E-PROCUREMENT IMPLEMENTATION FOR PROJECTS (ANALYSIS, CHALLENGES, AND SOLUTIONS)

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A dissertation project submitted in partial fulfilment of the requirement for the degree of
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Specially dedicated to my wife, my children, and my parents

ABSTRACT

E-PROCUREMENT IMPLEMENTATION FOR PROJECTS (ANALYSIS, CHALLENGES, AND SOLUTIONS)

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The E-Procurement or Electronic Procurement is one of the important tools and applications with certain processes and procedures by using technology, the study explaining the of e-procurement types and classifications, and all listed benefits by previous researchers, the study finding most used types of e-procurement in Malaysia currently, and checking the opinions of both of the e-procurement's Vendors/Owners and End Users about types, processes, procedures and technology used to make good business, also collecting and analysis all data by using surveys, and these data represented common related problems, barriers and challenges to the e-procurements, conclusion conducted to find weather there are any more issues can be solved by comparing the results for the targeted respondents to find more relations with each major parts of the study, the study considered the future work for this type of business and giving recommendations for the E-procurement future research to help for improving most of the E-procurement system's aspects.

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APPROVAL SHEET

This dissertation entitled **"E-PROCUREMENT IMPLEMENTATION FOR PROJECTS (ANALYSIS, CHALLENGES, AND SOLUTIONS)** " was prepared by **JALAL FARAJ SALEM ALMADANI** and submitted as partial fulfilment of the requirements for the degree of Master of Project Management at Universiti Tunku Abdul Rahman.

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PERMISSION SHEET

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I have given permission to the University to upload softcopy of my dissertation in pdf format into UTAR Institutional Repository, which may be made accessible to UTAR community and public.

Yours truly,

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DECLARATION

I hereby declare that the dissertation is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UTAR or other institutions.

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LIST OF ABBREVIATIONS

ASCII	American Standard Code for Information Interchange
BIM	Building Information Model
CD	Comact Disk
EDI	Electronic Information Exchange
e-GP	Electronic Government Procurement
e-MRO	Electronic Maintenance Repair Operation
E-p	Electronic Procurement
E-procurement	Electronic Procurement
ERP	Electronic Resource Planning
GDP	Gross Domestic Product
GIS	Geographical Information System
GPPC	Government Procurement Process Cycle
GPS	Global Positioning System
IAPWG	The united nation Interagency Procurement Working Group
ICT	Information Communication Technology
IT	Information Technology
ITB	Invitation To Bid
MDEC	Malaysia Digital Economy Corporation
P2P	Point To Point
PC	Personal computer
PPE	Project Procurement Exchange
R&D	Research and Development
REOI	Request for articulation of intrigue
RFID	Radio Frequency Identification
RFP	Request For Proposal
RFQ	Request For Quantity
SCM	Supply Chain Management
SME	Small to Medium Enterprises
SSM	Suruhanjaya Syarikat Malaysia
WPMS	Web based Project Management Systems
XML	Extensible Markup Language

CHAPTER ONE

1 INTRODUCTION

1.1 E-procurement Overview

E-Procurement is the term used to portray the utilization of electronic strategies, ordinarily over the Internet to lead exchanges between granting powers and providers. The procedure of e-obtainment covers each phase of buying, from the underlying distinguishing proof of a necessity, through the offering procedure, to the installment and possibly the agreement administration. (Corsi, 2006).

The procurement process is called purchasing process or purchase-to-pay as traditional meaning. It includes all activities from the selection of suppliers and ordering until the process of paying financially by development and improving the processes according to the e-markets needs the meaning of procurement to include buying, sourcing, or purchasing, with many other internal processes, like tendering, auctioning, delivering the goods or service on right time, and on right location.

Electronic procurement otherwise called e-procurement is the business-to-business buy and offer of provisions and administrations over the web. E-procurement is rapidly developing as the model acquirement technique in both the private and open segments in many nations. With the coming of the web, numerous organizations now offer just by means of PC innovation. (Godfred, Evans, Doumbia, & Hanson, 2015).

E-procurement regularly incorporates streamlining corporate obtaining forms by taking out such customary paper-based archives as buy requests and orders shapes. Through an e-acquirement framework, workers increase guide access to their provider frameworks to outwardly affirm specialized determinations and to view item pictures, cost focuses, and point by point item depictions. (Teo & Lai, 2009)

E-procurement is a capable business instrument that can alter the purchasing capacity of an association by streamlining and mechanizing the work serious acquirement schedules. (Teo, Lin, & Lai, 2009), information and communication technology (ICT) is very important factor for e-procurement, The edge of the Information Age, where data has turned into the bleeding edge of worldwide rivalry, has pushed ICT into the fore front of the national financial advancement. ICT has been perceived as a key empowering instrument to bolster the development of the economy and in addition upgrade the personal satisfaction of the populace. (Maniam Kaliannan & Halimah Awang, 2010), ICT infra structure is very real measure for the countries developments, which considering an important tool to adopt and use the e-procurement for governments, companies, and personals.

E-procurement is considered as one of the most important tool for projects, ICT impacting the organizations business and improving the ability to support and enhancing it, business gaining good features and benefits by using ICT.

For example for construction industry projects , particularly with e-Procurement, there has been an absence of reliable advantage benchmarking connected with the change from a manual obtainment procedure to e-Procurement handle improvements and developments, There are various experimental studies giving recounted confirmation to bolster e-Procurement makes the acquisition procedure more productive and compelling and affects firm execution.(Hashim, Said, & Idris, 2013)

The e-procurement forms by and large comprises of indent process, e-Tendering or e-barters,, provider administration, sellers forms, list administration, Purchase Order forms , Order Status, conveying Notice, e-Invoicing, e-Payment and exchanges, contract organizations, the vast majority of firms and associations are picking the appropriate procedures for their own particular great and mastermind as indicated by their business.

There many benefits for adopting e-procurement for all organizations which using it for their projects by reducing wasted time, saving time, saving cost, better work quality and many will discussing in chapter two.

1.2 Problem statements

Here got some questions need an answer to defined what the major points in this research are:

- What other good current classification and clear types for e-procurement based on, function, industry, business type, services, and locations we can find out or do more clarifying?
- What are the e-procurement systems, types and technologies used in Malaysia?
- What other effective process suitable for projects generally and for construction industry specifically which not listed by previous papers? Or may we can clarifying these processes, in this research Malaysia considered the geographical area for the study.
- In Malaysia what are the problems, difficulties, and challenges for e-procurements can describe on other point of view? And may can find out new problems challenges and barriers through this research?
- What other available solutions for these problems, difficulties, and challenges can list and satisfactions by conducting this research?
- Are there any new discovered issues by analysis the data of the survey that we doing affecting somehow the adoption of the e-procurement systems especially for construction industry in Malaysia?

  Each organization and firm have their own business strategy, and for many the e-procurement framework for them is not that clear to decide what are the business process of the e-procurement is the best for them or to maximize the outcome by using suitable e-procurement, and wrong choice could be happen for many reasons, we can find out through this research.

  E-procurement of project are different than other types which considered risky and much concern on time, cost and quality

factors, also with considering the stakeholders, it is not only supply chain processes or dealing with customers, it is for tendering , services, and financial processes, each project should have e-procurement system which fit for project purpose.

For who want to consider the use of e-procurement, there are many options for the frameworks and processes should be available to choose, with many clarification for each, and result satisfaction by solving all problems may face by adoption of e-procurement.

1.3 Study Motivation:

Through our study for procurement, and for as Telecommunication major, we were wondering whether can implementing the procurement and adopt it by ICT to make it more easy and getting more benefits, so we read about e-procurement, but the issue we found that many papers and researchers did their studies, and also there are many problems facing the e-procurement adoption for companies and governments, for different customers parties.

E-procurement classification and types need to be clear for many interested firms or people, to know what exactly choosing, identifying the issues and problems and solve them are considered for who want to adopt the e-procurement methods in terms of their business.

