E-CRM on supply chain Performance?

Significance of the Research

The potential of E-procurement is brought so many changes in the business (Aberdeen, 2001). In the research relevant data have been gathered about the factors that affect the Supply chain performance and gaps are identified which filled by accepting all the e-invoicing and e-payments factors and elements that are important in making effective supply chain performance so, there is a gap found in which a cross level analysis is not investigated accordingly, which have a most worthy of investigation while considering the importance their encouragement of characteristics and technology usage, in this study the main focus is on the reducing the cost, purchasing cycle process and reduce the risk of payments through e-procurement which is the main factor which reduce the both internal and external risk (Ibem, 2020).

Review of Literature

Electronic Payment

Electronic payment will allow you and your customer, suppliers and vendors to make a practice of doing cashless payments against the goods and services by through cards, internet facility or through the mobile banking. Through this SCM can more focus our time increased sales, supplies, product management inventory and stock availability, planning ,can maintain the shipping status of product and satisfying the requirement of the stakeholders and the customers, so SCM department by waste their time on preparing amount details, enter the amount data against the product again and again, deposit cheques and wait for the clearance, follow up with bank and customers on daily basis with the e-payment method we can update our payment cycle because e-payment help us in saving our time reduced transaction costs as well (Kimmons, 2017).

In developed countries electronic payment system become a part of their life and help in making business cycle more efficient and effective (LaMarco, 2018). As we saw companies nowadays spent millions of rupees and dollars to improving the ways through a sourcing, they distribute goods and services with the help of SCM department. Specially manufacturing companies in which supply chain department (SCM) have a big role because they are using the world resources for getting material which shipped thousands of miles and reach to their last destination accordingly (Albinkalil, 2021). Complex supply chain makes allow the organization to manage this process cost effectively. The development of e-payment the development of technology and the strong computer networks improved the Supply chain management. As the company still manage their financial method/flows manually, using paper-based cash/cheques payments methods against the invoices of raw material, machine, parts, equipment and other things which company used to sell the product to their final consumer and also receive payment from them in the form of cheque or cash, which create the risk specially in cheque if the cheque bounce against the product the customer receive so due to this the flow of cash stuck and many hurdles take places due to non-availability of cash on hand, because we usually see the cheque bounce problem is common in business. Other party always want they have some more time for payment because it's not an easy to recover the payment from other party specially in flow of business as the business is already running on credit and payment term when the maturity date comes of cheque and it will bounce due to multiple reason so the payment delay and due to payment delay other things also delay, due to non-availability of cash we cannot take more orders and not fulfilled the demand of market and which creates a competitor and make the name in market bad, so E-invoice help in making the payment to the supplier, vendors and other parties to quick and more efficient and effective way (Ibem, 2020). Through e-payment the risk of payment will decrease companies receive and doing payments on time just on click basis and also save the payment through different sources, when a supply chain department receive a raw material for manufacturing a product then right after receiving the invoices they can send the invoice data to their finance department for verification and they can do the payment as per the payment terms and same as when they sell the product to any party when the maturity date come for payment they can send reminder to relevant party for payment and they will a receive a payment immediately. However, an e-payment shortens the distance between the buyer and seller (Porter, 2001). The E-payment transformed the supply chain process. E-payment method not only improve the business to business payments but also increases the flow of business, as many companies around the globe starting to adopt the E-payment process to help the supply chain management to invest their time in managing the shipping criteria, bring innovation in planning and reduce the risk or error in planning so the inventory not gone waste and availability of running stocks on hand to sell and in this way supply chain will be perform the task more efficient and effectively these improvement also resolve the manual payment process, and the study shows a positive relationship.

