Assessing E-Procurement Success Factors in Telecommunication Organizations

By

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DECLARATION

It is declared that this is an original piece of my own work, except where otherwise acknowledged in text and references. This work has not been submitted in any form for another degree or diploma at any university or other institution for tertiary education and shall not be submitted by me in future for obtaining any degree from this or any other University or Institution.

Naveed Sarwar
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DEDICATION

Dedicated to my wife, Javeria Naveed

ACKNOWLEDGMENT

*All praises to Allah, the Omnipotent, the Eternal, the Omniscient and the Creator. I am immeasurable obligated to **ALMIGHTY ALLAH**, the Auspicious and supreme, whose benedictions and grandeur flourished my contemplation and ambitions. Many thanks to Allah who bestow us the perfect code of life through His beloved **Prophet MUHAMMAD** (Peace be upon him).*

*I consider myself very fortunate to work under the kind supervision and inspiring guidance of **Dr. Abdul Baseer Qazi** whose personal interest and dedication, remarkable suggestions enabled me to complete this tedious task. His involvement has provoked and nourished my intellectual maturity.*

*My deepest gratitude goes to my affectionate **Parents** for their unflagging love, unlimited support, prayers, encouragement and sacrifices throughout my life. I thank you from the core of my heart for everything you have given to me. I am honored to have you as my parents. Thank you so much for giving me chance to prove and improve myself through all walks of my life.*

*For this dissertation I am greatly indebted to my wife **javeria Naveed** for her faithful support, cheers and thankless efforts.*

May Allah Almighty bless you all.

Naveed Sarwar

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LIST OF ABBREVIATIONS

ANOVA	Analysis of variance
B2B	Business to Business
CLM	contract lifecycle management
CSF	Critical success factors
ICT	Information communication technologies
KMO	Kaiser-Meyer-Olkin Measure of Sampling Adequacy
SPSS	Statistical package for social sciences
SLM	supplier relationship management
RFP	Request for proposal
RFQ	Request for quotation

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ABSTRACT

e-Procurement alludes to the utilization of information and communication technologies using the Internet to carry out all stages of the procurement process. Most of the companies implement this new system of e-Procurement and they are succeeding while many fail. This study was carried out on assessing e-Procurement success factors among top telecommunication organization of Pakistan. The objective of the study determines the success factors influencing the success of e-Procurement. This study involved a semi-structured interview from the procurement managers of selected organizations for the identification of success factors in their organizations. Descriptive approach was adopted to find the important factors that influence the success of e-Procurement, from eight companies a sample size of eighty-five (85) respondents participated for the quantitative data collection through a survey questionnaire. SPSSv22 was used to analyze the collected data and various analysis are performed. It is revealed from the study that all of the organizations have adopted e-Procurement with practices like e-sourcing, advertisement and tendering online bid submission and proposal submission but due to uneducated market and feeling uncomfortable in using new system at supplier/vendor end some of the practices were not even started like e-payments. e-Procurement success factors are obtained and finalized after conducting semi structured interview from procurement managers in selected organization. For this purpose a validated instrument was used. Identified factors in the selected organization are: Employee commitment to success of adoption, Top Management Support, Availability of ICT infrastructure, Transparency, Vendor/ Supplier Qualification, Employee knowledge on new technologies, Real time Performance Monitoring / measurement, Reliability and supplier performance, Choosing right technology and Vendor /supplier response. It has recommended telecommunication organizations of Pakistan should incorporate all the e-Procurement practices and make this system successful. There is also need to find ways for encouraging the employees and by managing training of the new system to employees and small suppliers/vendors or small training or seminar could also me conducted for the sake e-Procurement system to be successful. This will help in improvising of e-Procurement system into success.

CHAPTER 1

INTRODUCTION

1.1 Overview

This study attempts to assess the e-Procurement success factors in telecommunication organizations of Pakistan. The main purpose of this study is to understand how the various factors play their role in making e-Procurement technology a success for the business.

1.2 Problem Statement

In current era there is a lot of competition amongst businesses and resultantly the organizations are eager to benefit from information technology. In order to be competitive in business e-Procurement is identified as an important technology through which a number of benefits can be achieved by organizations. In every organization various factors adds their role in success of e-Procurement System. e-Procurement success depends on these factors because many organizations have implemented e-Procurement and they have succeeded while a lot of them have failed. This difference in outcome has fascinated researches to find out the reason behind the diversified outcome of e-Procurement, stated by James Mauti Mose and Peterson Obara Magutu (2013)

1.3 Research objective

The object of this study is to assess the e-Procurement success factors in telecommunication organizations of Pakistan and to understand how the various factors play their role in making e-Procurement technology a success for the business. There is substantial importance of e-Procurement growth in different industries and in government organizations of Pakistan. It is observed that lack of accountability and

transparency are the main problems and these all have support by senior management mostly in government organizations, but these issues have not been highlighted is discussed by Dr Paul R Schapper (2014).

Coming to this study I had selected telecomm industry of Pakistan and the top telecommunication organizations that are involved in e-Procurement adoption.

The main emphasis of the study centers upon the important questions that are being modeled to Telecommunication organization in Pakistan, "how any organization can get benefit by using e-procurement to deliver significant efficiency and effectiveness gains by having a successful eProcurement system?"

1.4 Research Question

The research questions for my study is as follows:

- What were the important factors that contribute for success of e-Procurement in telecommunication organization of Pakistan?

1.5 Application of the Research

This research work will assess the key factors that affect the success of new adopted technology of e-Procurement system in Telecom organization of Pakistan. How the organization get benefits form it. As e-Procurement is considered an important topic in today's world since its use has significant out come on organization in procurement department. The telecom sector constitutes a major part in the IT industry and there are requirements of reworking in procurement procedures for acquiring new materials and equipment for their operational purposes.

This study determined how different factors influence the success of e-Procurement in different telecommunication organization of Pakistan. A number of researches have already been done on critical success factors for e-Procurement implementation in

different areas like in manufacturing firm, construction organization and in public sectors organizations. A very few study has been done on telecommunication organization and none of study has been done in Pakistan, that cover the sides; what are the key factors for e-Procurement success and how it help the organizations to be successful by choosing the new technology of e-Procurement. Through this study success of e-Procurement can be determine by the identified factors among different organizations. The behavior of individuals and suppliers towards adoption in different organizations could somehow relate to each other. The basic purpose of this study is to gather detailed investigation of the factors for assessing e-Procurement success, then, based on these findings, key factors were identified for success of this new technology.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In this chapter literature is reviewed. Definitions of procurement are introduced, then what is e-Procurement suggested by the literature is defined. This chapter is concluded by introducing the existing tradition procurement system used by organizations then how e-Procurement implemented and after that the success factors that influence e-Procurement is discussed.

2.2 Procurement

"Procurement is process of purchasing the products as scope and requirement of the project. Procurement contributes an important role in project failure and success. A number of sources are essential like cost, training equipment, consultancy and material" is defined in Project Management Institute (2004). Procurement is also defined as management includes preparation, soliciting sources, contract administering, selecting the resources and finalizing the contract. In Procurement management focus is mostly on the buyer's side, not on the seller's. A contractor, vendor / supplier and a subcontractor can be act as seller. When buying the required product or services from any vendor contract obligations are required and this contract becomes an important input for many processes in a project.

Problems related to procurement system includes less information for management , unproductive ways for doing work , high cost and time consuming for vendor and suppliers and lack in transparency of all the process involves in procurement. In outdated work environment, several opportunities for better social and economic results are invisible because the related planning information and management is

unapproachable. Most of these issues can be relatively or mainly addressed through the actual use of information technologies.

MacManus, Susan A (2002) in their study explained “procurement” as The joint purposes of purchasing, record management, transportation and shipping, supply and its inspection, storage and recovery & dumping of the processes.

McCormack, Peter Trkman and Kevin (2010) has defined the simple procurement procedure that is depicted in the figure below.

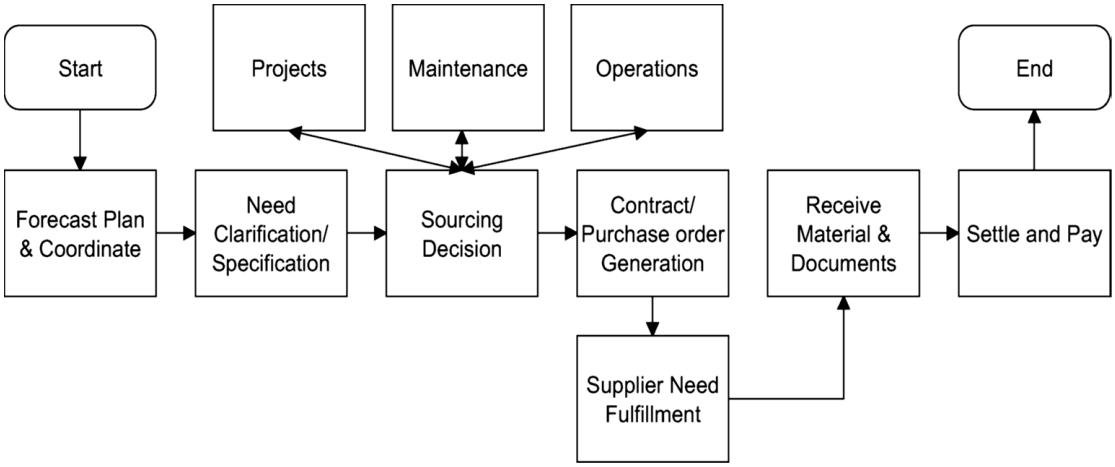

Figure 1. Basic procurement process by McCormack, Peter Trkman and Kevin (2010)

2.3 e-Procurement

The information technology (IT) sector is the utmost dynamic and advanced. Fresh technologies are impending up and challenging among themselves. Telecommunication industry constitutes a large part of IT industry and always at the focus of these technological enhancements, had to deal with same processes of buying new equipment and resources for their operations. Maniatopoulos, Joerg Leukel and Gregory (2005) has defined e-Procurement as a combined term for a variety of various technologies that is used to systematize its associated internal as well as external

processes which involves in processes of purchasing and out-sourcing and services. Davila, Antonio, Mahendra Gupta, and Richard Palmer (2003) in their work on "Moving Procurement Systems to the Internet" addresses the present state of e-Procurement technologies. He explained solutions like e-procurement aim automate work processes and simplify the process of procurement more efficiently. Thompson S.H. Teo, Sijie Lin,Kee-hung Lai (2009) enlightened e-Procurement as "the restructuring the commercial purchasing procedures by excluding outdated system like purchase order forms and requisitions forms and other paper base activities". The rise of e-business headed toward the growth of new prospects linked to procurement: e-Procurement, cost managing, subcontracting is stated by Richard A. Lancioni, Michael F. Smith, and Terence A. Oliva (2000).

Jurong Zhenga and Nigel Caldwell (2004) stated internet arrival in businesses has added the vital changes in procurement processes of organizations and changes in procedures of procurement.

Dave Nelson, Jonathan Stegner and Patricia E Moody (2001) in their study conclude that generally organizational expenses involves purchasing. In order to minimize the total costs consumed on purchasing procedure, e-Procurement became popular using internet technologies by public and private sector organizations. While the openings for improvement seems flourished and still thoughtful in adoption of automated technologies stated by Jurong Zhenga and Nigel Caldwella (2004).

The intensely changed in the services, efficiency, quality in business models and information sharing is due to utilization of information communication technologies (ICTs). Evolution in ICT, mainly the Internet benefit the applicants in deals, using additional functioning by incorporating IT infrastructure. e-Procurement is the system that is supported by modernize supply chain process was enlighten by David Brown

(Brown, 2005). MacManus, Susan in (2002) states about the use of terms "e-purchasing" and "e- Procurement" in e-commerce rising. Thompson S.H. Teo, Sijie Lin,Kee-hung Lai in (2009) their study said that different functionalities are involved in e- Procurement like selecting of supplier, services and goods by using selected search engine.

Kishor Vaidya, Sajeev and Guy Callender (2006) done a study and concluded that e-Procurement inventiveness in the government sector are to provision the development of e-Procurement vide the information budget, there would be discussion on what forms the appropriate CSFs. In this regard he has conducted survey of existing e-Procurement literature assessment reports and research studies on e-Procurement. Eleven factors found to be an important for advantages of e-Procurement application. Another study was done by Batenburg and Ronald (2007) and it was highlighted that e-Procurement adoption is differ from country to country. Some countries are willing to change like France, Spain and other countries like UK and Germany are countries which are timely acceptors of e-Procurement.