What other issues and problems may raise by adoption e-procurement? Here the study discuss other development countries and communities, is there any new issue we can add and face through reception and execution of e-procurement.

Projects are usually considering time as a very important factor, and the procurement method choosing is a risky, how much can e-procurement helping for projects, especially for construction industry.

1.4 Research Significance:

E-procurement systems and applications is very important and with rapidly increasing on the technology it become more effective for business and communities developing.

Choosing the right type of E-procurement is considered in this research by doing some explanations and classifications in easy and simple way to help the interested organizations weather in private or public sectors to choose the best type of e-procurement and related procedures and processes.

To adopt the e-procurement on business many benefits can gain in many aspects, this research listed most important benefits for business, also the current situations for existed e-procurement systems in Malaysia, which is important for organizations interested to adopt the e-procurement systems in Malaysia.

Usually any organization or end user dealing with the e-procurement have the knowledge about the e-procurement systems, but the most important issues and problems should be known to them to avoid many issues and barriers during the using or even new implementing the e-procurement systems.

1.5 Study methodology:

All information for the exploration was accumulated by utilizing a poll study, the members of this study are partitioned into three gatherings as per errands of the e-acquirement preparing and outline work, the e-obtainment framework engineers and specialists, the e-acquisition proprietors or clients and the end clients for the frameworks.

The study of e-procurement considering and targeting firms, organizations, individuals for both public and private sectors, and The research study philosophy is Pragmatism with Abduction approach, quantitative, analytically and Descriptive, for all

variables which defining the problems, difficulties and challenges of e-procurements by collecting all information which got and captured by investigation of research questionnaire.

We chose this methodology for getting more flexibility to describe the current used e-procurement framework, processes, technologies, and review all previous listed issues, considering if there are any new findings which may added through this research, by collected quantitative data and do all mathematical analysis.

The study conducted a surveys for two groups as e-procurement system owners/vendors and end user as qualitative and quantitative research, the results outcome quantified and analyzed as Likert scale data analysis statistically, checking the current satisfaction on Malaysia and discovering weather more issues or barriers to be listing.

Finally, may some interested researchers or organizations on the research results to know how the e-procurement systems are used in construction industry in Malaysia, and what are the related issues for improving the e-procurements applications, and systems, enhancing the procedures and processes to fit for the Malaysian industry and community.

1.6 Research Objectives:

In this research there are have some objectives intend to do to enrich most important aspects for who working on e-procurement field, weather if they are a vendors, suppliers, governments, systems creators, e-procurements ICT experts, organizations and firms, or just normal end user, here can list these objectives as following:

1.6.1 E-procurement explanations:

Many studies have been done on the e-procurement systems, with many details on the types, processes, and practices, the aim in this research to describe in simple way all e-procurements aspects satisfactions for Malaysian e-business

industry , for functions, processes, methods, make more categorization for all types of procurement, paying more considerations for e-procurement systems in projects generally in Malaysia and construction industry especially, with referencing for the other studies which conducted on Malaysia about e-procurement systems.

1.6.2 E-procurement benefits:

In this research data collected through the questionnaire to be analyzed to provide more explanations for each type of e-procurement how the framework and all processes which currently existed worldwide and especially for Malaysia, by measuring satisfactions it can help for differentiation the benefits for all e-procurement aspects.

E-procurement having many benefits and the study determining these benefits in Malaysia and identifying weather these benefits are same comparing to the other countries for many industries and for construction projects.

1.6.3 Listing the current problems, difficulties, and challenges:

By looking at and reading many papers on problems, difficulties, challenges and barriers which facing the adoption of e-procurement which the study listing and identifying in Malaysia, address and discuss, especially those which facing the project e-procurement and on more specifically for construction projects in Malaysia, results of the survey concern mostly on these issue in Malaysia to conclude and find out most problems facing the e-procurement systems adoption and implementing, weather known or unknown issues.

The study is going to detect and view the technical procedures problems for the higher management effect, in case there are any influence to the e-procurement systems reliability.

1.6.4 Solutions for E-procurement issues:

After collecting and investigating the current issues, problems and barriers for e-procurement systems in Malaysia and applications comparing the suggested solutions by previous studies and researches to the existed solutions for Malaysia and which solutions are more suitable to solve these issues which provided by this research study or suggested by Malaysian organizations.

1.7 Study Outcome:

this research to extract the benefits of e-procurement being studied carefully and knowing what are these benefits to help us to improve the e-procurement systems for all projects and industries especially the construction industry, may we can simplify the solutions of other researchers for problems, difficulties and challenges to be more able to use or to find better solutions by more future studies.

Hope by this research we can put the e-procurement systems for construction industry into spot light and consider it for more developments and enhancing the new frameworks and more invention for ICT using technology.

1.8 Research organization structure:

The research is starting with an introduction for the e-procurement systems with more explanations and giving more information to be more familiar with the subjects of this research, also listing the research problems to solve, objectives, the research importance, and research outcomes.

The second chapter is a literature review for e-procurement systems, with sufficient information about types, processes, procedures, and

listing the researcher's results about e-procurement systems benefits, implementation barriers, difficulties related, also consideration for ICT value for e-procurement systems, and implementation for projects and construction projects in Malaysia especially.

The third chapter is all about research methodology, approach, and design, how to collect data for the study research and do the appropriate analysis, sampling for the research population and with more discussion for all chapter sections.

Chapter four is for resulting and discussion, doing more analysis and comparisons for all items and survey groups, with more graphical figures to show the results, listing the results according to research objectives and outcomes.

Chapter five is conclusion for whole research with explanations and validations for the research findings, research limitations, and what can be for further work on the same topics especially for country of Malaysia.

CHAPTER TWO

2 Literature Review

2.1. Introduction

On this chapter of the study a brief information about e-procurement applications and systems with definitions of other researchers, a very useful details about the e-procurement types and classification for Malaysia and worldwide countries, reviewing benefits for the e-procurement in details with consideration to the industries and the Malaysian construction sector, with different types of the e-procurement it is necessary to explain all related processes and procedures, the e-procurement systems depends on ICT as technology and infrastructure and their types which also discussed in this chapter, and at last the study mentioned to the current problems, difficulties, and challenges for the e-procurement implementations an adoptions.

2.2. What is the Electronic procurement or E-procurement:

Procurement implies gaining merchandise as well as administrations from an outside source. The term obtainment is broadly utilized as a part of government; numerous privately owned businesses utilize the terms buying and outsourcing. Associations or people who give acquirement administrations are alluded to as providers, merchants, temporary workers, subcontractors, or dealers, with providers being the most broadly utilized term. (Schwalbe, 2011)

In today's market, many organizations introduce themselves to the world by means of their web website; they delicate and react to tenders utilizing web-empowered innovations, oversee and control their bookkeeping and data trade utilizing electronic means, and they additionally utilize group-ware web advancements for sharing learning, basic leadership, coordination, and venture control. Moving from paper-based to question situated information models has changed a great part of the acquisition

procedure and enhances production network reconciliation.(Walker & Rowlinson, 2009)

According to (Patel, Satrndrakumar, & Khajuria, 2016) mention that technology or ICT, it had an incredible effect in all parts of life, for example, economy, business, venture and so on. The worldwide economy is presently experiencing basic change in which IT assumes a key part. Data Technology has change the method for working together. Headways in data and correspondence innovation (ICT) have rolled out conceivable central improvements in the strategies for routine of all organizations and ventures. The significance of legitimate administration of acquirement is highlighted by the way that it represent considerable part of association's assets and time.

(Tatsis et al., 2006) were trying to considering other researchers work on their paper and said: E-acquisition has been characterized in various ways. Table 2.1 presents different definitions differentiating and think about their shared characteristics and contrasts. In spite of the fact that there are contrasts in degree and detail among these definitions, unmistakably they allude to the utilization of electronic advancements to bolster the acquisition work.