H₀₁: There is a significant relationship between E-Payment and Supply Chain Management

Electronic Tendering

Tender is the process to invite bidder for a big project to participate in a very formal manner to take over a bid, Tender is the process in which Governments and Financial institutes invites a bidder through advertisement about the product and its usually happened for the large projects and the bidder have to submit their technical and financial bid on the given period of time otherwise the bidder automatically get rejected without inform. There is also a condition applied during the tender submission process the shareholders are submitting their shares or securities in case of takeover offer. That's why use the tender method instead of buying products directly from the seller, company and organization wishing to use the Tender process. There are number of types of Tenders like an Open Tender, Selective Tender, Negotiated, serial and Term tender. (Clarke, 2001) In which the Open Tendering is the most important procedure of Tender which employed by the Government and private sectors as well.

An Electronic Tendering is a process of procuring goods and services and is an internet-based process which simplifies the whole tendering process like from the very initial step such as from the tender advertisement of the requirement of product till the last placing the contract and in this way all the documents which need to be exchange in the tender process all the tender process comes into electronic tender format (Waithaka & Kimani, 2021). Such as RFQ (request for quotation) RFT (request for tender) and e-bidding are the main parts of E-tendering. As we see nowadays, well known organization and companies they usually handle number of procurement need, so in this way they realize to replace the manual tendering paper- based procedure with a highly updated and automated e-tendering system, in which the process involve like tender specification, advertising on social media, Tender aggregation and evaluation all the things involved in the contact can be prepared at ease in Electronic tendering system. With E-Tendering system all the contracting agencies can open tenders request for get participants through easy electronic system and submit their tender request to participant in tender digitally through signing into a portal. Likewise, user posts Tender and then entering all the tender details like product specification, upload plans of all relevant documents and the deadline of submission their bid, then in a next step Supplier, companies or organization apply for tender by easily download the tender details and documents with the mentioned of terms and condition like who is eligible for this tender and all other document. Then participant submits upload all the details and documents with technical and financial bid and arrange a follow up. Then the user will make informed the participants with the decision which is taken and who get the Tender all the things done with the help of Electronic Tendering easily and quickly.

H₀₂: There is a significant relationship between E-Tendering and Supply Chain Management

Electronic Invoice

Manually process of Invoicing is taking number of hours for entering data according to available of documents and enter the things same as it is mentioned on documents if it is not same it will be rejected on any stage which is much frustration process and the whole data which we entered goes on trash box which is doing the wastage of papers and then need to create the invoice again as per the available documents and terms and conditions which is very time consuming and also the create the bad impact on management eye because we need to takes signatures on invoice again and again.

After extracting the detail of invoice, it must be approved more one approver and departments. Because invoice related to sales, marketing, supply chain, production and the finance department. Once the signing procedure done then it will send to vendor through courier or by hand which is totally depend when approver department return the invoice to vendor which is making the process slow it takes days for further process and number of peoples get involve, number of materials involve. Which is very much frustrated (Kimmons, 2017) and electronic invoice is able to specify charges from purchaser to suppliers. An electronic invoice is a process to bring the entire working life cycle of Supply chain into a system like from the creation of invoices, sending to concern areas, for receiving a payments and financial book-keeping take place on an entirely electronic/computerized system from the starting point till to finish (LaMarco, 2018).

Effect of E-invoicing on Supply Chain Management E-invoicing improve work management by offers many benefits: significant cost reduction, process simplification, reduced payment time, paper cost, greater security of data, as well as numerous environmental benefits and promote real-time validation (Matano et al., 2020). This is confirmed by enterprises and public authorities which already use it. They introduce transaction costs. E-Invoicing is also help into report B2B GST invoices into the system automatically and help in filling monthly GST tax directly into the one same procedure system instead of doing manually, because every company work according to their SOP and their finance perform and enter the invoices data accordingly so it is not easy in the business point of view to work according to the number of procedure nor the GST network. So, E-invoicing is a unified system which bring all the thing on one portal so all in this way all the GST tax registered holder can be formatted according to the same standard and through this the whole industry can reduce their time and become more efficient and applying the E-invoice system procedure in their business activity (Pattanayak and Punyatoya, 2019).