Greunen, Herselman and Niekerk J. V. (2010) in their study highlighted that quantifiable result of procurement management was not so far predictable due to limited awareness.

Gitahi (2011) in his study states that in Kenya there are a number of organizations that are using e-Procurement technology. The organization that are using this technology have given the permission to their customers / clients to purchase products online.

Awino (2011) in his study emphasis that mostly supply chain management tactics of manufacturing organizations in Kenya are not held by single firm, other firms also offer the necessary links toward performance of the industrialized business. Previous literature has acknowledged main benefits of e-Procurement, such as; less paperwork,

decrease in supply costs, per tender cost reduction, time savings in process, easy to order, less bureaucracy, processes and documentation standardization, connected reporting, transparent processes, less errors, and easier information access.

Engstrom, Salehi-Sangari,and Wallstrom (2008) in their study States that e-Procurement leads to improved quality and satisfactory level in purchasing. In addition, e-procurement helps in delegation of procurement responsibilities and allow top management authorities to emphasis more on important matters elaborated by Panayiotou, Gayialis and Tatsiopoulos (2004)**.** Adequate skills, compatibilities and expertise are required to develop, maintain and update an electronic solution such as portal (Lindskog, 2008)**.**

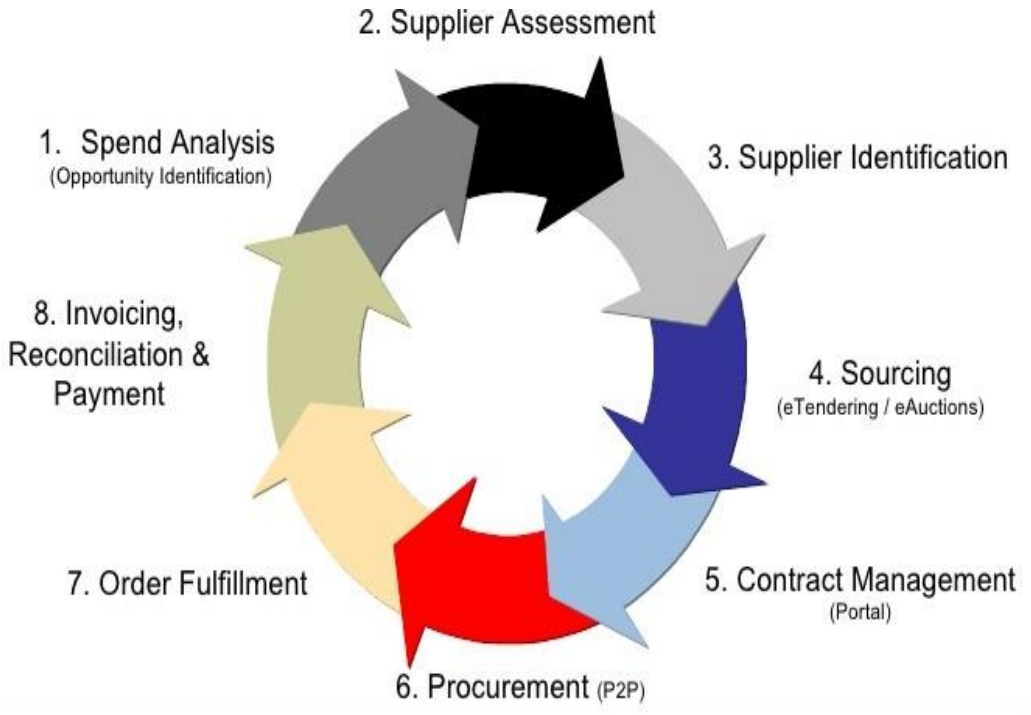

Figure 2. Basic procurement process

Source: http://www.slideshare.net/anandsubramaniam/Strategic-Sourcing-eProcurement

2.4 Forms of e-Procurement

Thompson, Sijie Lin and Keehung Lai (2009) refer the term "e-Procurement technology" to support the activities of procurement actions some associated information technologies functionalities used, are defined as forms of e-Procurement. In e-Procurement he has also introduced three prospective that are infrastructure, information and transaction prospective combines to form of e-Procurement. In Infrastructure perspective, we see packages and acquiring e-procurement functionalities, for example: information regarding to products and services are provided by number of vendors that leads to negotiate contractual terms between buyers and suppliers. The information perspective emphases on the use of e-Procurement in helping information flow, for example, notifying suppliers about the subsequent offering of higher prices on purchasing of goods and services via email in order to compete.

Luitzen de Boer, Jeroen Harink, Govert Heijboer (2002) has explained in their work and focused on impact of different e-Procurement forms, different applications of e-Procurement are highlighted; thus e-Procurement is divided in to six different forms i.e.

a) e-MRO.
b) web-based ERP.
c) e-sourcing.
d) e-tendering.
e) e-reverse auctioning.
f) e-informing.

These forms of e-Procurement system are further explained.

2.4.1 e-MRO and web-based ERP

e-MRO (maintain, Repair and operating) is defined as the process of initiating the purchase request and approval of the purchase request. This solution is based on software that is dependent on internet connectivity. The same way Web base ERP (enterprise Resource planning) system has the same feature of initiating and approving Solutions. The difference between these two solutions is in e-MRO is supporting software system that can be used by each employee of an organization but web-based ERP the procurement department can use this solution.

2.4.2 e-sourcing

e-sourcing is defined as the process in which new suppliers are identified for a specific category of purchase. Competitiveness can be maximize in tendering process when new supplier is identified by the purchaser using this type of procurement.

A purchaser can by identifying new suppliers, maximize the competitiveness during the process of tendering in the case of this procurement category.

2.4.3 e-tendering

Is defined as the process of transfer of information to supplier and receiving the cost of product and response from supplier, like sending the Request for proposal (RFP) and in return response from supplier in form of bids by using internet technologies. e-tendering supports the comparison from different suppliers.

2.4.4 e-reverse auctioning

In this process the main focus is on the price of services and product that is placed for the auction purpose. This process is used for closing the deal among supplier and purchasing company, condition dependent when both supplier and purchaser are agreed upon the price.

2.4.5 e-informing

In this form of e-Procurement, information is exchanged using e-informing between both the parties (purchasers and suppliers) by use of internet technologies, like both the parties can have access on published information on extranet , known as way of e-informing

These different solutions are exited in different systems adopted by the organization like SAP (Systems, Applications and Products) and ERP (enterprise Resource planning) after integration of whole solution in it. These solutions help vendors to purchase from selected suppliers.

Subramaniam and Chandrasekar (2004) in their work on" The Effects of Process Characteristics on the Value of B2B e-Procurement" has stated that organizations are implementing Web-based procurement system and moving their system to this new system but they are unclear about the benefits of their system. What factor effect this system to be successful? He has done empirical study to enlighten the importance by using different procurement types. More over define e-Procurement system as replacing the old manual procurement process and using the new internet based client/ server request.

He also stated that major areas covered by e-Procurement are Procurement Management, transaction and market making and these areas has impact on four procurement operative activates which are: identification of products, processing of the orders, control and observation of the process and coordination between purchaser and supplier and defined function of e-Procurement system in below Fig 2.

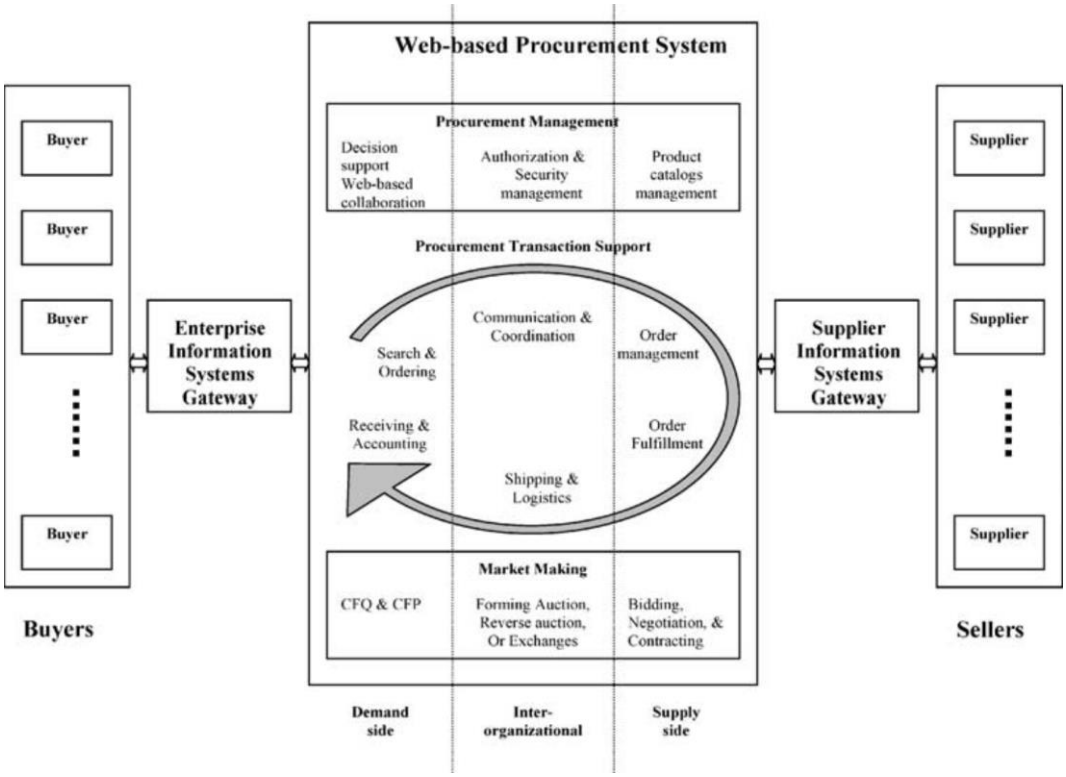

Figure 3. Functionalities of a Web-based procurement system (Subramaniam, 2004)

2.5 e-Procurement Adoption

Organizations in public and private sector are in way to stream line their procurement process and automating them by using information technology and new system of e-Procurement adoption. Adoption of e-Procurement and other business models are important in success of business in industrial scale, highlighted in study of Qizhi Dai, Robert J and Kauffman (2001).

e-Procurement refers to as using of information and communication technologies based on internet in order to conduct the process of procurement at all stages starting from purchase request, searching, sourcing, negotiation, ordering and receipt, highlighted by Brandon-Jones, Simon R. Croom and Alistair (2005). PeralToktaş-Palut (2014) in his study represent that there are a number of barriers in adoption of e-Procurement system

among them; poor IT infrastructure of supplier/ purchaser is one of the important barrier in e-Procurement system adoption.

Helen Walker and Stephen Brammer (2012) in their is study states that SMEs (Small medium enterprises) are typically deficient in implementation of e-Procurement, results in lacking behind in the market as there is greater utilization of technologies (IT) in public procurement. In this way some SMEs will be out of business if they cannot adapt.

2.6 e-procurement benefits

e-Procurement involves in purchase of high cost goods and services for any organization. Kalakota, R. and Robinson (2001) has highlighted the benefits of procurement, which is more important than sales concerning its effect on company profit for example: in the case study conducted at Mercedes 10% increase in business had equal influence on the operative outcome and a decrease of 0.518% in material cost, due to the control effect of procurement prices .

Thompson Teo, Sijie Lin,Kee-hung Lai (2009) states that benefits of e-Procurement include reducing error in transactions, improving buyer services, reducing contract cost, enhancing interaction with business partner's and firms are understanding the importance of benefits, whereas to quantify the benefits may be tough and need time to take measure.

2.7 Reasons for adopting and implementing e-Procurement systems

Before the origination of this new technology of e-Procurement system a lot of resources were spent on procurement activities by the organizations, after adopting and implementing e-Procurement system by the organizations, various overheads of procurement are reduced and efficiency and effectiveness of the whole process is

improved. The importance of e-Procurement adoption is the benefits a firm can achieve like reduced process cycle time, price reduction, improved inventory management, minimizing inventory cost, minimizing the administrative cost, good decision making, having a complete view of entire process starting from purchase request till the payment to supplier, simplify the sourcing of products. Eliminating complex and old-style procurement process with higher administrative cost at every step and use of resources are avoided by using e-Procurement system. There are many benefits that organization can be benefited after implementing e-Procurement system like transparency of all the process, quick exchange of data between both the parties, timely coordination with suppliers and vice versa.