In light of these shared characteristics it was conceivable to build up the accompanying definition utilized for this exploration:

E-Procurement is the coordination, administration, computerization, enhancement and enablement of an association's acquisition procedure, utilizing electronic devices and advances, and online applications.

Table 2.1 Definitions of e-procurement SOURCE (Tatsis et al., 2006)

Source	Definition	Electronic tool	Web-based/Internet based	Technology	Process	Supply chain integration	Procurement management	Procurement automation	Procurement optimization
Alaniz and Roberts (1999)	-E‘‘procurement refers to Internet solutions that facilitate corporate ’purchasing’	X	X	X			X		
Morris et al. (2000)	‘‘E-procurement is a series of steps—from the formulation of the purchasing corporate strategy to the actual implementation of an Internet-based		X	X	X		X		
Aberdeen Gr oup (2001)	-E‘‘procurement is the creation of‹private based-webprocurement markets that automate ‹communications transactions and collaboration betweensupply chain partners. Itis about enhancing ‹collaborations streamlining processes, controllingcosts, and enhancing informationexchange within and across organization boundaries’’		X	X		X	X	X	X
Chaffey (2002)	-E‘‘Procurement should be directed at improving performance foreach of the five ‘‘rights’’ of purchasing, which are sourcing items: at the right price, delivered atthe right time, are of the rightquality, are of the right quantity, from the right ’’source						X	X	X

2.3. Types of E-procurement:

E-procurement started to spread widely for mostly all industries, the e-procurement systems vendors and innovators have created many types of applications that helping to do the tasks required, each sector and industry having their own type, with more customizing to fit the purpose, by market growing up and the business rapidly increasing the needs of the e-business and e-commerce which depends on ICT are very clear now, many researchers doing classifications and distinguishing the e-procurements type to help the industries sectors to choose and improve

the e-business to the maximize benefits , here we are giving some types and classifications in this part of our study.

2.3.1. Public e-procurement

Which used by governments to the whole community, the approach issues and instruments can be separated into the supply side and the request side. Cases of supply side strategy identify with R&D, training, firm abilities, the foundation of organizations which impact correspondence amongst firms and amongst firms and colleges, and so forth. Cases of interest side strategy incorporate open innovation acquirement, laws, directions, models and different establishments which may impact the advancement and dispersion of advances.

Some organization using e-procurement systems to provide services to the community and public, most of these organizations are charity and other international organizations which carried out the procurement services especially for development and poor countries.

2.3.2. Government e-procurement

Electronic Government Procurement (e-GP) is depicted as the online use of data progression and framework to the association, prepare, assessment and reporting of government obtainment. Government acquisition addresses 18.42% of the world GDP. It is utilized by government work environments and unmistakable on-screen characters of getting social occasions in coordinating all activities of the organization obtaining get ready cycle (GPPC) for the securing of stock, works, and consultancy organizations with redesigned viability in procurement organization.(Adebiyi, Ayo, Akinusi, & Marion, 2010)

Falikh tried to identify the E-Government as following, E-Government activities refocus consideration on various issues: how to work together more viably crosswise over offices to address unpredictable, shared issues; how to upgrade client center; and how to manufacture associations with private segment accomplices. Open organizations must address these

issues on the off chance that they are to stay responsive.(Falikh, 2014)

Usually governments are having many projects implemented through the government organizations and agencies, most of these projects are using procurement systems adopted to their business, and the constructions project taking the priority for governments, so e-procurement taking a good support, for many benefits we will mention to them later to make the e-procurement systems working smoothly and problems free.

There is wide agreement that there exist three principle e-obtainment innovative designs: Buyer - facilitated, dealer – facilitated and intermediated structures.

Business to business e-procurement B2B:

We recognize among three sorts of B2B e- procurement frameworks stages. Restrictive stage obtainment frameworks include conventional electronic information exchange (EDI) innovations. Open stage obtainment .frameworks are connected with e-advertise Web advances. Cross breed stages include components of both. We indicate an investigative model that catches the key components of our point of view, including the conditions under which solid conclusions can be made about the imaginable watched harmony e-acquirement arrangements of the organizations.(Kauffman & Mohtadi, 2004)

For B2B and using the both of EDI and open platform are simpler than other e-procurement systems which used for activities of organizations for projects and constructions, which more customized to be use for normal B2B.

Akota and Robinson (2001), in their exploration they specify that a considerable number of different applications and structures of e-procurement are recognized in the written work are: e-MRO, online ERP, e-sourcing, e-offering, e-turn around unloading, e-advising. As per Kishor Vaidya, A. S. M. Sajeev and Guy Callender, there are diverse sorts of e-Procurement that concentrate on one or many periods of the acquisition technique, for instance,: E-Tendering, E-Marketplace, E-Auction/Reverse Auction, and E-Catalog/Purchasing.(Patel et al., 2016)

2.3.3. Forms of e-commerce and e-business

Garvin, 2009, did more explaining for E-business and E-commerce, we have presented some crucial ideas and this now permits us to see how web based business and e-business might be embraced. We can now consider a portion of the numerous e- procurement subsidiaries that are clarified beneath. Association amongst clients and providers (and all members inside a production network) can be empowered through data, documents and exchanges being transmitted electronically byP2P – shared systems where people manage different people inside a system. The organization PayPal5 has as of late settled a P2P installment framework and there are various P2P document swap arranges in presence.

B2C – Business to client. Offering on the web to people or associations, for example, Amazon for books CDs etc.

- B2G – Business to government. This is boundless in offering and over the Globe this is turning into a typical element. For instance, the Commonwealth Government of Australia, whose reason for existing is for natives to get data and also have the capacity to execute business and hunt down delicate demands or to react electronically to tenders et cetera.
- C2G – Citizens to government. Many governments have extensive websites for interacting with citizens to provide information and to receive feedback.
- C2C – Consumer to consumers. From multiple points of view, EBay is a C2C facilitator as its plan of action is to permit shoppers to associate as though in an open (physical) commercial center swapping, dealing and purchasing and offering through an online middle person. Specialists and individuals keen on memorabilia likewise get together to associate and swap/purchase, making exchanges through utilizing the e-facilitator.
- C2B – Consumer to business. This may utilize the invert closeout demonstrate offered by various associations including aircraft discounters where bidders set their value confine and the middle person encourages subscribing organizations to choose whether to

acknowledge these offers. A few associations have advanced electronic operators which permit purchasers to arrange their alternatives to request things. Dell is one of numerous that has this limit.

- G2G – Government to Government where governments can be connected; correspondence between these elements can be priceless. In Australia, similar to the USA, Germany and different nations with an elected and state (or region) constitution, this sort of cross-government electronic cooperation is generally helpful. Governments additionally connect as specified before with business in G2B and with buyers in G2C exchanges.(Walker & Rowlinson, 2009).

The e-procurement system usage depends on purpose is different from industry to another, and totally different from the frame work, processes, benefits, even financial transactions are different sometimes, corresponding on these differentiation they got different issues , problems, barriers according to system function and industry they use this system.

Schwalbe, 2011, did some classification on the purpose of use of e-procurement that can help for classification for what type should use to satisfying the requirement of the organization, also (Rowlinson & Walker, 2008) on their book they explaining Five e-procurement models and their impact on projects:

- Online ERP (Electronic Resource Planning): Creating and favoring obtaining orders, putting in buy requests and getting products and ventures by utilizing a product framework in view of Internet innovation. But for (Rowlinson & Walker, 2008) they expressed that ERP means Web-based Enterprise Resource Planning (ERP), furthermore, it is acquirement modules utilize a product framework that depends on web innovation to make and endorse obtaining orders, submit buy requests and record the receipt of merchandise and enterprises. It portrays, basically, the combination of ERP

arrangements in light of SAP, Oracle, PeopleSoft, JD Edwards (both now consumed by Oracle) or different stages, which used to be isolated arrangements limited to the organization utilizing the ERP framework, with its providers and clients.