By using E-invoice we can save a paper in a significant amount because in Simple invoice method number of papers are used because in a day multiple invoices are created and submitted to their concern area and for record maintaining a company who create an invoice and submitting too concern area they receive a receiving from them as approve that the material has

been received and they are accepting the invoice for payment and this is very time consuming process in the end (Time is money) by adopting e0invoice you can save paper and time and get the thing done through technology through effective and efficient manner. And electronic invoice is also better for the environment point of view, because the manufacturing of paper is done by deforestation. E-invoicing also bring a solution in company for removing a Human error in terms of duplicating of invoice entry because its lead to duplicate payments, and losing printed invoices (Waithaka and Kimani, 2021).

Electronic Invoice can be a game changer for Supply chain performance and can help in complete all the process in simple, education and most important in an updated way and it also save the time save time and money without sacrifice the quality and can entertain the customers and vendors on updated and given time without any delay which help the business both direct and indirect way and also help the organization to become a part of competition. In the study discussed on the e-invoicing creation for a financially viable solution, in this way corporates have to or need to create this mass via valuable network with the alliance partners and technology solution experts and provide the important desirability for the creation of e-invoice for the financial Supply chain. There is a big and positive relationship of E-invoice with Supply chain management.

H₀₃: There is a significant relationship between E-Invoicing and Supply Chain Management

Electronic CRM

For Making any organization or company a profitable it is necessary to maintain a goof customer relationship by supplying customer which they want and satisfy them for repeat purchasing. It is necessary to know the need of customers like, dislike of customers this thing judge by the Sales and marketing and Supply chain teams usually.

Electronic customer relationship management (E-CRM) is the application of Internet-based technologies such as emails, websites, chat rooms, forums and other channels to achieve CRM objectives. It is a well-structured and coordinated process of CRM that automates the processes in marketing, sales and customer service (Shahin et al. 2022).

An effective E-CRM increases the efficiency of the processes as well as improves the interactions with customers and enables businesses to customize products and services that meet the customers' individual needs. Electronic customer relationship management is very much motivated because of easy internet access by through of carious platforms such as laptops, mobile devices, desktop and TV sets as much as customers happy with supply chain services it will be good for the procuring agency and supply chain department E-CRM is the main part of Procurement, and have a high impact on procurement performance (Ibbotson, 2007).

Through applying E-CRM system in Supply chain department it become easy to maintain the record of customers on one side in which they can easily analyze the running items and product

and services (Al-Zagheer, 2017). Because of this data it become easy for planning and production team in Supply chain that they can maintain the stock in inventory and entertain the need of customers, because of availability of data of customer need and wants it avoid the error of forecasting and can save the loss of not necessary stock which is not running in the market currently because if companies not have a right information according to the trend then they loss their customers and company will face loss due to not having a right planning and information. By having a proper data of customer like and dislike and purchasing habit of customers so we can satisfy the customer and make the company and organization profitable (Khan, 2013). With available of quality data improved our services, matching the needs of customer and their purchasing behavior, revenue of business increases day by day and having a greater efficiency in our business product and services. As it is in multiple studies mentioned that there is a positive relationship of CRM with Supply Chain Management.

H₀₄: There is a significant relationship between E-CRM and Supply Chain Management

Supply Chain Management

A Supply chain is a network through which procurement get the raw material and finished materials, which later transformed into finished product and ready to distribute to the final consumer by having a multiple resource (Albinkalil, 2021). The main goal of Supply Chain Management is to satisfy their customer's request by using different resources and with having a facing multiple internal and external challenges. E-procurement is a system to purchase, paying payment to vendor; participate on Tender through with the help of technology (Masudin et. al. 2021). Electronic procurement provides an organized way to make a contact with potential supplier during a process of business, and it helps in making an ABC analyze of rates which they received from number of suppliers after the analyze process it become easy in making decision by keeping relevant information. Basically an E-procurement in Supply chain is to bring and service oriented and event driven to provide the support to supply chain activities, it Also covering the role to support the distributors, retailers, producers, customers the services providers in e-procurement system, the help of e-procurement it easy to identify the and presenting the efficient selecting criteria, their implementing strategies, well planned models which is an important e-procurement process and help in making the implementation in supply chain activities. Well managed e-procurement system efforts in managing the inventory and reduce the loss of inventory. A well maintain and updated e-procurement system helps a companies and organization to connect suppliers and increase interaction between them. E-procurement help in provide monitoring tools of customers and to help in cost control by assuring supplier performance.