2.8 Success factors

Rockart and John F (1982) are pioneer in using the critical success factors (CSF) in perception with project management system and information. CSF varies form one company to another company manager visualization and identification, different researches have participated and worked in identifying and elaborated the CSF. Like wise (Jeffery K. Pinto, 1987) Proposed a model for project implementation success in form of an equation:

S = *f* (x1, x2,.....,xn) where xi is measures for CSF and S denotes success of project Factors that were discovered and also related to previous literature are:

a) Identification of goals
b) Skilled and experienced manager
c) Support form top level
d) Skilled team members
e) Enough resource allocation
f) Sufficient communication channels

g) Control tools to schedule and plan

h) Response/feedback capabilities

i) Customer support

James Mauti Mose andPeterson Obara Magutu (2013) have conducted a study on critical success factors related to manufacturing firms in Kenya. They have concluded the five critical success factors that have impact on success in e-Procurement are: management & employees and commitment toward acceptance, consistency of information technology, reliability and performance of supplier, performance monitoring and acceptance of consumers towards e-procurement systems and support by senior management.

Kishor Vaidya, Guy Callender and Sajeev (2006), elaborates the outcomes of literature survey and projected a model of the CSF expected to influence e-Procurement success benefits in public sector. Identified no of factors through survey of e-procurement literature that are: user training programs, adoption of new system by suppliers, existing and new system integration, high security, performance monitoring, process re-engineering, management support, implementation tactics, and standardization. Brandon-Jones, Simon R. Croom and Alistair (2005) have conducted study and identified the five success factors that are: cost effectiveness, contract forecast, purchaser – supplier relations, integration with other systems, Administrative commitment.

In e-Procurement, success factors contain effective processes without unnecessary idle times, better monitoring systems and assessment which helps in process improvement and employee's training to get benefit of the new system defined by Panayiotou, Gayialis.S and Tatsiopoulos (2004).

Gunasekaran Angappa and Eric W.T. Ngai (2008) in their study they elaborated that over 60% of the respondents agrees on the following as critical success factors for e-Procurement adoption are:

- Centralized control and management
- better Communication
- Clear accountability
- skilled man power
- Efficient approval and workflow systems
- Top management involvement and support.

Kaliannan, Awang and Murali (2009) has defined the success factors in three sub-groups organizational, technological and environmental describing the organizational perceptions that influence toward e-Procurement use and its adoption.

2.9 e-Procurement Success Measurement

Success of any system is measured by a number of indicators like return on equity, cost effectiveness, quality, competitiveness, better work environment, better control and transparency of system and quick response. In this regard to measure the dependent variable, that is e-Procurement success a questionnaire (Attached in Appendix) was taken from the previous work done by Daniel J. McConnell (2009). The questionnaire comprising of seven questions (including possible indicators for its measurement) was further floated to selected telecom organization and a sample size eighty five respondent was recorded. Using SPSS version 22 the e-Procurement success (dependent variable) is computed by taking mean of seven questions outcome (Detail in Appendix)

CHAPTER 3

TOOLS AND TECHNIQUES

To assess the factors of e-Procurement success previous studies were reviewed and it was found that each sector had different success factors due to different visualization and identification of their goals. To have an understanding of telecom sector of Pakistan and to know the factors which contributes in success of e-Procurement, a semi structure interview based on literature review and previous work done by researchers was recorded from procurement department managers. An analysis of the interview data was conducted to identify common success factors (independent variables) among selected eight organizations. Afterward for quantitative data analysis and to prove the qualitative part two more questionnaires were formulated one for e-Procurement success (dependent variable) second for identified factors (independent variables) Quantitative data analysis was done by using SPSS version 22.

3.1 Software Used

"Statistical package for social sciences" SPSS V22 was used for analysis of quantitative data and to assess key factors of e-Procurement success and having understanding of telecom sector of Pakistan semi- structured interviews were carried out.

CHAPTER 4

METHODLOGY

4.1 Introduction

This study started from literature review, international telecommunication standards, conference papers, journal articles and online material. Focus of this study is telecommunication organizations; those who are already using e-Procurement platform. This study was based on two stage approach, in the first step phenomenological (qualitative) paradigm used to know the important success factors in telecommunication organization. In this respect, semi structured interviews were carried out from the procurement mangers in procurement department in selected organizations. These success factors are finalized after study of past works done by researchers in different fields and after study of different articles it was found that there are different factors that determine e-Procurement success in different organizations / sectors. After finalizing of success factors, a semi structured interview questionnaire, based on previously identified success factors, was used. This instrument was taken from previous study done by Mc Connell and Daniel J. (2009). This instrument was already validated but validation through experts' opinion for semi structured interviews in the directions given by Jill Collis and Roger Hussey (2009) was also done.

In second stage after the semi-structured interview from the procurement manager of each selected organization the factors that are common among all were taken as independent variables. These independent variables were further computed independently by having three questions each. The questionnaires (Attached in Appendix) were developed and selected from past two studies; first one, done by Haslinda Hassan (2013) and second, by Hsin Hsin Chang, Kit Hong Wong (2010). More over the dependent variable, that is e-Procurement success, was also computed

(detail attached in Appendix) by floating the questionnaires among the respondents of same organizations. Quantitative part was validated using the SPSS software.

4.2 Formulation of Independent Variables

Semi structured interview questionnaire was used to for the formulation of factors (independent variables). Distribution of questionnaires showing which question formed the respective variable is tabulated below.

S.no	Interview ionnaire	Variables
1	What is the user level of acceptance in your organization for e-procurement system?	Employee commitment to success of adoption
2	How much employee and management is committed to success of e-procurement adaptation?	
3	How much top management support the implementation and adaptation of e-procurement system?	Top management Support
4	How much employee and management is committed to success of e-procurement adaptation?	
5	What resource implications are associated with implementing the preferred procurement structure?	Availability of ICT infrastructure
6	Will the ICT infrastructure or current financial system restrict the choice of e-procurement solution?	
7	Does e-procurement is a reliable source for sharing the information	Transparency
8	Overall, the e-marketplace/ e-procurement is a platform where information can be transferred securely?	
9	How many staff is trained on e-procurement and how much it is supported in your organization?	Vendor/ supplier Qualification
10	After participating in an e-procurement, the number of existing customers that we are able to retain has increased?	
11	Is there a need to improve procurement skills within the organization?	Employee knowledge on new technologies.
12	How much employees have an understanding of the possible benefits of IT applications?	
13	How procurement is currently organized, how many staff have procurement experience, procurement qualifications?	
14	Does e-procurement helps to reduce the possibility of mistakes?	Real time Performance Monitoring
15	What is the best organizational structure to support effective and efficient procurement throughout the organization?	
16	Overall, the e-marketplace/ e-procurement is a platform where information can be transferred securely?	Reliability and supplier performance
17	What systems do you have in place to capture and store procurement related information?	Choosing right technology
18	What types of e-procurement solution are you aware of available on the market and what solution is used in your organization?	

19	What are the challenges that the organization will face in trying to adopt e-procurement?	Vendor/ supplier Response
20	After participating in an e-procurement, is your company has been able to strengthen its existing business relationships with partners and suppliers?	

Table 1. Formulation of independent variables

4.3 Sources of Primary Data

This research was limited to telecommunication sectors of Pakistan, in this regard, for qualitative part interviews were conducted from procurement managers from each organization. These interview were recorded (audio files are available on CD) but due to some privacy and company policy among eight organizations two organization did allow to record the interview conversation.

For quantitative part questionnaires that were made to know the success factors(independent variable) for e-Procurement success(dependent variable) were floated to eight selected organizations and total of eighty five respondents had participated in these selected organizations.

A thorough analysis, of the interview data was conducted to identify the independent variables, that are success factors, concluded after having interviews from procurement department managers. Following were the target organizations, which were selected for survey in order to gather the required information

- PTCL (Pakistan Telecommunication Company Limited)
- Ufone / Pak Telecom Mobile Limited
- Telenor
- Warid telecomm
- Mobilink
- Huawei
- LMKT
- Celmore

4.4 Data Collection Method

Data collection was divided into two parts. In first part for identification of success factors through semi structured interview was conducted from procurement managers in selected organizations and these questions (Attached in appendix) were taken from related past research work and also validated through expert opinion . In the second part for assessing the factors (independent variables) that contribute in success of e-Procurement (dependent variable) a collection of survey data was made as closed ended questionnaire was selected .All the results of survey data of eighty five respondents was recorded and is available in hard copy form. The questionnaires (Attached in Appendix) were be divided in to three sections.

Section 1: First section include questions on individual's bio data and organization information.

Section 2: Second section questionnaires were about what key factors contributes in success of e-Procurement in selected organizations

Section 3: In third section questionnaires asked about e-Procurement success.

4.5 Data Analysis Method

After collection of data, through survey questionnaires among selected organizations, all the data was entered in SPSS Software. For analysis of dependent variable, that is e-Procurement success, the data of floated questionnaire in selected organization was added in SPSS software and all the seven question data was computed to make a single variable by taking its mean. (Attached in Appendix)

To analyze e-Procurement success survey data was recorded from Eighty five respondents and this survey data was composed of all the elements (process faster, improves relationships, reduces the price, reduces operational costs, improves competitive

advantage) that were required for its measurement, furthermore ten independent variables were computed one by one because each variable was composed of three items (questions). After computation of independent and dependent variable data Different analyses were performed on selected then used for assessing the e-Procurement success factor in telecommunication organizations.

4.6 Factors Hypothesized to Affect e-Procurement Success

E-Procurement allows buyers and sellers to progress supply chain efficiency by automating procurement processes. Thus the following hypotheses was proposed.

H1. *There is a positive relation between e-procurement success and Employee commitment to success of adoption*

Employees Commitment to Success of Adoption among telecommunication organizations is the most important factor for e-Procurement system to be successful, it should allow employees to concentrate on their jobs without forgoing the visibility. Management requires effective control on organizational expenditure. This can be accomplished through training of staff and conveying all the instructions which help in effective use of the technology. The hypotheses is therefore justified

H2. *Top management support has positive influence on e-procurement success*

Top management support was also identified as an important factor that leads to the success of e-procurement. For success of e- procurement top management has to support the system and to achieve overall goal. Top management is responsible for setting the goals, vision, process change, organizational structures, and formulating the new policies and strategies necessary to put an e-procurement initiative in place. Lack of top management support was identified as a barrier to e-procurement use and success. The hypotheses is therefore justified.

H3. *Availability of ICT infrastructures has a significant relation with e-procurement success.*

Availability of ICT infrastructure is an important factors for success for e-Procurement. In e-Procurement there is requirement for sharing the information and documentation among supplier/vendors. In this regard a common standard of technology for communication is required. Small vendors with no ICT infrastructure will be failure for E-Procurement system to be successful

H4. *There is a positive relation between e-procurement success and transparency of the system.*

Transparency of a system is very important for its success. Ensuring that all the information is secure and there are no loop holes in the system that will gain the trust of suppliers. e-Procurement is an effective tool for introducing procurement reform and establishing a fully transparent and open procurement environment and provides traceability of all transactions & audit trail. The hypotheses is, therefore, justified.

H5. *Vendor/ supplier qualification has positive relation with e-procurement success.*

e-Procurement benefits can be understood by an organization only if its partners are ready to use information, interactions or transactions via e-procurement. Uneducated trading partner was identified as a barrier to e-Procurement use. Awareness of new technologies and having knowledge for the business growth by automating the procurement is very important. Vendor / supplier can realize the direct benefits of e-Procurement system after having understanding its vast functionalities. In this regard the main emphasis should be on training, alongside the need for uneducated vendors to identify the skills required by all those engaged in procurement. The hypotheses is, therefore, justified

H6. *There is a positive relation between e-procurement success and Employee knowledge on new technologies.*

Employee skills and knowledge, learning capability and sharing of information positively affect e-procurement success in any organization. Lack of employee knowledge and skills was identified as a barrier to e-procurement use and success. Employee knowledge within organization is result in using wider range of e-procurement functionalities and forms in organization procurement processes. The hypotheses is, therefore, justified.