As an aftereffect of online ERP mix endeavors, buyer–supplier connections are regularly fortified, which makes this e-obtainment approach reasonable for relationship organizations.

- E-MRO (Maintenance, Repair and Overhaul): The same as web-based ERP except that the goods and services ordered are non-product related MRO supplies.

  On (Rowlinson & Walker, 2008) book they explained that e-MRO Similar to web-based ERP, with different meaning which is e-MRO (Maintenance, Repair and Operating)enables non-product-related MRO supplies. Channels for e-MRO include direct or DPS (dynamic picking system), standardized catalogues (e.g. at buyer's site), broker intermediaries (Application Service Providers, which purchase goods on the buyer's behalf within certain price limits) and supply-side shop systems.

  We can consider that e-MRO is one of the important process related to construction industry, but sometimes e-MRO systems are not only web-based systems for some especial clients and customers they need to install some desktop applications to communicate with each other.

- E-sourcing: Identifying new suppliers for a specific category of purchasing requirements using Internet technology, and this is for most of industries, including construction implementations projects.

  Vital sourcing is a precise procedure for diminishing the aggregate cost of remotely obtained merchandise or administrations, at a characterized quality level. E-sourcing is the computerization of this procedure. It permits distinguishing new providers for a

particular classification of obtaining necessities utilizing web innovation crosswise over spatial limits. Advantages of E-sourcing incorporate expanded basic leadership adaptability and (conceivably) bring down costs through a more extensive scope of providers.(Rowlinson & Walker, 2008)

- E-tendering: Sending asks for at data and costs to providers and getting the reactions of providers utilizing Internet innovation.

  For project procurement e-tendering will be more different than just e-business, which considered with more stages for negotiations and contracts pre-stages. E-turn around unloading: Using Internet innovation to purchase products and enterprises from various known or obscure providers.

For more explanation (Rowlinson & Walker, 2008)in their book mentioned that in a commonplace sale, a vender sets up a thing available to be purchased, various purchasers offer for the thing and the most noteworthy bidder will purchase the merchandise at a cost dictated by the aftereffect of the offering. In a switch closeout, a purchaser issues a demand for citations to buy a specific thing. Numerous providers cite the cost at which they will supply the asked for thing or administration. The exchange is granted to the provider that gave a mix of the most reduced cost or best administration conveyance (time, quality confirmation, and so forth.).

It is likewise called E-empowered closeouts, and can be found in numerous ventures (car, flight, synthetic, development, medicinal services, sustenance and drink, farming), flat commercial centers and can apply to B2B, B2G, B2C and C2C markets.

For a venture business, this knowledge is extremely pertinent: if a feasible relationship is proposed, a relationship-disapproved of obtainment approach will probably succeed. Other venture situations, for example, a one-time exchange, may warrant utilizing e-empowered or invert barters.

E-informing: Assembling and conveying obtaining data both from and to inside and outer gatherings utilizing Internet innovation.

(Rowlinson & Walker, 2008) said it depicts the social event and

dispersing of purchasing information, both from and to interior and outer gatherings utilizing web innovation, E-advising is basic for the venture acquisition prepare as it empowers modest and prompt access to data about business accomplices.

Also it taking another forms for some industries, for some projects detailed engineering documents are gathered and distributed according to e-procurement type procedures.

E-market sites: Develops Web-based ERP to open up esteem chains. Purchasing people group can get to favored providers items and administrations, add to shopping baskets, make demand, look for endorsement, receipt buy requests and process electronic solicitations with incorporation to providers supply chains and purchasers money related frameworks. (Schwalbe, 2011)

All these previous stages are considered more important for the projects implementations procedures, except some stages as e-auctions, e-markesties, which not important like other stages, and project frameworks, e-procurement systems adoption for projects generally and construction projects especially having many issues, these issues are assessing and evaluated each one depends on the functions it responsible on, to know each problem, difficulty, and barrier we need to study and defining what is the affection of these issues on the e-procurement systems benefits.

2.4. Benefits of E-procurement:

On this research we need to most valuable benefits for e-procurement especially for projects and construction industry projects, why do we need to view and explain these benefits? It will be important to understand the e-procurement systems and how we can get the benefits by using these systems for all industries and for construction industry as well, so we can know once we got some issue related to these systems or facing the adoption of these system for any industry and business, by doing

comparison or apply investigation through our survey, we all that. The technology used may be different or even procedures are different, but the idea concerned on how this issue raised, how we can solve this issue, and how other systems work to overcome this issue and get the targeted benefits.

In this research the questions used on survey concluding weather there are some issues causing an obstacle for getting the benefits by using e-procurement systems.

Each one of the next researchers providing a good benefits for the e-procurement systems, and each have his own perspective point of view, they have some similarity but each one added new benefits which should be considered for our research.

Brack (2000), Purchasers demonstrated that the transformation from paper-based to e-buying brought about a lessening of acquiring value, diminishment at stock level.

Thai & Grimm (2000), The execution of e-Procurement activities ought to be viewed as a push to enhance the acquirement objectives, which typically incorporate quality; opportuneness; cost; minimizing business, monetary and specialized dangers; expanding rivalry; and looking after trustworthiness. In a comparable vein, CGEC (2002) has distinguished cost, quality, program administration advance measures (on-time, on-spending plan, and issue administration), prepare execution variables, and Return on Investment as the most pertinent estimations. According to Min & Galle (2003), Main e-procurement benefits are:

- Cost savings and subsequent increase in return-on-investment
- Upgrade of store network productivity by giving ongoing information with respect to item accessibility, stock level, shipment status, generation prerequisites
- Assistance of collective arranging among store network accomplices by sharing information on request figures and generation plans that direct production network exercises
- Intense linkage of customer demand information to upstream SCM (stock system organization) limits, while in like manner empowering "compel" SCM operations. Robert Eadie, Srinath

Perera, George Heaney, Jim Carlisle, This study breaks down the drivers and obstructions for E-procurement being developed inside Northern Ireland. Disclosures shows that the two most surprising situated drivers by the impermanent specialists were upgrading correspondence and diminished association costs, while the two most basic impediments were security of trades and the defenselessness enveloping the true blue issues of e-obtaining
(Patel et al., 2016).

J.Buschmention in his examination that association recommends that the rising requirement for network and combination between frameworks addressing acquisition mirrors four current business needs that many organizations are searching for from acquirement and back associations:

- Flexibility – Focused on the capacity to coordinate new frameworks rapidly while adjusting to the changing business environment
- Control – Influencing and controlling spending choices on the bleeding edges of the business
- Visibility – Insight into both spending movement and choices, in addition to more extensive spending plans and the capacity to pro-actively oversee money all the more proficiently and adequately
- Forecasting – Using acquisition knowledge for fund driven gauging, scenario building, spending building, and so forth. (Busch, n.d.)

The united nation Interagency Procurement Working Group (IAPWG), have many publishes about procurement and in some details, they expressed some cost benefits on UN procurement practitioner's handbook, 2012, as following:

- The cost of use on merchandise/administrations related specifically to the creation/benefit conveyance.
- The cost of non-creation of products and ventures.

- The cost of operational acquirement exercises – e.g., demanding, requesting, assisting and managerial support.
- The cost of strategic acquirement exercises – e.g., defining particulars, selecting providers, consulting with providers, contracting, transfers and so forth.
- The expenses of key obtainment exercises – e.g., spend examination, exchange investigation, advertise examination, arranging, creating acquisition strategies and so forth.
- Inner advantages emerging from interests specifically between hierarchical connections.
- The commitment of interests specifically between hierarchical connections to incomes.

These expenses and advantages ought to be surveyed in connection to every e-obtainment apparatus. While it is normally accepted that e-obtainment will naturally convey benefits, the real advantages will rely on upon many variables including: cost of required venture, capacity to change over related reserve funds to money, nature of the acquirement procedure being mechanized, specific supply advertise and the degree to which the association bolsters its usage.