As we see the world is now fully updated with the technology and their usage which make the thing fast and easy to do like this the companies also implement the e-procurement system globally for getting the thing result oriented and to make the supply chain action fast and help in to compete in the market by satisfy their stake holders and customers, for this firms need to work

of bring innovation in their product timely, provide superior quality and the main thing response as fast as their competitors cannot do (Whyte, 2000). These can be done competitive dimension with having only effectively managed supply chain. As we see the only firms have a winning position those supply chain is updated and competitive this helps them to win the contemporary business. The Supply chain only encompasses the all activities by having the transformation of goods and services from the raw materials stage through end users, as well as associated information flows (AlNuaimi, et al. 2021).

In order to achieve a sustainable competitive advantage, it is necessary to make strong links. It is like the supply chain is playing a role boundary-spanning activity on the input in business from where the suppliers based is build which directly helping the firm to deliver a big impact on industry as having competitive advantage. In the supply chain management, the procurement part is most important, as because it includes business partner in a way of: suppliers, customers, distributors, manufactures that create a query of purchase a raw material in order to assemble or distribute the product and services to their customers and stake holders (Eugenie and De Dieu 2022).

Theoretical Framework

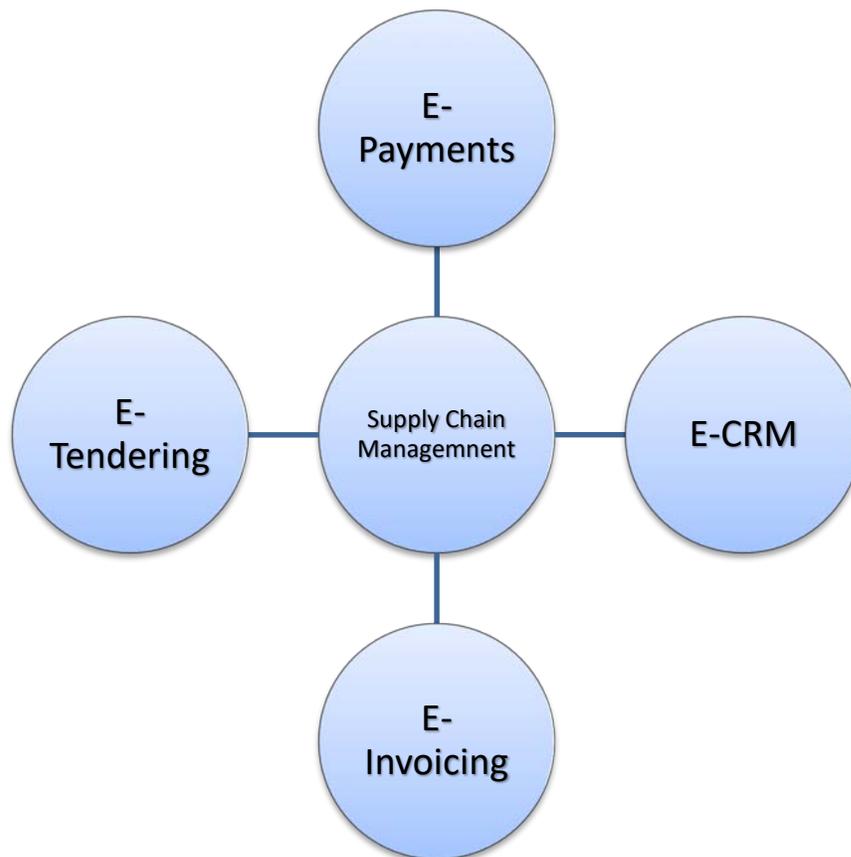


Figure 1: Framework

Research Methodology

Research Design

This method of research is quantitative research methods because the quantitative research is examined by the structural questions which are previously pre- arranged and these questions examined by different respondents and participants. In this study number of people's participations is indulged as it is need to methodically classify the association between the research selection independent and dependent variables. In the following research, for collecting a response the survey method has been adopt.