H7. *There is a positive relation between e-procurement success and Real time performance monitoring.*

Every organization has exclusive challenges towards effective procurement solution. Real time performance monitoring of e-procurement in selected organizations is important. It ensure all the process complies with organizational rules and regulations thus leading to the success of e-procurement. Real time Performance monitoring will also ensure that the e-procurement process is implemented properly in order to realize optimum benefits. Established goals will enable the organization measure how much has already been achieved as far as e-procurement system is concerned. The hypotheses is, therefore, justified.

H8. *There is a positive relation between e-procurement success and Reliability and supplier performance.*

Reliability of information technology is very crucial in success of e-procurement. Reliable e-systems enhances security of information, minimizes risks thus leading to higher levels of acceptance by suppliers and buyers. In order to achieve reliability ensure that website contents are complete, relevant and easy to understand as well as

secure. This will enable suppliers to conduct their transactions with minimal risks and gain the satisfaction level of users. The hypotheses is, therefore, justified.

H9. *There is a significant relation between e-procurement success and choosing right technology.*

It is very important to choose the right technology as per organization requirements. Determining what all integration is required between selected e-Procurement solution and existing systems. If integration matters are complex, there will be requirement for changing of the business processes within the organization. Moreover it is also important financial management should also be linked with e-Procurement system to ease the online payment processes to suppliers and also communicated to suppliers for fulfilment. The hypotheses is, therefore, justified

H10. *There is a positive relation between e-procurement success and vendor supplier response.*

As e-Procurement includes new technologies and changes in traditional procurement approaches, there is need to train staff in procurement practices and the use of e-Procurement tools are critical to the success of an e-Procurement initiative. End-users can realize the immediate benefits of the e-Procurement system once they understand the operational functionalities. This means that training should be given a high priority. Success of e-procurement alone does not depend upon technology, users (supplier) are also the main force in success of e-Procurement. The solution must attract the users to vision e-Procurement for purchase of goods and services. The hypotheses is, therefore, justified.

CHAPTER 5

RESULT AND ANALYSIS

5.1 Identification of Success Factors

To identify the success factors which contributes in implementation of successful e-Procurement solution in selected telecommunication origination of Pakistan, eight officers from procurement departments were approached from eight selected organizations and semi-structured interview was conducted.

5.2 Factors found to have an Effect

After having interviewed (recorded audio is available) from procurement managers of selected organizations, analyses were done after knowing each organization factor that contributed in e-Procurement success. It was found that there are total ten common factors that play an important role in success of e-Procurement system in targeted organization of Pakistan. These identified factors have different importance among different organizations.

1) Employee commitment to success of adoption
2) Top Management Support
3) Availability of ICT infrastructure
4) Transparency
5) Vendor/ supplier Qualification
6) Employee knowledge on new technologies.
7) Real time Performance Monitoring / measurement
8) Reliability and supplier performance
9) Choosing right technology
10) Vendor /supplier response

5.5 Theoretical Frame work

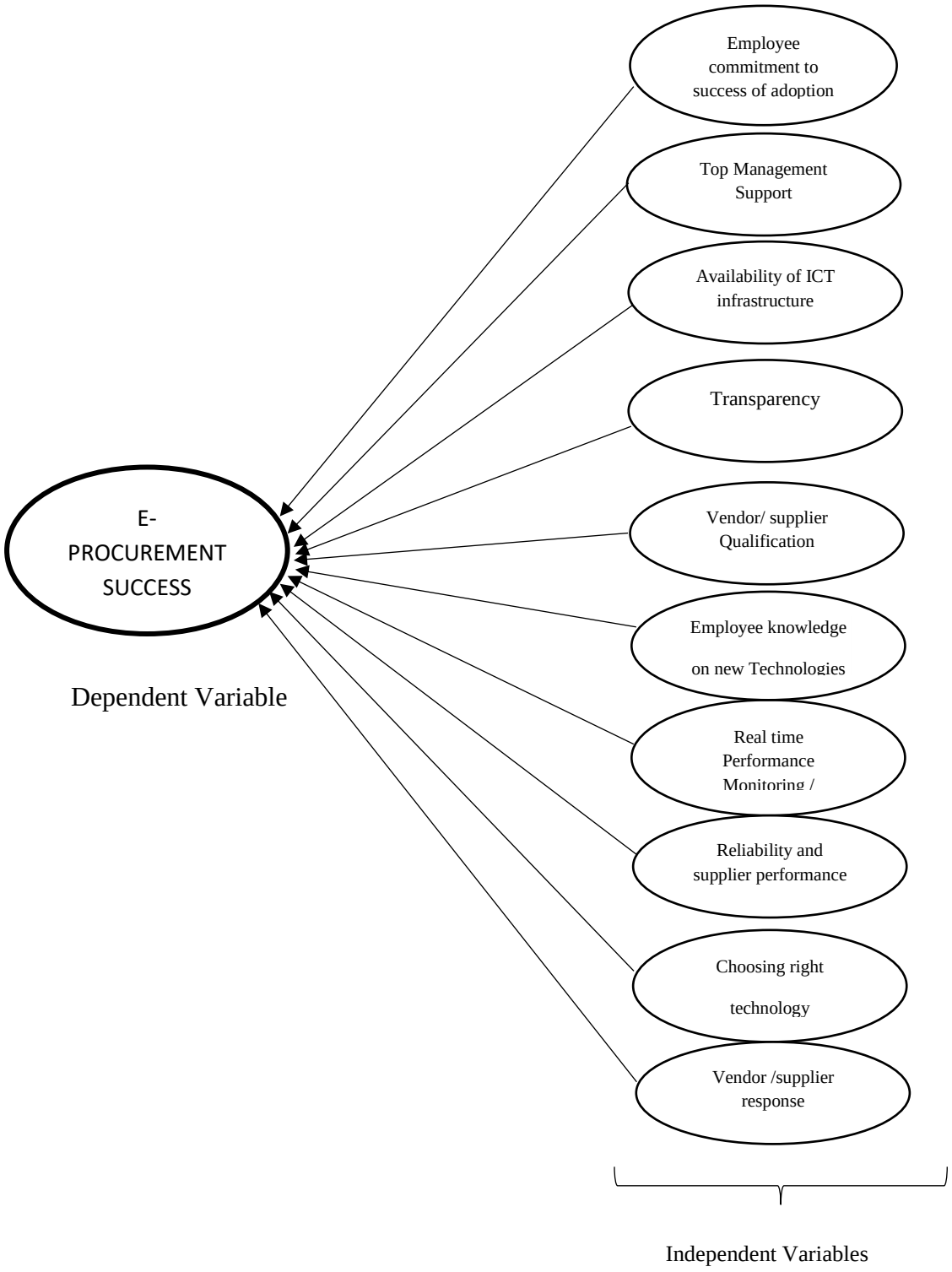

Figure 4. Dependent and independent variables

5.6 Data Analysis

The data collection part was be the most important as this research work was focused on telecommunication organization who were aware of e-Procurement and using this system. Data was gathered and quantitative analyses were performed on the obtained data. Using SPSS data was analyzed using frequency distribution, Co-relation Analysis, Reliability Analysis of data and Regression Analysis. (Results are attached in Appendix) These methods were choose due to the nature of the data, and to make it easy for interpretation and understanding. It will be helpful and assist to selected organization to understand the success factors that influence e-Procurement and how they come up in successful adoption system.

5.7 Frequency Distribution Analysis

Frequency distribution test was used to categorize the responses from participants of survey questionnaires into different categories. In frequency we get to know count of the number of time each scores on single variable occurs. In SPSS histogram was use to represent the frequency distribution of variable. In frequency distribution we got the values of Mean, median and Mode.

		Employee Commitment	Top Management Support	Availability of ICT Infrastructure	Transparency	Vendor/ Supplier Qualification	Employee Knowledge on new Technologies.	Real time Performance Monitoring /	Reliability and supplier performance	Choosing right technology	Vendor /supplier response
N	Valid	85	85	85	85	85	85	85	85	85	85
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		3.78	4.2941	4.1961	4.356	4.0314	3.3216	4.1686	4.1451	4.027	3.4000
Median		4.00	4.3333	4.3333	4.333	4.0000	3.3333	4.0000	4.3333	4.000	3.6667
Mode		4.00	5.00	4.33	5.00	4.00	3.00	4.00	4.00	4.00	3.67[a]

Table 1. Frequency distribution analysis of independent variable

N	Valid	85
	Missing	0
Mean		4.0655
Median		4.1429
Mode		4.00[a]

Table 2. Frequency distribution analysis of Dependent variable

5.8 Analysis Using Histogram

Histogram analysis was used represent the frequency distribution of the variables. First variable was Employee Commitment to Success of adoption of e-Procurement and from the given graph, it was infer that majority of respondents lied in agreed and strongly agreed. That means in target organizations employees' commitment is important for e-Procurement success.

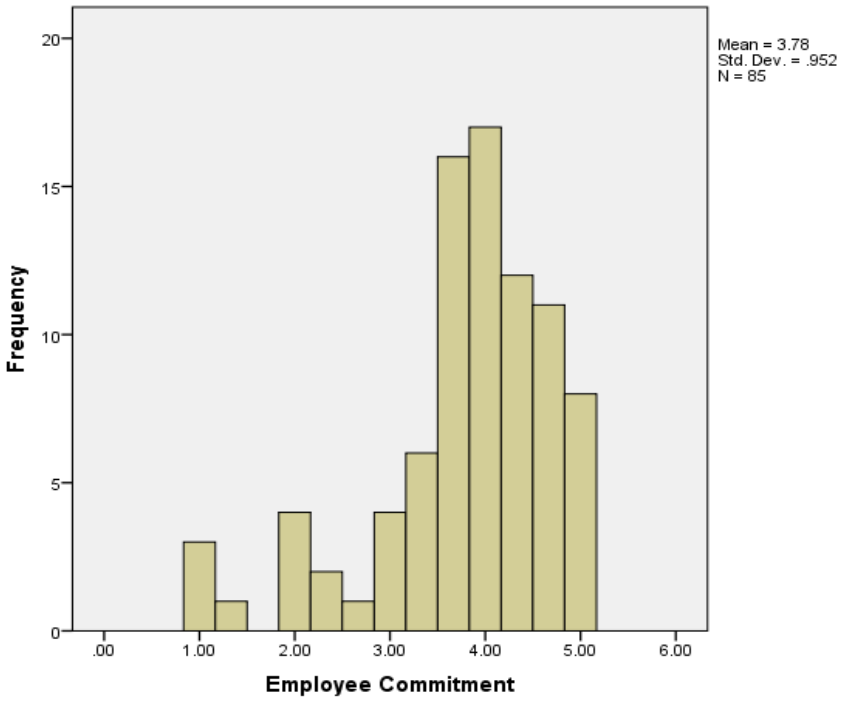

Figure 5. Employee Commitment to Success of Adoption

Second variable was Top Management Support for Success of e-Procurement and from the given results it was concluded that management is interested in e-Procurement success and its role is quite important in success of e-Procurement

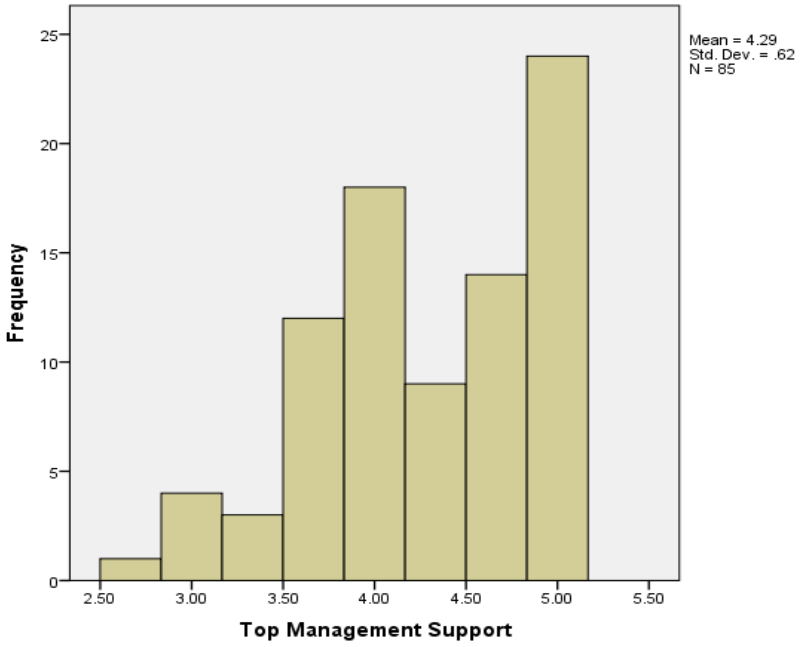

Figure 6. Top Management Support

Third variable was Availability of ICT infrastructure, for Success of e-Procurement and from the given graph, it was concluded that how much availability of ICT infrastructure is important for success of e-Procurement. As this new technology is dependent on ICT infrastructure.