(Bakar, Peszynski, Azizan, Pandiyan, & Sundram)In their research they did and collecting some information from many researches papers to provide a good examples for the e-procurement benefits, so they said:

There are many major benefits which got by using the e-procurement for organizations in both the private and public sectors.

For manufactory industry, many reports of manufactures mention that e-procurement giving more control on whole processes in real time, enhancing and improving the supply chain management systems, providing more detailed data on real time for all related products, make the inventory, shipments and delivery very easy, more collaborative planning with partners.

Mercedes Benz, in its Spain operations, reported reserve funds of up to US$30 million and a lessening of providers by 65% after its appropriation of e-acquirement (Attaran and Attaran, 2001). Emerson in like manner

reported reserve funds of US$30million, while American West Airlines and the Eastman Kodak Corporation reported value breaks of 40% and 20%, separately (Attaran and Attaran, 2001).

By executing e-acquirement while obtaining merchandise and enterprises for either generation or nonproduction needs, organizations can increase considerable advantages. A few potential advantages connected with the utilization of e-obtainment have been found by associations, and can be portrayed into various fields including operational and key advantages (Croom, 2000), proficiency and viability benefits (Kothariet al., 2007) and value-based, consistence, cost and administration data benefits (Eakin 2002).

A portion of the advantages perceived using e-acquirement advancements incorporate a 73 percent diminishment in exchange costs, a 70 to 80 percent lessening in buy arrange handling cycles, and a five to 10% decrease in costs paid (Attaran and Attaran, 2001). For example, IBM has acknowledged aberrant cost improvements by executing e-acquirement. These circuitous cost upgrades have incorporated a change in on-time shipments from 90 to 98 percent, and a shortening of conveyance process duration by 55 percent, a change of stock turn by 44 percent, and a shortening of the request and supply arranging cycle from 60 to 20 days (IBM, 2002).The open division e-acquirement prepare has likenesses with the private area handle regarding its concentrate on esteem, aggressiveness and responsibility (Hardy and Williams, 2007). For instance, the Republic of Latvia anticipated that e-obtainment frameworks, including e-sell off arrangements, would spare in any event US$320,551 and make a turnover of around US$7,693,000 every year from 2007 onwards.

Denmark reported that the advantages got from the usage of e-acquirement at the state, district and region levels brought about an arranging for of assets by around 40%, 65% and 30%respectively (Henriksen et al., 2004).

Here some researchers trying to simplifying the benefits with evidence of researcher's papers and provided in table format to be easy to explain, (Calipinar & Soysal, 2012) are one of these researchers and they express the following:

Researchers state the benefits of e-procurement in literature which are categorized and presented in Table 2.2.

Table 2.2 new table adopted from the source (Calipinar & Soysal, 2012)

POTENTIAL BENEFITS TO	LITERATURE SUPPORTING
Reduce order cycle times	Min&Galle, 2003; Tatsis et al., 2006; Gunesekaran&Ngai, 2008; Panayiotou et al., 2004; Liu et al., 2011; Davila et al., 2003; Mettler&Rohner, 2009; Roche,
Simplify purchase payment	Min&Galle, 2003;
Expand supplier bases	Min&Galle, 2003; Moon, 2005;
Reduce paperwork	Min&Galle, 2003; Gunesekaran&Ngai, 2008; Davila et al., 2003; Mettler&Rohner, 2009; Roche, 2001;
Eliminate order errors	Min&Galle, 2003; Mettler&Rohner, 2009; Zheng et al., 2006; Davila et al.,
Inventory reduction	Min&Galle, 2003; Tatsis et al., 2006; Panayiotou et al., 2004; Zheng et al., 2006; Ageshin, 2001; Liu et al., 2011;
Productivity and/or service improvement	Gunasekaran et al., 2009; Moon, 2005; Panayiotou et al., 2004; Ageshin, 2001; Muffatto&Payaro, 2004
Save time	Moon, 2005; Mettler&Rohner, 2009; Gunasekaran&Ngai, 2008; Kim&Shunk, 2004; Gebauer &Segev, 2001;
Reduce cost	Moon, 2005; Tatsis et al., 2006; Mettler&Rohner, 2009; Smith&Correa, 2005; Gunesekaran&Ngai, 2008; Panayiotou et al., 2004; Zheng et al., 2006; Kim&Shunk, 2004; Ageshin, 2001; Liu et al., 2011; Davila et al., 2003; Mettler&Rohner, 2009
Decentralize procurement management	Moon, 2005;
Decrease prices, price advantages	Tatsis et al., 2006; Panayiotou et al., 2004; Ageshin, 2001; Liu et al., 2011; Davila et al., 2003; Gebauer &Segev, 2001;
Improved communication and collaboration with suppliers	Tatsis et al., 2006; Gunesekaran&Ngai, 2008; Panayiotou et al., 2004; Ronchi et al., 2010; Liu et al., 2011; Mettler&Rohner, 2009 ; Muffatto&Payaro, 2004; Roche, 2001;
Improved planning and control	Tatsis et al., 2006;
Improved effectiveness of purchasing process	Panayiotou et al., 2004; Davila et al., 2003;

Reduction of purchase department size and number of functional areas involved in purchasing process	Ronchi et al., 2010; Davila et al., 2003;
Allowing the purchasing department to concentrate on more strategic tasks	Gebauer &Segev, 2001;
Improving business transparency	the united nation UN procurement practitioner's handbook (2012) , (Neupane et al., 2012)
Reducing corruption in public and private sectors	(Neupane, Soar, Vaidya, & Yong, 2012),
E-procurement can centralize data in order to improve audit and analysis	(Gupta,Jha & Gupta, 2009).
E-procurement eliminates the direct human interaction on bidding, and internal efficiency increase.	(Ndou, 2004).
government can monitor all the works and services more easily and efficiently	(Aman & Kasimin, 2011; Kaliannan & Awang, 2009)
provides better status monitoring and tracking of applications	(Adebiyi,Ayo & Adebiyi Marion, 2010)
improves better interaction between supplier and vendors and citizens	(Adebiyi,Ayo & Adebiyi Marion, 2010)
Online bidding system automatically reduces the cartel, collusion and riggings among the bidders	(Pathak et al., 2006)

2.5. E-procurement processes and procedures:

The e-procurement polices effect not only to standards and rules that providing honesty, fair, transparency in contracting but also for goals such as economic developing and ICT innovations.

We should have rules to translate procurement policies into practices, there should be a guide methods to make sense of e-procurement how to work, and we should be do contributions to develop and enhance the understanding of policies and how to be implemented.

(Bakar et al., n.d.) On their research mentioned that many researchers have their point of view which they said: E-obtainment can encourage the accompanying three key procedures required in acquirement (Chan et al., 2003):

- Information recovery – whereby forthcoming purchasers distinguish their own particular needs, and they assess the capacities of potential sources to satisfy these necessities. They assemble data about economic situations, items and dealers.
- Negotiation – whereby singular business accomplices begin to cooperate with each other and decide the costs and accessibility of merchandise and ventures, and also conveyance terms. Effective arrangements are normally concluded with an agreement.
- Settlement – whereby the terms of the agreement are completed and products and ventures are moved in return for cash or different types of pay.