The research method used in this particular research is to collect a respondent data is a primary research method with the help of adapted questionnaire and used closed ended structured types questionnaire and data will be gathered with the calculated responses and all the questions are related with both dependent and independent variables of this research. In the following research the non- probability sampling technique is used for doing the study. The regression analysis will be used to examine the relationship between independent and dependent variables.

Findings and Results

Reliability Analysis

Table 1

Cronbach's Alpha

Variable	Cronbach Alpha	Items
Supply Chain Management	0.927	6
E- Invoice	0.712	4
E- Tendering	0.889	4
E- CRM	0.837	4
E- Payment	0.917	5

The values in the above table indicate that all the 6 variables have internal consistency, and they all are supposed to be reliable because all the values are greater than 0.6 as the Cronbach alphas results says.

Descriptive Analysis

Table 2

Descriptive Analysis

Variables	Mean	Std. Dev	Skewness	Kurtosis
Supply Chain Management	2.1152	1.01213	1.211	0.927
E- Invoice	2.4361	0.93369	1	0.315
E- Tendering	2.2193	1.01999	1.319	1.435
E- CRM	2.3282	0.95653	0.95	0.636
E- Payment	1.9538	1.07947	1.459	0.926

In the above table 2, E- payment (m = 1.9538 and St. Dev = 1.07947) has a greatest skewness i.e. (1.459) and beside that goes after is E- Tendering (m = 2.4361 and St. Dev = 1.0199), SCM (M= 2.1152 and St. Dev = 1.01213), E- Invoice (m= 2.1152 and St. Dev = 0.93369) and E- CRM has a lowest skewness i.e. (m= 2.3282 and St. Dev = 1.07947).

On the other hand, E – tendering has highest kurtosis (m= 2.2193 and St. Dev= 0.95653) has highest and greatest kurtosis i.e., 1.435 than after this SCM (m=2.1152 and St. Dev= 1.01213), E- payment (m= 1.9538 and St. Dev= 1.07947) E-CRM (m= 2.3282 and 0.95653) and E- Invoice has lowest kurtosis with having (m = 2.4361 and St. Dev= 0.93369) i.e., 0.315 (Bryman, 2015).

Regression Analysis

Table 3

Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std error of the estimated
1	0.916	0.838	0.836	0.41505

Table 4
 Anova Analysis

Model	Sum of Square	Anova		F	Sig
		Df	Mean Square		
1 Regression	301.086	4	75.272	436.947	0
Residual	58.054	337	0.172		
Total	359.14	341			

Table 5
 Regression Analysis

Coefficient					
Mean	Unstandardized Coefficient	Unstandardized Coefficient	Standardized Coefficient	T	Sig
T	B	Std Errors	Beta		
Constant	-0.072	0.07		-1.025	0
E-payment	0.453	0.029	0.485	15.474	0
E-Invoice	0.05	0.039	0.045	1.286	0.03
E-Tendering	0.197	0.046	0.198	4.32	0
E-CRM	0.32	0.4	0.303	7.932	0

Supply chain Management is a dependent variable which R square is 0.838 and adjusted R square 0.836 whereas (F = 436.947, P= 0 < 0.05).