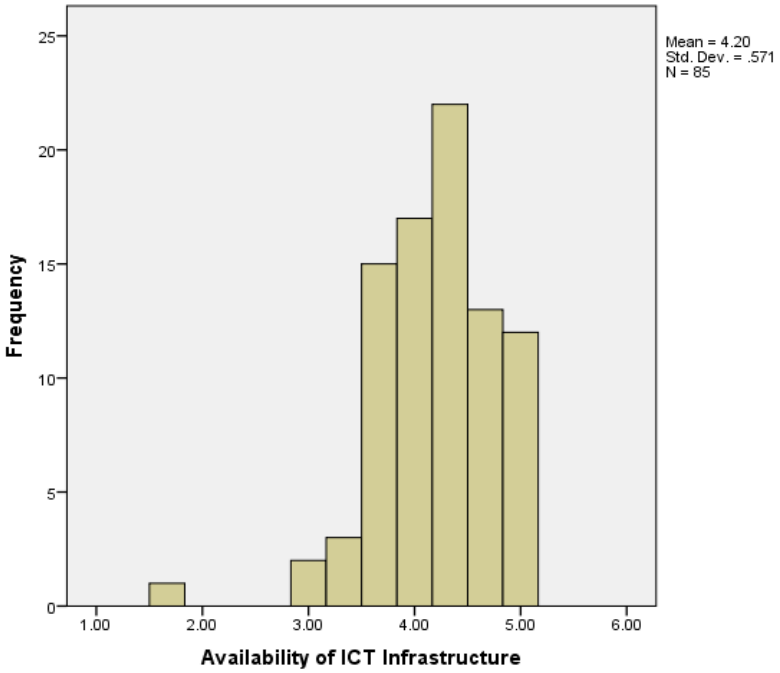

Figure 7. Availability of ICT infrastructure

Fourth variable was Transparency for success of e-Procurement and from the given chart, it was concluded that most people think transparency is important for success of e-Procurement, as it gains the interest of supplier and provide a transparent environment for the system to work. None of the respondents is disagreed on this variable.

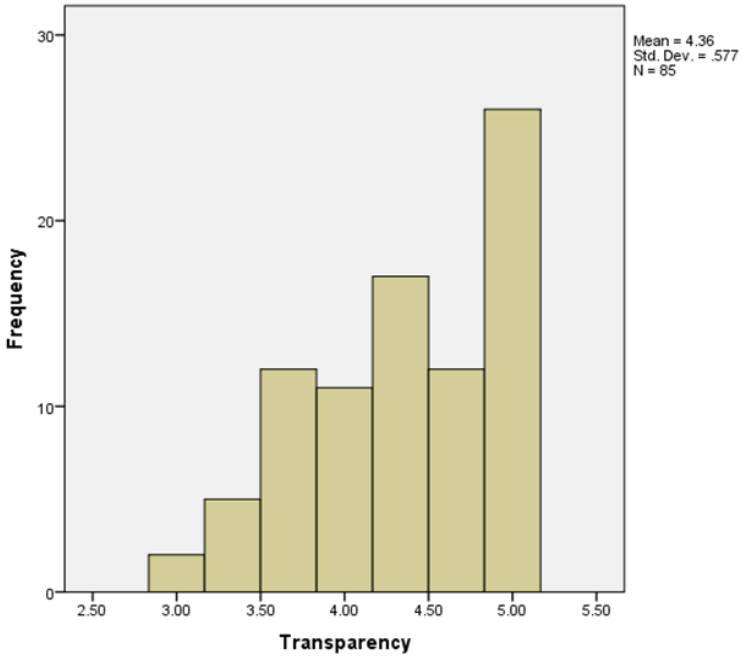

Figure 8. Transparency

Fifth variable was vendor Supplier Qualification is quite important for the optimal use and best performance of system and from the given chart, it was concluded, most of the respondent are convergent and they think that it is important that e-Procurement system to be successful if the interacting part is educated enough and is aware of new technologies.

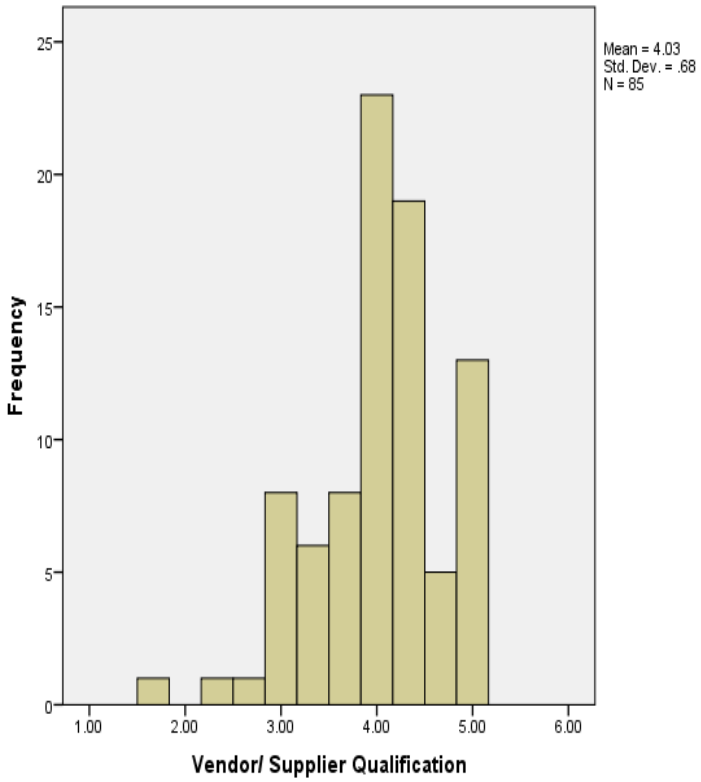

Figure 9. Vendor / Supplier Response

Sixth variable was Employee knowledge on new technologies, as from the results it is assumed that about 19 respondents are neutral on employee knowledge on new technology but overall it is important that employee knowledge on new technology is vital for success of e-Procurement.

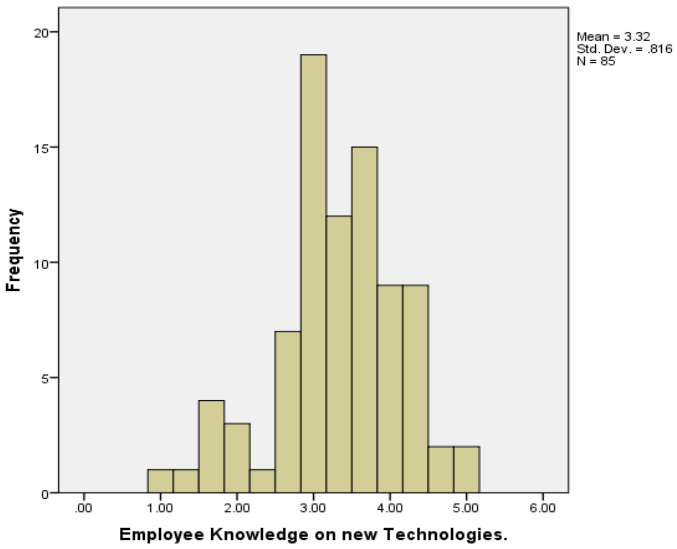

Figure 10. Employee knowledge on new technologies

Seventh variable was Real time performance monitoring/ measurement from the acquire graph it was found that most of the respondents agreed that with the feature like proper monitoring and checking the performance and for required goal achievement, it will be important factor for e-Procurement to be successful.

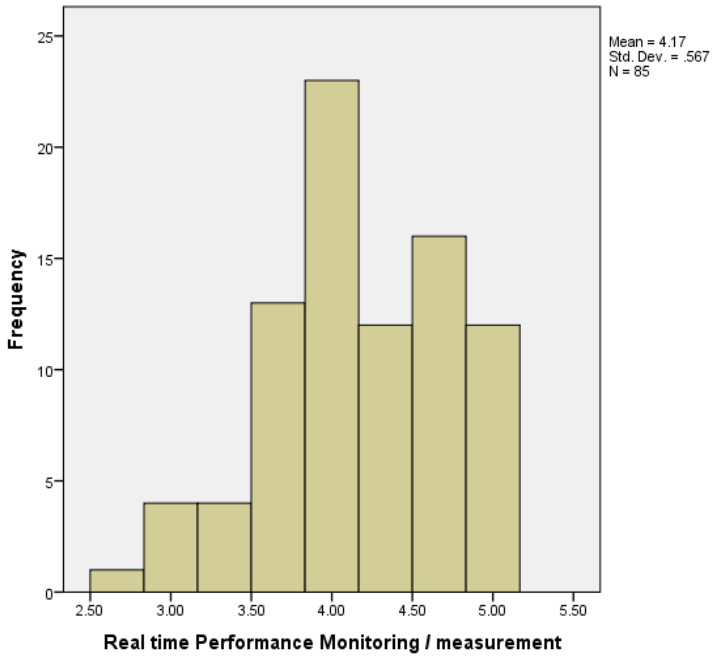

Figure 11. Real time performance monitoring/ measurement

Eight variable was reliability and supplier performance, as reliability play an important part in a system to be successful or not. In e-Procurement all the information travel accurately and securely so this is an important factor for e-Procurement success. And from the given graph it is clear that majority of respondent agreed that reliability and supplier performance is important factor for e-Procurement success.

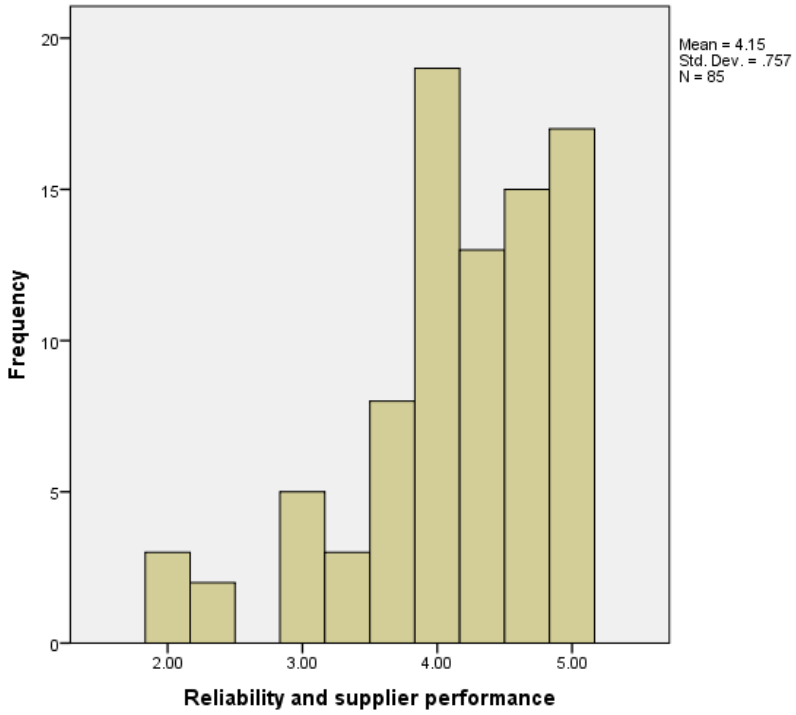

Figure 12. Reliability and supplier performance

Ninth variable was choosing the right technology, e-Procurement is a complete system and there are number of solutions available in the market. Choosing a technology that really fit for the organizations and meet its requirements is extremely important. And from the given graph it was concluded that majority of respondents agree that choosing right technology is important factor for e-Procurement success.