2.5.1. E-procurement in the procurement cycle:

The united nation on the book of UN procurement practitioner's handbook (2012) explained in easy way the similarity of e-procurement and traditional procurement processes: The figure underneath demonstrates the six types of e-procurement plotted in the acquisition procedure:

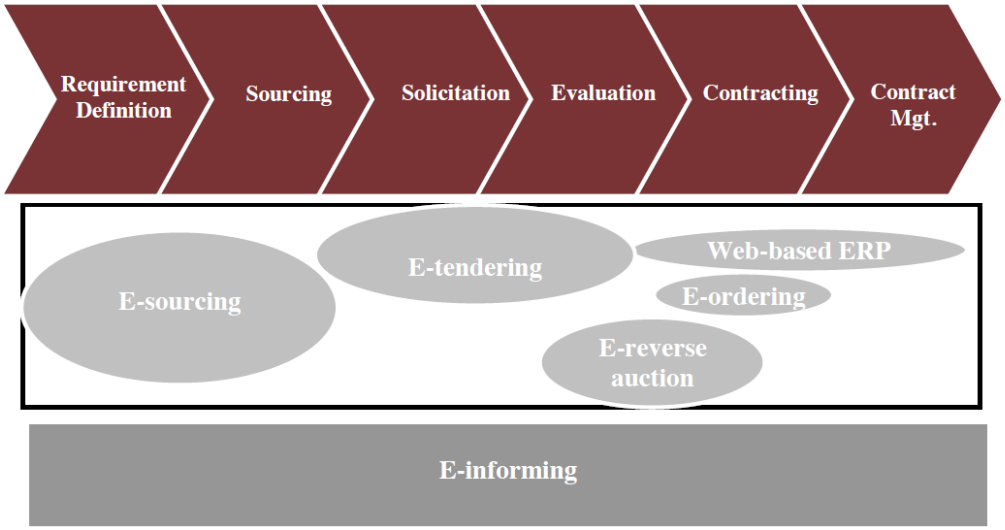

Figure 2.1 Flowchart of e-procurement procedures

Each of these structures can be clarified as takes after:

E-sourcing underpins the determination stage; it recognizes providers that can be utilized as a part of the choice stage.

E-tendering underpins the choice stage; it encourages the Request for articulation of intrigue (REOI) and Invitation to Bid or demand for proposition (ITB/RFP) exercises, more often than excluding support for the examination and evaluation exercises.

E-reverse around selling underpins the agreement stage; it empowers making it all work out with a provider;

E-ordering and electronic ERP is the way toward making and supporting acquirement demands, putting in buy requests, and in addition accepting products and enterprises requested, by utilizing a product framework in view of the Internet.

E-informing is not straightforwardly connected with a stage in the acquirement procedure; it is the way toward get-together and circulating obtainment data both from and to inside and outer gatherings utilizing Internet innovation.

E-negotiation alludes to a system that takes into account a recursive collaboration between a purchaser and provider, along these lines permitting the determination of a decent arrangement. (Raghavan & Prabhu, 2004)

2.5.2. E-Procurement and e-Business

E-Business impacts on supply chain integration in the following four key dimensions:

2.5.2.1. Information integration. **This involves information sharing and** transparency across the supply chain which is accessible in real time.

2.5.2.2. **Synchronized planning**. This involves collaborative planning and replenishment across the supply chain.

2.5.2.3. **Workflow co-ordination.** This focuses on

automated business processes and coordinating them.

2.5.2.4. **New business models.** These include different supply- and sell-side models that were previously not present in the off-line world.

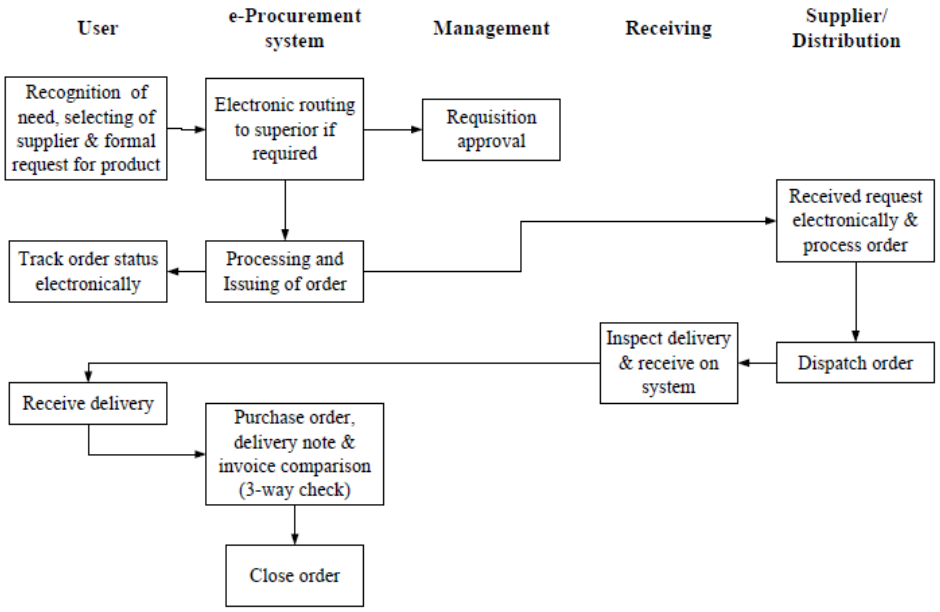

Figure 2.2 The e-Procurement Process, Source (Jooste & Van Schoor, 2003)

Table 2.3 indicates the impact procurement has on each of these integration dimensions (adopted from Lee & Whang).

Table 2.3 Impact of e-Procurement on Supply Chain Integration, Source (Jooste & Van Schoor, 2003)

Dimensions of Supply Chain Integration	Contribution of e-procurement
Information Integration	Provider data sharing. Both purchasers and providers can get to data progressively to track arrange advance.
Planning Synchronizations	Co-ordinated renewal. E-Procurement with a productive determining framework could start arranges consequently as opposed to physically, which will bring about a draw as opposed to a push model.
Workflow co-ordination	Paperless acquisition, barters, auto-renewal, auto installment. E-Procurement computerizes the majority of the requesting procedure. Incorporating this with a robotized installment framework, (for
New Business Models	Market exchanges, auctions, secondary markets.

The Internet has permitted organizations to create inventive arrangements that quickened the appropriation of inventory network reconciliation standards. On the off chance that executed effectively, this guarantees not just to change supply binds from being versatile to being responsive, additionally guarantees investment funds crosswise over organization outskirts that can bring about less stock and in enhanced satisfaction time in the inventory network.(Jooste & Van Schoor, 2003)

2.6. ICT in E-procurement:

The Internet has permitted organizations to create inventive arrangements that quickened the appropriation of inventory network reconciliation standards. On the off chance that executed effectively, this guarantees not just to change supply binds from being versatile to being responsive, additionally guarantees investment funds crosswise over organization outskirts that can bring about less stock and in enhanced satisfaction time in the inventory network.(Walker & Rowlinson, 2009)

The Internet innovation that is required in these procedures can be offered to the workers in a few ways:

- Via commercial centers: commercial centers are particular sites on the Internet (went for e.g. an industry or an item) that unite purchasers and venders to encourage workers of associations in applying types of e-acquirement and more as a rule web based business.
- Via intranets: intranets can be viewed as various sites with data that must be gotten to by representatives of one association.
- Via extranets: extranets can be viewed as various sites that must be gotten to by representatives of various known associations. One of these sites might be a commercial center.(Boer, Harink, & Heijboer, 2001)

The part and working of gateways is quickly changing with new thoughts, items and administrations going ahead stream always. These offer chances to reexamine how the whole correspondence part of venture

acquirement will work.