The outcome of the regression shows the results that (E- payment, invoice, Tendering and CRM shows the outlines = 83.8%, F = 436.947 and P = 0 < 0.05. It is also seen in the results that E-payment (B=0.485, p = 0) is effect on E- procurement followed by E- CRM (B = 0.303 P= 0), E-invoice (B= 0.198 and P= 0.03) and E- invoice (B= 0.045 and P = 0.03) Hence the proven model is explaining the effects of SCM which comes from the following regression equation (B.-T.-R., 2015).

Correlation

Table 6
 Multi-Collinearity

	E-payment	E-Invoice	E-Tendering	E-CRM	E-Procurement
E- Payment	1				
E-invoice	0.566	1			
E-Tendering	0.608	0.754	1		
E-CRM	0.673	0.553	0.779	1	
Supply Chain Management	0.838	0.644	0.773	0.811	1

In table 6, the highest and greatest correlation shows ($r = 0.811$) is linking between Supply chain management and E-CRM. On the other side the lowest correlation ($r = 0.533$) linked with E-tendering and in above table we can see all the variable is in between 0.30 – 0.90 which shows that the constructs have no error with the multi-collinearity and all the variables are distinctive.

Discussion and Conclusion

Discussion

This study examines the impact of Supply Chain Management through E-invoice, E-tendering, E-CRM and E-payment. In this paper carried out inductive- exploratory investigations with the multiple cases. Aim is to understand e-procurement adoption and solution on transforming business process by doing shortening current activities. But sometimes this shortening solution of e-procurement is not allowed to implement the solution as the end users not want due to their ease. Through this study found four more variable in adoption of E-procurement is E-Invoice, E-tendering, E-CRM and E-payment. Such variables contribute in e-procurement adoption research by how the variables can break down the barriers and pursuits of e-procurement benefits and variables also highlighting the importance of E-procurement process and the overlooked role.

This research revealed that the commercial state corporation does not provide the specification of the items in which they are dealing on daily basis and which they intend to procure on their websites. The challenge is also being found out that the employees not ready to adopt the new system as they have an experience in their working style and pattern so not ready to lose their comfort zone which fails the implementation process of E-procurement sometime due to not provide proper training to their employees as they need to be trained adequately of the system, so the employees make online requisition for items which are procure.

The findings say that the e-procurement help in get real time response and feedback from customer and make the working process and smooth and helps in contribute towards paperless environment and to compete in the market. The findings indicate the system e-procurement has assisted the corporation to achieve level of transparency in the procurement system, helps in provide better flow of information and improved the accountability in all aspects of activities and process are being carried out.

In the current financial and economy crises, e-procurement offers the greater benefits and transparency, wider reach on globally in lesser times of transaction, as the technology provide the essential safeguard in both most organizing sectors such as the services and manufacturing sectors. Many organizations are move in E-procurement side to compete in the market, minimizing cost improving productivity, improving process of invoice, get fast response form customer to maintain customer relationship, and effective and fast payment process in the modern marketplace. Nowadays business is learning to compete by use of new information technologies especially adoption of technology in the area of procurement as a result increase

importance in examine the benefits of risks of implementing solution and become successful using e-procurement technology.

Conclusion

In this research it has been analyzed that E-procurement is a key role in future for companies as there are many companies already switch their supply chain management process into e-procurement activities as in the studies it has been analyzed that the previous studies show how important e-procurement but not provide the empirical and theoretical impact of e-procurement implementation in supply chain management and performance. Present studies attempt the best possibilities with the effect of e-procurement steps which are in practices in supply chain process in Pakistan and manufacturing sector. In this research study also introduced a theoretical framework which proposed with the four Electronic procurement practices on supply chain management performance. Through the help of SPSS software able to find the impact of supply chain with e-procurement variables has a positive impact on supply chain management and results are agreed with the findings of research. The results show that the four electronic variables of E-Procurement are essential factor which directly reduce uncertainty in supply chain functions increase supply chain activities and practices, fast moving process, fast moving supply chain order, fulfillment of orders with quick and improve supply chain performance. As supply chain is known for connect the activities from the acquisition of raw material till deliver the finished goods to end customer.

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