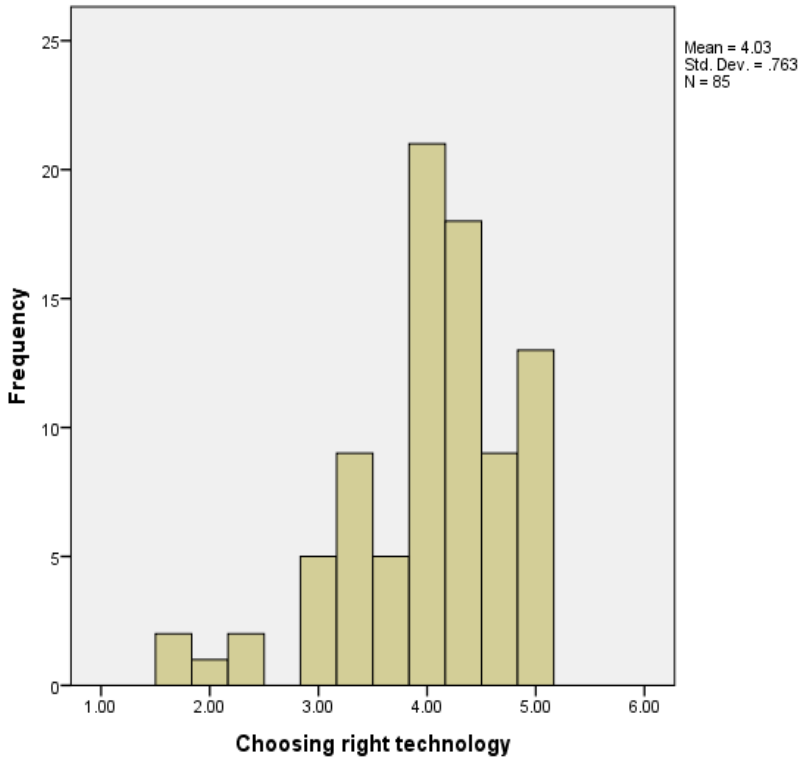

Figure 13. Choosing the right technology

Tenth variable was vendor supplier response and from the graph it was concluded the respondents have considered this important for the success of e-Procurement because if vendor and supplier is comfortable in using e-Procurement and know the benefit of new technology to be beneficial to their business.

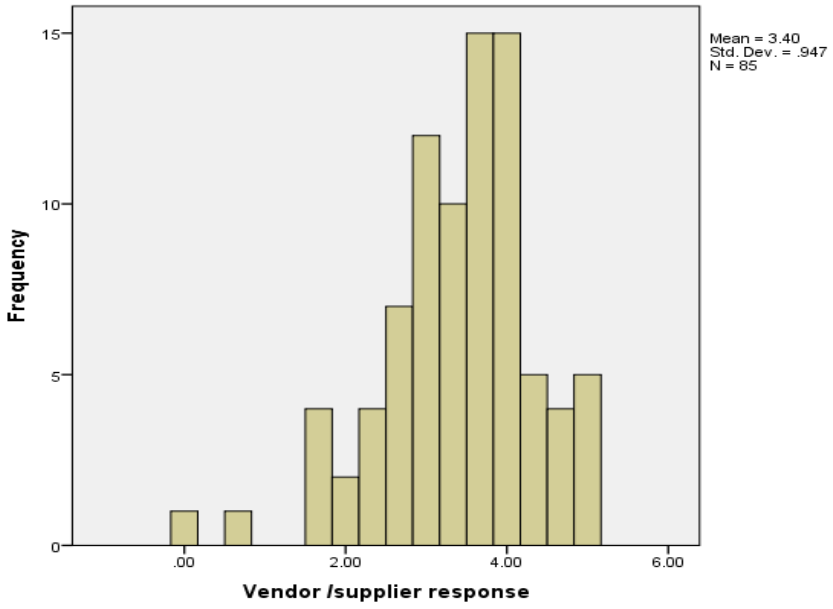

Figure 14. Vendor supplier response

5.9 Correlations Analysis

In order to find the strength of relations among dependent and independent variables correlation analysis being performed in SPSS. In the analysis, the dependent variable that is e-Procurement Success was measured by a validated instrument having questionnaire was floated among 85 respondents in eight selected organizations. Furthermore, ten independent variables that are Employee commitment to success of adoption, Top Management Support, Availability of ICT infrastructure, Transparency, Vendor/ supplier Qualification, Employee knowledge on new technologies, Real time Performance Monitoring / measurement, Reliability and supplier performance, Choosing right technology and Vendor /supplier response from the results it is concluded that there exist a positive or negative correlation among variables .

The correlation analysis of e-Procurement success (dependent variable) and Employee commitment (independent variable) showed a strong and positive relationship. Its value is 0.356 with two steric marks that showed a strong correlation between the dependent and independent variable. The value of significance level is 0.001 which quite less than 0.01, results in the significant relation of the variables.

Correlations		E_P_SUCCESS	Employee Commitment
E_P_SUCCESS	Pearson. Correlation	1	.356**
	Sig. (2-.tailed)		.001
	N	85	85
Employee Commitment	Pearson. Correlation.	.356**	1
	Sig. (2-tailed.)	.001	
	N	85	85

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

Table 3. Correlations analysis of e-Procurement Success and employee commitment.

In the correlation analysis of the dependent variable i.e. e-Procurement success and independent variable Top management support showed a strong and positive relationship. Its value is 0.367 with two steric marks that showed a strong correlation between the dependent and independent variable. The value of significance level is 0.001 which quite less than 0.01, results in the significant relation of the variables.

Correlation		E_P_SUCCESS	Top Management Support
E_P_SUCCESS	Pearson Correlation	1	.367**
	Sig. (2-tailed)		.001
	N	85	85
Top Management Support	Pearson Correlation	.367**	1
	Sig. (2-tailed)	.001	
	N	85	85

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

Table 4. Correlations analysis of e-Procurement Success and top management support

In the correlation analysis of the dependent variable e-Procurement success and independent variable, availability of ICT infrastructure showed a strong and positive relationship. Its value is 0.384 with two steric marks that showed a strong correlation between the dependent and independent variable. The value of significance level is 0.000 which quite less than 0.01, result in the significant relation of the variables

Correlation		E_P_SUCCESS	Availability of ICT Infrastructure
E_P_SUCCESS	Pearson Correlation	1	.384**
	Sig. (2-tailed)		.000
	N	85	85
Availability of ICT Infrastructure	Pearson. Correlation	.384**	1
	Sig. (2-tailed)	.000	
	N	85	85

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

Table 5. Correlations analysis of e-Procurement Success and availability of ICT infrastructure

Correlation analysis of the e-Procurement success and Transparency showed a strong and positive relationship. Its value is 0.268 with one steric marks that showed a strong correlation between the dependent and independent variable. The value of significance level is 0.013 shows significant relation of the variables

Correlation		E_P_SUCCESS	Transparency
E_P_SUCCESS	Pearson Correlation	1	.268*
	Sig. (2-tailed)		.013
	N	85	85
Transparency	Pearson Correlation	.268*	1
	Sig. (2-tailed)	.013	
	N	85	85

*. Correlation is significant at the 0.05 level (2-tailed).

Table 6. Correlations analysis of e-Procurement Success and Transparency

The correlation analysis of e-Procurement success (dependent variable) and Vendor Supplier Qualification (independent variable) showed a very strong and positive relationship. Its value is 0.469 with two steric marks that showed a strong correlation

between the dependent and independent variable. The value of significance level is 0.000 which quite less than 0.01, results in the significant relation of the variables.

Correlations		E_P_SUCCESS	Vendor/ Supplier Qualification
E_P_SUCCESS	Pearson Correlation	1	.469**
	Sig. (2-tailed)		.000
	N	85	85
Vendor/ Supplier Qualification	Pearson Correlation	.469**	1
	Sig. (2-tailed)	.000	
	N	85	85

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

Table 7. Correlations analysis of e-Procurement Success and vendor/ supplier qualification

The correlation analysis of e-Procurement success (dependent variable) and Employee knowledge on new technologies (independent variable) showed a weak relationship. Its value is 0.126. The value of significance level is 0.251 which quite higher than 0.01, results shows relation among the variables is not significant.

Correlation		E_P_SUCCESS	Employee Knowledge on new Technologies.
E_P_SUCCESS	Pearson Correlation	1	.126
	Sig. (2-tailed)		.251
	N	85	85
Employee Knowledge on new Technologies.	Pearson Correlation	.126	1
	Sig. (2-tailed)	.251	
	N	85	85

Table 8. Correlations analysis of e-Procurement Success and Employee Knowledge on new Technologies.

The correlation analysis of e-Procurement success (dependent variable) and Real time performance monitoring / measurement (independent variable) showed strong and positive relationship. Its value is 0.222 with one steric marks that showed a strong correlation between the dependent and independent variable. The value of significance level is 0.041 results in the significant relation of the variables.

Correlation		E_P_SUCCESS	Real time Performance Monitoring / measurement
E_P_SUCCESS	Pearson Correlation	1	.222*
	Sig. (2-tailed)		.041
	N	85	85
Real time Performance Monitoring / measurement	Pearson Correlation	.222*	1
	Sig. (2-tailed)	.041	
	N	85	85

*. Correlation is significant at the 0.05 level (2-tailed).

Table 9. Correlations analysis of e-Procurement Success and Real time Performance Monitoring / measurement

The correlation analysis of e-Procurement success (dependent variable) Reliability and Supplier Performance (independent variable) showed strong and positive relationship. Its value is 0.264 with one steric marks that showed a correlation between the dependent and independent variable. The value of significance level is 0.015 results in the significant relation of the variables

Correlation		E_P_SUCCESS	Reliability and supplier performance
E_P_SUCCESS	Pearson Correlation	1	.264*
	Sig. (2-tailed)		.015
	N	85	85
Reliability and supplier performance	Pearson Correlation	.264*	1
	Sig. (2-tailed)	.015	
	N	85	85

*. Correlation is significant at the 0.05 level (2-tailed).

Table 10. Correlations analysis of e-Procurement Success and Reliability and supplier performance

The correlation analysis of e-Procurement success (dependent variable) choosing the Right Technology (independent variable) showed strong and positive relationship. Its value is 0.373 with two steric marks that showed a strong correlation between the dependent and independent variable. The value of significance level is 0.000 results in the highly significant relation of the variables

Correlation		E_P_SUCCESS	Choosing right technology
E_P_SUCCESS	Pearson Correlation	1	.373**
	Sig. (2-tailed)		.000
	N	85	85
Choosing right technology	Pearson Correlation	.373**	1
	Sig. (2-tailed)	.000	
	N	85	85

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

Table 11. Correlations analysis of e-Procurement Success and Choosing right technology

The correlation analysis of e-Procurement success (dependent variable) Vendor Supplier Response (independent variable) showed strong and positive relationship. Its value is 0.351 with two steric marks that showed a strong correlation between the

dependent and independent variable. The value of significance level is 0.001 results in the highly significant relation of the variables

Correlation		E_P_SUCCESS	Vendor /supplier response
E_P_SUCCESS	Pearson Correlation	1	.351**
	Sig. (2-tailed)		.001
	N	85	85
Vendor /supplier response	Pearson Correlation	.351**	1
	Sig. (2-tailed)	.001	
	N	85	85

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

Table 12. Correlations analysis of e-Procurement Success and Vendor /supplier response

5.10 Reliability and Validity Analysis

Reliability and validity of an instrument is too much important. Reliability and validity analysis has been carried out on each variable. All the items are first computed into variables in SPSS software and then these variable are tested using SPSS Software .After analysis value of Cronbach Alpha of independent variable is 0.791 and dependent variable is 0.783. Since both the values of all Cronbach Alpha value are higher than 0.7, which shows the reliability of instrument. Moreover, the measured items are; Employee commitment to success of adoption, Top Management Support, Availability of ICT infrastructure, Transparency, Vendor/ supplier Qualification, Employee knowledge on new technologies, Real time Performance Monitoring / measurement, Reliability and supplier performance, Choosing right technology and Vendor /supplier response are reliable.