Electronic frameworks to bolster customary obtainment, EDI (electronic information exchange), ERP frameworks, Internet as a support or supplement to conventional acquisition , Electronic mail (email), Web empowered EDI, Extensible increase dialect (XML), World Wide Web (www), Internet apparatuses and stages that supplant conventional procurement(Patel et al., 2016)

E-Procurement programming requires bigger speculations than option e-obtainment advances, a reality that most likely clarifies why extensive enterprises are the fundamental adopters of this innovation. The variety in the forthright venture may halfway record for the affiliation already recognized between different e-obtainment advancements and distinctive market sections. Conversely, these organizations may profit by less expensive e-acquisition advancements.(Davila, Gupta, & Palmer, 2003)

Many researchers started to put many ways to implement the e-procurement through the ICT technology and facilitate these methods with classifications and with help of ICT experts for users and organizations for both public and private sectors, (Muffatto & Payaro, 2004) put five steps for implementing the e-procurement supported by other researchers facts and evidences as following :

2.6.1. Traditional communication tools

In the main stage, the data stream between the different players in a similar store network and the organization in reference is overseen utilizing conventional correspondence frameworks. For this situation, an organization's data frameworks are for the most part used to oversee inward procedures instead of convey remotely. Be that as it may, an organization may have its own particular correspondence system, for example, EDI. There are numerous confinements at this stage, for example, the execution cost, the trouble in connecting with other data frameworks, the requirement for an organization's accomplices to embrace a similar innovation, the requirement for specific aptitudes, and

the absence of adaptability which makes it hard to get new accomplices and makes high exchanging costs for the individuals who wish to clear out.

Conventional correspondence frameworks are exceptionally wasteful in that they don't make it workable for data to be exchanged rapidly with a low likelihood of blunder. Moreover, if the organization utilizes a customary administration framework, the greater part of the passage and leave orders must be placed in the framework physically.

2.6.2. Enterprise integration

In this stage, the association fuse the association's abilities in an organization information system. The execution of these structures is troublesome and high cost recommendation that spots goliath asks for on corporate time and resources.

Organization information system gives two significant points of interest that don't exist in nonintegrated departmental structures: (1) a united wander viewpoint of the business that wraps all limits and divisions; and (2) an attempt database where all business trades are entered, recorded, arranged, watched, and reported (Davenport, 1998). This bound together view grows the need for, and the level of, interdepartmental support and coordination.

In any case, it engages associations to finish their objectives of extended correspondence and responsiveness to all accomplices (Umble, Haft, & Umble, 2003).

2.6.3. Web-based communication tools

Amid the third usage arrange, then again, Internet is utilized to speak with providers and also with the majority of the players required in the store network. For this situation, a domain is made where the players can get to and utilize different administrations by means of the Web. This arrangement does not incorporate the Web environment with the organization's inward administration framework. Along these lines, a portion of the interfacing exercises between the distinctive data frameworks must be completed physically. Contrasted with the past stage,

the time required for the different players to convey is diminished (quicker data stream) and the exactness of the data exchanged increments, with a huge lessening in the quantity of mix-ups.

2.6.4. XML web-based platform

XML is a record augmentation for an Extensible Markup Language (XML) document arrange used to make basic data configurations and share both the organization and the information on the World Wide Web, intranets, and somewhere else utilizing standard ASCII content. (M. Energize, 2010)

The fourth usage arrange includes more mix between an organization's inside administration framework and the Web environment. At this stage an interface between the two situations must be created. Not the majority of the organizations in the inventory network can complete this sort of usage, rather, just medium-to expansive estimated organizations which have critical contract control with respect to their providers and clients can. For this situation, the pioneer organization builds up a product which permits the fundamental providers and clients to see the circumstance of the distribution center continuously. Though in the past stage, orders set by means of Web were exchanged physically to the organization's inside administration framework, in this stage they are naturally changed over from the Web channel and exchanged to the pioneer organization's administration framework.

Access to the framework is straightforwardly controlled by the pioneer organization; toward the starting, just the fundamental accomplices have entry. Along these lines, the manual exercises are diminished, just like the lead-time and the greater part of the phases of acquirement and satisfaction can be followed. The innovation expected to make the majority of this conceivable is offered by XML applications.

2.6.5. Integrated enterprise

The fifth stage speaks to a likely development of data and correspondence frameworks. Specifically, the data framework being created would need to unite diverse organizations working in a similar field into a kind of

consortium.

By utilizing Web interfaces, a stage is made in which numerous providers and clients can work together to make a few procedures more proficient.

The reception of systems to coordinate the inventory network offer a great deal more than only a change in organization productivity. A few organizations are finding better approaches for doing business and new open doors which were already unrealistic. Indeed, at this level, the greater part of the calculated streams are re-imagined and there is a move towards the formation of a "supply organize" (Lee& Whang, 2001). The players required in these systems can make new items together.

The organizations considered here are in the blink of an eye utilizing XML Web-based stages. Be that as it may, the particular need to coordinate increasingly the majority of the players in the production network was communicated amid the meetings. A "supply system" would make it conceivable to streamline the administration of the accompanying exercises (Simchi-Levi, Kaminsky, and Simchi-Levi, 2000): request arranging, supply arranging, and assembling arranging and planning. (Muffatto & Payaro, 2004)

(Wong & Sloan, 2004)concluding on their research for many facts about using the e-procurement, ICT giving many favorable circumstances the majority of little medium venture (SME), lessening acquisition expenses and gainfulness are among the most critical advantages that an e-obtainment system would bring. The most plausible clarification could be the expanded rivalry among development SMEs. Another observation from the respondents could be that e-acquirement offers energizing new chances to augment their commercial center while sparing significant operational expenses on ICT organizations.

Via seeking it is endorsed that the most widely recognized ICT applications are managerial assignments, organization site, and inner systems administration (sharing of processing foundations).

This shows ICT applications fundamentally for monetary advantages at the preparatory phase of ICT venture. It is trusted that little firms tend to concentrate on general applications to upgrade inner correspondences and

enhance secretarial and administrative assignments while investigating ICT to satisfy the bland requirements for a little association. Another rising concern is the choice on ICT speculation and execution. There is a productive decision of ICT applications and arrangements. The most recent advances have demonstrated a decent option for enhancing the current items. Be that as it may, to choose and assess the most suitable one could be a dull errand. This is because of the cost for advocating such advantages regularly surpasses its actual esteem and could be unrealistic for little firms. This is not shocking as Irani and Love (2002) and Love, et al (2000) have observed IT speculation has a tendency to be a noteworthy test amid its assessment procedure.

SMEs are picking up advantages using ICT that empower them to mechanize standard and monotonous works. Run of the mill cases of these are instruments for managerial errands, records and correspondences at the between authoritative level, trade of between hierarchical reports and business data. The exploration advocate absence of duty to put resources into ICT take-up later on to catch the potential offered by ICT. By and large, the reception and coming about increases from ICT take-up are needy to the degree. (Wong & Sloan, 2004)

2.7. E-procurement for construction projects:

Data Technology (IT) is currently routinely utilized as a part of the development business as a device to lessen a portion of the issues created by fracture. The utilization of IT enhances coordination and joint effort between firms taking an interest in a development extend, prompting to better correspondence rehearses. Its advantages incorporate an expansion in the nature of archives and the speed of the work, better money related control and interchanges, and less complex and quicker access to normal information and also a reduction in documentation mistakes. IT spending in Architecture/Engineering/Construction (A/E/C) firms has expanded essentially. (Nitithamyong & Skibniewski, 2004)

The investigation of these different ventures demonstrates the

many advantages that development could possibly saddle through e-business reserve funds and efficiencies. The recognizable proof of the drivers and obstructions to e-acquisition in development is imperative to picking up a comprehension of how the advantages of e-acquirement can be utilized to expand its take-up and to give a model to implant e-obtainment. A restricted study had been completed in this field; (Farzin & Teimoori Nezhad, 2010)

(Farzin & Teimoori Nezhad, 2010)o their exploration clarified that the E-procurement empowers organizations to decentralize operational acquisition forms and incorporate key obtainment forms as a consequence of the higher production network straightforwardness gave by E-acquirement frameworks, and the ICT utilize, E-acquisition can likewise incorporate exercises, for example,

- Publicizing tenders.
- Electronic requesting.
- Explore into provider markets.
- Web sourcing by means of outsiders.
- Electronic accommodation of tenders
- Electronic mail amongst purchasers and venders.
- Electronic mail in contract administration.
- Joining of obtainment inside the monetary and stock frameworks.