Validity of data is very important to validate the data whether it is real or not, validity has been checked through SPSS and to validate the instrument factor analysis has been done it is concluded from the results (Shown in Appendix) the value of determinant is

0.061 which is valid and greater than0.0001 and the KMO (kayser-meyer-olkin) value is 0.801 which is valid and from this value it is also concluded that sample size is also good enough because it value is greater than 0.7. Moreover, results also show level of significance is 0.000. Which shows that selected variables are highly validated and highly significant shown in Table.13.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.801
Bartlett's Test of Sphericity	Approx. Chi-Square	223.170
	df	45
	Sig.	.000

Table.13 KMO and Bartlett's test for sample size.

5.11 Regression Analysis

Analysis was performed on dependent and independent variable (Results attached in Appendix). In this study the dependent variable was e-Procurement and multiple independent variable so the extension of linear regression known as multiple linear regression was applied as there were more predictors that were included.

After the analysis and from the result the value of R is 0.633^{a} and adjusted R-square value is 0.400. This value indicates the relationship among dependent variable that is e-Procurement Success and independent variables, which are Employee commitment to success of adoption, Top Management Support, Availability of ICT infrastructure, Transparency, Vendor/ supplier Qualification, Employee knowledge on new technologies, Real time Performance Monitoring / measurement, Reliability and supplier performance, Choosing right technology and Vendor /supplier response.

ANOVA test is conducted to enlighten independent variable results have on the result of dependent variables among a regression analysis. The ANOVA table (Attached in

Appendix), results shows the value of significance level i.e. 0.000[b] which is less than 0.05 denotes that dependent variable relationship with independent variables is very significant.

This shows that independent variable is significantly depicting dependent variables. Here in the results there are some values like (df) which is known as degree of freedom and its value is 84 which mean total no of population minus 1.In the table, value of mean square come up by dividing the value of sum of square to the value of (df) i.e. 14.831/10 equals to 1.483.

To make the Regression equation, in the table every coefficient is having a value which represent the positive or negative relation exist between variables and the value of coefficient is +0.809 (show a positive relationship)

Regression Equation

E-PROCUREMENT SUCCESS = (.809) + 0.130*Vendor /supplier response - 0.026*Reliability and supplier performance +0.189* Top Management Support + 0.101* Choosing right technology + 0.033*Transparency +0.075 * Employee Commitment -0.113* Employee Knowledge on new Technologies+0.0319* Vendor/ Supplier Qualification+ 0.219* Availability of ICT Infrastructure -0.186 * Real time Performance Monitoring / measurement)

Chapter 6

CONCLUSION AND RECOMMENDATION

6.1 Conclusion

In this study, it was prove that e-Procurement has been adopted by telecommunication industries of Pakistan and it is clear that starting from request generation, online tendering, online bid submission ,online request for proposal, SLM (supplier relationship management), CLM (contract lifecycle management), e-auction and vendor management are the e-Procurement practices that are adopted by targeted organizations of Pakistan; this all information was gather from the procurement manager of selected organization by conducting interview . Detailed analysis of the interview data was conducted to identify the independent variables that are success factors were concluded. In this research of assessing e-Procurement success factor quantitative data gathered from procurement department was then analyzed through various analysis methods. Correlation analysis conducted among dependent and ten independent variables identified as positive and significant correlation and one variable Employee knowledge on new technology was found a weak correlation. Linear regression analysis has been conducted to progress a model measuring the relationship between dependent variable that is e-Procurement Success and independent variables, which are Employee commitment to success of adoption, Top Management Support, Availability of ICT infrastructure, Transparency, Vendor/ supplier Qualification, Employee knowledge on new technologies, Real time Performance Monitoring / measurement, Reliability and supplier performance, Choosing right technology and Vendor /supplier response. All the variable except Employee knowledge on new technologies and real time performance monitoring turned out the most contributing

factor towards e-Procurement success, showing that relationship between dependent variable and independent variable is a highly significant.

Moreover it is also concluded that the selected organization are lagging in fully implementation of e-Procurement system and the reason behind this is due to uneducated market and small vendors that are not feeling comfortable in using the new technology. The satisfaction level of the vendors and small suppliers is till old dated. Like none of organization had used e-Payment system in their organization because of the trend and satisfaction level and it is only fulfilled when they received the money /cheque in their hands.

It is also concluded that there are number of things that organizations need to make e-procurement successful by supporting the small vendors in used of e-procurement by arranging small training and availability of ICT infrastructure for use of this new technology and this all could be done by top management support.

6.2 Recommendations

The outcomes direct that in Pakistan there are many organizations which have not adopted this new technology of e-Procurement and even the top most IT sector organizations that were included in the research had not fully adopted the e-Procurement in complete manner, like there are number of solutions available. Oracle EBS (ERP) enterprise resource planning and SAP (SRM) supplier relationship management solution for the e-Procurement and all the activities are not incorporated like e-payment solution.

It is recommended, a study on finding the reasons for not incorporating all e-Procurement activities in organizations need to be conducted. It will be important to know what were the differences and similarities in factors contributing in success of e-Procurement in different industries.

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APPENDIX-I

SEMI- STRUCTURED INTERVIEW QUESTIONNAIRES

1. How procurement is currently organized, how many staff have procurement experience, procurement qualifications?
2. What systems do you have in place to capture and store procurement related information?
3. Will the ICT infrastructure or current financial system restrict the choice of e-procurement solution?
4. What types of e-procurement solution are you aware of available on the market and what solution is used in your organization?
5. How much top management support the implementation and adaptation of e-procurement system?
6. How much employee and management is committed to success of e-procurement adaptation?
7. Does e-procurement is a reliable source for sharing the information?
8. What is the user level of acceptance in your organization for e-procurement system?
9. How many staff is trained on e-procurement and how much it is supported in your organization?
10. Based on the value and categories of expenditure, which areas do you feel are most suited for e-procurement and which are not? (Rejected)
11. What type of e-procurement solution do you thing best fits the needs of the organization? (Rejected)
12. What are the challenges that the organization will face in trying to adopt e-procurement?

13. What is the best organizational structure to support effective and efficient procurement throughout the organization?
14. What resource implications are associated with implementing the preferred procurement structure?
15. Is there a need to improve procurement skills within the organization?
16. Does e-procurement helps to reduce the time spent on procurement activities?
17. Does e-procurement helps to reduce the labor needed on procurement activities? (Rejected)
18. Does e-procurement helps to reduce the cost related to procurement activities? (Rejected)
19. Does e-procurement helps to reduce the possibility of mistakes? (Rejected)
20. If companies don't participate in e-marketplaces they will be considered as lagging behind technologically?
21. Is Good IT planning ability is important for a firm to participate in e-marketplaces?
22. How much employees have an understanding of the possible benefits of IT applications?
23. After participating/implementing e-procurement is there some process that need to be redesign?
24. After participating in an e-procurement, the number of existing customers that we are able to retain has increased?
25. After participating in an e-procurement, is your company has been able to strengthen its existing business relationships with partners and suppliers?
26. Overall, the e-marketplace/ e-procurement is a platform where information can be transferred securely?

APPENDIX-II

SURVEY QUESTIONNAIRE

Section 1

This survey is being conducted to access e-procurement success factors in telecom organization of Pakistan. In this section we require a little information about you and your organization.

a. Name _____

b. Designation _____

1. Please mark (√) where suitable as per following scale

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
0	1	3	4	5

		Strongly Agree 5	4	3	1	Strongly Disagree 0
F1	**Employee commitment to success of adoption**					
Q1	Employee are ready to make e-procurement succeed.					
Q2	Employee are willing to use e-procurement system.					
Q3	Employees feel comfortable in using the new system of e-procurement.					
F2	**Top management Support**					
Q1	Top management is interested in the adoption of e-procurement system.					
Q2	Top management considers e-procurement adoption as important to the organization.					
Q3	Top management has effectively communicated its support for e-procurement adoption to employees.					
F3	**Availability of ICT infrastructure**					
Q1	Good IT planning ability is important for a firm to participate in e-procurement.					
Q2	Our firm has adequate knowledge about IT.					
Q3	Our trading partner have good understanding and know the possible benefit of IT infrastructure					
F4	**Transparency**					
Q1	E-Procurement provides traceability of all transactions & provides audit trail.					

Q2	E-Procurement is an effective tool for introducing procurement reform and establishing a fully transparent and open procurement environment.					
Q3	Suppliers has gain trust due transparency of eProcurement system.					
F5	**Vendor/ supplier Qualification**					
Q1	Training of the supplier on the usage of the technology will equally enhance performance on e-procurement.					
Q2	E-Procurement is related more to governance and capacity development than to the availability of technology.					
Q3	Supplier are interested to gain knowledge on new technologies					
F6	**Employee knowledge on new technologies.**					
Q1	Our employees have very little knowledge about how e-procurement can help improve our business.					
Q2	Our employees have the technical knowledge to start using e-procurement.					
Q3	Our employees have an overall knowledge about e-procurement.					
F7	**Real time Performance Monitoring**					
Q1	E-Procurement can serve as a deterrent and as an instrument towards effective and efficient public administration.					
Q2	Performance monitoring will also ensure that the e-procurement process is implemented properly in order to realize optimal benefits.					
Q3	E-Procurement helps in establishment of performance goals and objectives.					
F8	**Reliability and supplier performance**					
Q1	E-procurement systems enhances security of information and minimizes risks.					
Q2	We think it is secure to transfer information in the e-procurement system.					
Q3	The information can be transferred correctly in the e-procurement.					
F9	**Choosing right technology**					
Q1	E-Procurement is holistic opportunity to modernize public financial systems and related purchases.					
Q2	Selected eProcurement solution is compatible with existing procurement process in our organization.					

Q3	Current adopted eProcurement solution system full fill the needs of the organization.					
F10	**Vendor/ supplier Response**					
Q1	Trading partners are reluctant to change to new system.					
Q2	Trading partner feel comfortable to use the new system of e-procurement.					
Q3	Non automated/non sophisticated trading Partner effect in success of e procurement system.					

Section 2.

1. In this section we ask about the indicators for measuring of e-procurement success in your organization.
2. Please mark (√) where suitable as per following scale

Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
0	**1**	**3**	**4**	**5**

	Strongly Agree				**Strongly Disagree**
	5	**4**	**3**	**1**	**0**
S	**E-procurement success**					
1	E-procurement makes the purchasing process faster					
2	E-procurement facilitates better management of our purchasing activities					
3	E-procurement improves relationships with our business partners.					
4	E-procurement reduces the price of procured goods.					
5	E-procurement reduces the price of procured services.					
6	E-procurement reduces operational costs					
7	E-procurement improves competitive advantage.					

APPENDIX-III:

COMPUTING VARIABLE

Transforming variable to factors and success

COMPUTE FACTOR_1=MEAN(Q1,Q2,Q3).
EXECUTE.
COMPUTE FACTOR_2=MEAN(Q4,Q5,Q6).
EXECUTE.
COMPUTE FACTOR_3=MEAN(Q7,Q8,Q9).
EXECUTE.
COMPUTE FACTOR_4=MEAN(Q10,Q11,Q12).
EXECUTE.
COMPUTE FACTOR_5=MEAN(Q13,Q14,Q15).
EXECUTE.
COMPUTE FACTOR_6=MEAN(Q16,Q17,Q18).
EXECUTE.
COMPUTE FACTOR_7=MEAN(Q19,Q20,Q21).
EXECUTE.
COMPUTE FACTOR_8=MEAN(Q22,Q23,Q24).
EXECUTE.
COMPUTE FACTOR_9=MEAN(Q25,Q26,Q27).
EXECUTE.
COMPUTE FACTOR_10=MEAN(Q28,Q29,Q30).
EXECUTE.
COMPUTE E_P_SUCCESS=MEAN(S_Q1,S_Q2,S_Q3,S_Q4,S_Q5,S_Q6,S_Q7).
EXECUTE.

APPENDIX-IV

REGRESSION ANALYSIS

Variables Entered/Removed[a]			
Model	Variables Entered	Variables Removed	Method
1	Vendor /supplier response, Reliability and supplier performance, Top Management Support, Choosing right technology, Transparency , Employee Knowledge on new Technologies., Vendor/ Supplier Qualification, Employee Commitment, Real time Performance Monitoring / measurement , Availability of ICT Infrastructure[b]	.	Enter
a. Dependent Variable: E_P_SUCCESS			
b. All requested variables entered.			

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.633[a]	.400	.319	.54788
a. Predictors: (Constant), Vendor /supplier response, Reliability and supplier performance, Top Management Support, Choosing right technology, Transparency , Employee Knowledge on new Technologies., Vendor/ Supplier Qualification, Employee Commitment, Real time Performance Monitoring / measurement , Availability of ICT Infrastructure				

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.831	10	1.483	4.941	.000[b]
	Residual	22.212	74	.300		
	Total	37.043	84			
a. Dependent Variable: E_P_SUCCESS						
b. Predictors: (Constant), Vendor /supplier response, Reliability and supplier performance, Top Management Support, Choosing right technology, Transparency , Employee Knowledge on new Technologies., Vendor/ Supplier Qualification, Employee Commitment, Real time Performance Monitoring / measurement , Availability of ICT Infrastructure						

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.809	.623		1.298	.198
	Employee Commitment	.075	.076	.108	.992	.325
	Top Management Support	.189	.113	.177	1.674	.098
	Availability of ICT Infrastructure	.219	.146	.189	1.501	.138
	Transparency	.033	.141	.029	.237	.813
	Vendor/ Supplier Qualification	.319	.108	.327	2.957	.004
	Employee Knowledge on new Technologies.	-.113	.088	-.139	-1.293	.200
	Real time Performance Monitoring / measurement	-.186	.139	-.159	-1.337	.185
	Reliability and supplier performance	.026	.091	.029	.281	.779
	Choosing right technology	.101	.092	.117	1.102	.274
	Vendor /supplier response	.130	.085	.185	1.529	.131
a. Dependent Variable: E_P_SUCCESS						

APPENDIX-V

RELIABILITY

Scale: ALL VARIABLES

Case Processing Summary			
		N	%
Cases	Valid	85	100.0
	Excluded[a]	0	.0
	Total	85	100.0
a. List wise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.791	10

Item Statistics			
	Mean	Std. Deviation	N
Employee Commitment	3.7843	.95217	85
Top Management Support	4.2941	.62023	85
Availability of ICT Infrastructure	4.1961	.57112	85
Transparency	4.3569	.57686	85
Vendor/ Supplier Qualification	4.0314	.67968	85
Employee Knowledge on new Technologies.	3.3216	.81560	85
Real time Performance Monitoring / measurement	4.1686	.56723	85
Reliability and supplier performance	4.1451	.75671	85
Choosing right technology	4.0275	.76326	85
Vendor /supplier response	3.4000	.94673	85

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Employee Commitment	35.9412	14.635	.464	.776
Top Management Support	35.4314	16.240	.460	.774
Availability of ICT Infrastructure	35.5294	15.824	.611	.761
Transparency	35.3686	16.323	.487	.772
Vendor/ Supplier Qualification	35.6941	15.892	.474	.772
Employee Knowledge on new Technologies.	36.4039	15.556	.420	.779
Real time Performance Monitoring / measurement	35.5569	16.001	.573	.764
Reliability and supplier performance	35.5804	16.347	.328	.789
Choosing right technology	35.6980	15.811	.417	.779
Vendor /supplier response	36.3255	14.212	.535	.764

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
39.7255	18.924	4.35014	10

Reliability

Scale: ALL VARIABLES

Case Processing Summary			
		N	%
Cases	Valid	85	100.0
	Excluded[a]	0	.0
	Total	85	100.0
a. List wise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.783	7

Item Statistics			
	Mean	Std. Deviation	N
E-procurement makes the purchasing process faster	4.47	.609	85
E-procurement facilitates better management of our purchasing activities	4.35	.719	85
E-procurement improves relationships with our business partners.	4.05	.925	85
E-procurement reduces the price of procured goods.	3.66	1.314	85
E-procurement reduces the price of procured services.	3.73	1.219	85
E-procurement reduces operational costs	3.98	1.080	85
E-procurement improves competitive advantage.	4.22	.993	85

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
E-procurement makes the purchasing process faster	23.99	18.583	.505	.765
E-procurement facilitates better management of our purchasing activities	24.11	18.905	.350	.782
E-procurement improves relationships with our business partners.	24.41	17.721	.390	.777
E-procurement reduces the price of procured goods.	24.80	13.186	.701	.710
E-procurement reduces the price of procured services.	24.73	13.652	.718	.706
E-procurement reduces operational costs	24.48	17.110	.373	.783
E-procurement improves competitive advantage.	24.24	15.992	.583	.741

Scale Statistics			
Mean	Variance	Std. Deviation	N of Items
28.46	21.608	4.648	7

APPENDIX-VI

FREQUENCIES

Statistics											
		Employee Commitment	Top Management Support	Availability of ICT Infrastructure	Transparency	Vendor/ Supplier Qualification	Employee Knowledge on new Technologies.	Real time Performance Monitoring / measurement	Reliability and supplier performance	Choosing right technology	Vendor /supplier response
N	Valid	85	85	85	85	85	85	85	85	85	85
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		3.7843	4.2941	4.1961	4.3569	4.0314	3.3216	4.1686	4.1451	4.0275	3.4000
Median		4.0000	4.3333	4.3333	4.3333	4.0000	3.3333	4.0000	4.3333	4.0000	3.6667
Mode		4.00	5.00	4.33	5.00	4.00	3.00	4.00	4.00	4.00	3.67[a]
a. Multiple modes exist. The smallest value is shown											

Frequency Table

Employee Commitment					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	3	3.5	3.5	3.5
	1.33	1	1.2	1.2	4.7
	2.00	4	4.7	4.7	9.4
	2.33	2	2.4	2.4	11.8
	2.67	1	1.2	1.2	12.9
	3.00	4	4.7	4.7	17.6
	3.33	6	7.1	7.1	24.7
	3.67	16	18.8	18.8	43.5
	4.00	17	20.0	20.0	63.5
	4.33	12	14.1	14.1	77.6
	4.67	11	12.9	12.9	90.6
	5.00	8	9.4	9.4	100.0
	Total	85	100.0	100.0	

Top Management Support					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.67	1	1.2	1.2	1.2
	3.00	4	4.7	4.7	5.9
	3.33	3	3.5	3.5	9.4
	3.67	12	14.1	14.1	23.5
	4.00	18	21.2	21.2	44.7
	4.33	9	10.6	10.6	55.3
	4.67	14	16.5	16.5	71.8
	5.00	24	28.2	28.2	100.0
	Total	85	100.0	100.0	

Availability of ICT Infrastructure					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.67	1	1.2	1.2	1.2
	3.00	2	2.4	2.4	3.5
	3.33	3	3.5	3.5	7.1
	3.67	15	17.6	17.6	24.7
	4.00	17	20.0	20.0	44.7
	4.33	22	25.9	25.9	70.6
	4.67	13	15.3	15.3	85.9
	5.00	12	14.1	14.1	100.0
	Total	85	100.0	100.0	

Transparency					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3.00	2	2.4	2.4	2.4
	3.33	5	5.9	5.9	8.2
	3.67	12	14.1	14.1	22.4
	4.00	11	12.9	12.9	35.3
	4.33	17	20.0	20.0	55.3
	4.67	12	14.1	14.1	69.4
	5.00	26	30.6	30.6	100.0
	Total	85	100.0	100.0	

Vendor/ Supplier Qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.67	1	1.2	1.2	1.2
	2.33	1	1.2	1.2	2.4
	2.67	1	1.2	1.2	3.5
	3.00	8	9.4	9.4	12.9
	3.33	6	7.1	7.1	20.0
	3.67	8	9.4	9.4	29.4
	4.00	23	27.1	27.1	56.5
	4.33	19	22.4	22.4	78.8
	4.67	5	5.9	5.9	84.7
	5.00	13	15.3	15.3	100.0
	Total	85	100.0	100.0	

Employee Knowledge on new Technologies.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	1	1.2	1.2	1.2
	1.33	1	1.2	1.2	2.4
	1.67	4	4.7	4.7	7.1
	2.00	3	3.5	3.5	10.6
	2.33	1	1.2	1.2	11.8
	2.67	7	8.2	8.2	20.0
	3.00	19	22.4	22.4	42.4
	3.33	12	14.1	14.1	56.5
	3.67	15	17.6	17.6	74.1
	4.00	9	10.6	10.6	84.7
	4.33	9	10.6	10.6	95.3
	4.67	2	2.4	2.4	97.6
	5.00	2	2.4	2.4	100.0
	Total	85	100.0	100.0	

Real time Performance Monitoring / measurement					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.67	1	1.2	1.2	1.2
	3.00	4	4.7	4.7	5.9
	3.33	4	4.7	4.7	10.6
	3.67	13	15.3	15.3	25.9
	4.00	23	27.1	27.1	52.9
	4.33	12	14.1	14.1	67.1
	4.67	16	18.8	18.8	85.9
	5.00	12	14.1	14.1	100.0
	Total	85	100.0	100.0	

Reliability and supplier performance					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	3	3.5	3.5	3.5
	2.33	2	2.4	2.4	5.9
	3.00	5	5.9	5.9	11.8
	3.33	3	3.5	3.5	15.3
	3.67	8	9.4	9.4	24.7
	4.00	19	22.4	22.4	47.1
	4.33	13	15.3	15.3	62.4
	4.67	15	17.6	17.6	80.0
	5.00	17	20.0	20.0	100.0
	Total	85	100.0	100.0	

Choosing right technology					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.67	2	2.4	2.4	2.4
	2.00	1	1.2	1.2	3.5
	2.33	2	2.4	2.4	5.9
	3.00	5	5.9	5.9	11.8
	3.33	9	10.6	10.6	22.4
	3.67	5	5.9	5.9	28.2
	4.00	21	24.7	24.7	52.9
	4.33	18	21.2	21.2	74.1
	4.67	9	10.6	10.6	84.7
	5.00	13	15.3	15.3	100.0
	Total	85	100.0	100.0	

Vendor /supplier response					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	1	1.2	1.2	1.2
	.67	1	1.2	1.2	2.4
	1.67	4	4.7	4.7	7.1
	2.00	2	2.4	2.4	9.4
	2.33	4	4.7	4.7	14.1
	2.67	7	8.2	8.2	22.4
	3.00	12	14.1	14.1	36.5
	3.33	10	11.8	11.8	48.2
	3.67	15	17.6	17.6	65.9
	4.00	15	17.6	17.6	83.5
	4.33	5	5.9	5.9	89.4
	4.67	4	4.7	4.7	94.1
	5.00	5	5.9	5.9	100.0
	Total	85	100.0	100.0	

APPENDIX VII

SELECTED TELECOMMUNICATION ORGANIZATIONS

In the line top one is Pakistan telecommunication limited (PTCL). After inquiring it was found that PTCL currently in the phase of implementing e-procurement solution till now they had successfully implemented and integrated 80% of this new solution. PTCL has selected SAP Supplier Relationship Management (SAP SRM) that provides innovative methods to coordinate business processes with suppliers and make them more effective. SAP SRM enables to optimize procurement strategy, to work more effectively with your supplier pool, and thus to gain long-term benefits from all your supplier relationship .and for Contractual work Contract Life cycle Management (CLM) in integration with SAP system is implemented . This new solution is implemented with the help of an Indian company named Bristocon who has contract with ETISALAT.

Second Organization of ETISALAT group is Ufone / Pak Telecom Mobile Limited is also using the same solution (SAP SRM) for the procurement in their organization.

Next four organization that include Warid telcom, Mobilink, Telenor and Huawei Pakistan. These organization are using Oracle EBS (ERP) enterprise resource planning solution for the e-Procurement

The procurement officers those who are interviewed in Warid telecom and Mobilink indicated that the implementation of e-procurement system is 75 % is completed and some part like e-invoice is not yet completed and due to some of technical reason & some integration of this new system with old process has required some time to fully implement the new solution

Huawei Technologies Corporation limited is fully implementing the e-procurement system since last two year. All the procurement is done through e-procurement system. They are also using the Oracle EBS (ERP) enterprise resource planning solution for the e-Procurement.

The two more organization that are also selected are **CELMORE & LMKT** semi-structured interview are conducted and it was fond that these both organization are in line to adopt a complete solution for the e-procurement. Currently they are using sourcing part electronically and contract lifecycle management part is still manual.