(Nitithamyong & Skibniewski, 2004) made an audit of utilizing the ICT apparatuses into venture administration and e-acquirement, recently, an idea of how the Web and its related innovations can be utilized to oversee development ventures has been generally recognized by experts. This idea is frequently alluded to as a Web-based Project Management.
Here and example for the e-procurement Figure (Figure 2.3) explaining the most important processes stages in general concept.

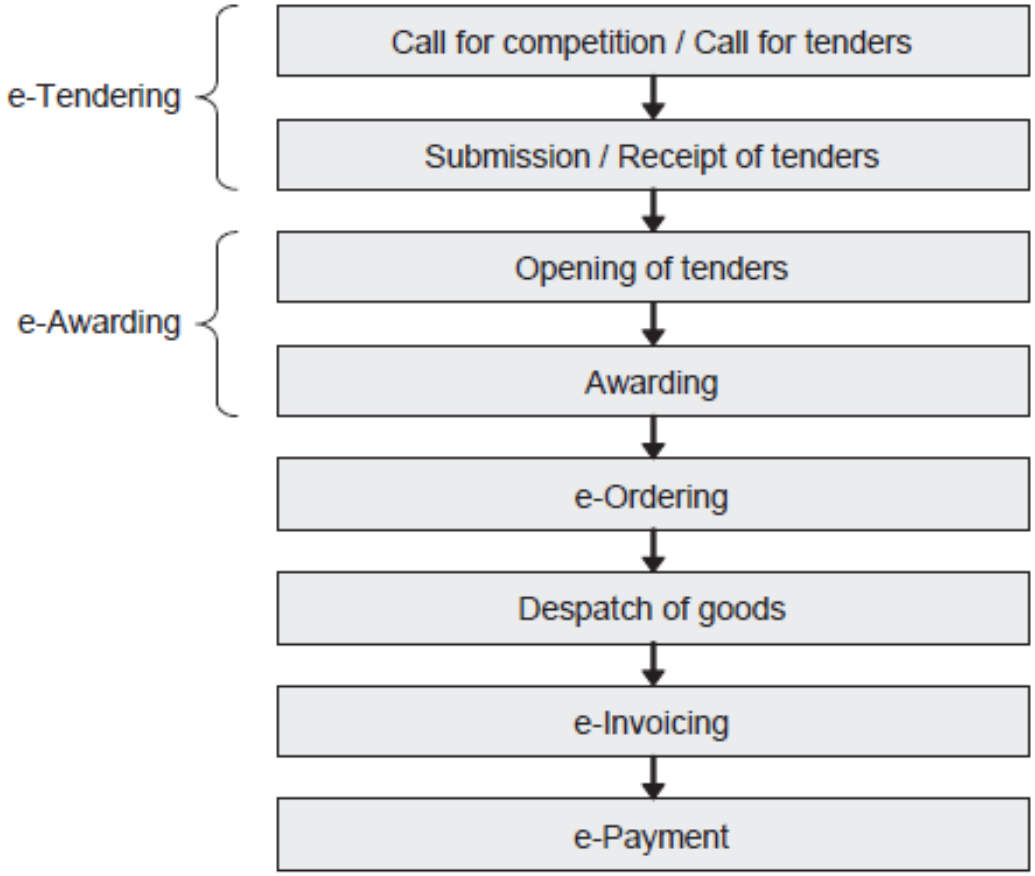

Figure 2.3, the most important processes stages of e-procurement source (Meier & Stormer, 2012)

Framework (WPMS) and guarantees to improve development extend documentation and control and to upset the path in which a development extend group conducts business. WPMS is an electronic venture administration framework directed through the Extranet, which is a private system that utilizations Internet conventions to transmit data.

The framework is just available by a venture group, yet colleagues can be situated in various associations.

Project Procurement Exchange (PPE)

PPE means to streamline the obtainment cycle of development materials and administrations. The framework gives electronic offering and obtainment administrations, which by and large permit clients to see online inventories of items and administrations, transmit RFQs, trade cost-related information, audit work bundles, and direct offering and acquisition on the web. Table 4 shows a few cases of PPE as of now accessible for the development business. (Nitithamyong & Skibniewski, 2004).

Table 2.4 Examples of PPE for the construction industry , source (Nitithamyong & Skibniewski, 2004)

Examples of PPEs for the construction industry

PPE service	Company	URL
BuildPoint.com	BuildPoint.com	www.buildpoint.com
Buildscape™	Buildscape.com	www.buildscape.com
BidA/E/C.com	BidA/E/C.com	www.bidaec.com
BidExpress.com	Contractors Online	www.bidexpress.com
BidHost™	eBid Systems	www.ebidsystems.com
Contractors eSource™	Contractors eSource	www.contractorsesource.com
Cprojects.com	Cprojects.com	www.cprojects.com
eu-supply.com	eu-supply.com	www.eu-supply.com
PurchasePro™	PurchasePro.com	www.purchasepro.com
TradePower™	TradePower	www.trade-power.com

Hashim et al, (2013) has considered seen estimation of E-Procurement in the development business in Malaysia. This study reasoned that strategic and operational qualities are more critical than key qualities. Imperative factors in various heads were characterized as takes after:

Tactical Value

- Lower procurement cost
- Reduced time of preparing cost plans

Operations Value

- Reduced non value added activities
- Order process more efficient

Strategic Value

- Improved firm growth and success
- Reduced and eliminate problem with suppliers

(Shukla, 2016)

With regards to development by and large, e-Procurement advances and devices incorporate a few sorts of unmistakable and elusive questions, for example, web-empowered/upheld programming bundles; organize advances for the trading of information and data (e.g. EDI, email, and remote advances); web-upheld value-based and cooperation applications; web bolstered information gathering and taking care of technologies(e.g. GIS, GPS, RFID, sensor systems) and intuitive, integrative and coordinated effort advancements (e.g. Web 2.0, BIM, ERP, distributed computing, online venture administration and tweaked e-Procurement programming applications)used to bolster the execution of development obtainment exercises electronically (TUNJI-OLAYENI & AYO-VUAGHAN, 2016).

2.8. Problems, difficulties, and challenges of Implementing E-procurement:

(Falikh, 2014) mentioned to some problems and difficulties for e-procurement on his paper as:

- ◊ Absence of products and costs data
- ◊ Access to market is constrained
- ◊ Showcase protected bulkhead
- ◊ Undesirable business rivalry
- ◊ Awful Governance
- ◊ HR acquirement is constrained

- ◊ The substantial measure of spending plan spent for acquisition
- ◊ Constantly large amounts of spillage in the execution of the financial plan
- ◊ Absence of clarity principles administering the obtainment

Many classifications for the problems, risks, and barriers provided by researchers, (Patel et al., 2016)(Calipinar & Soysal, 2012)on their research classified Risks for adopting the e-procurement and mentioned to other researchers notes and explanations, we can list these risks :

2.8.1. Internal business risk:

Receiving e-acquisition framework in a firm requires the incorporation of this framework with another data foundation including frameworks, for example, bookkeeping, HR, resource administration, stock administration, creditor liabilities, creation arranging, and money administration frameworks.

This implies making speculation just in acquiring framework is not adequate for inferring benefits; additionally, this would bring about undesirable results, for example, absence of data, double sections prompting to complexities, and expanding time utilizations, most organizations as of now have put vigorously in these different applications and the mix of e-acquisition ought to go as easily as would be prudent.

2.8.2. External business risk:

Receiving an e-obtainment framework and incorporating it with data foundation of a specific firm may not ensure the achievement of the new procedure.

E-acquisition arrangements additionally should have the capacity to coordinate with providers IT-foundation. For e-acquisition answer for be fruitful providers must be available through the Internet and give inventories to fulfill the necessities of their clients. Now and again providers may do not have the assets to meet the requests of clients in inventory creating and upgrading. Organizations additionally need to create systems that give the purchasers affirmation that new providers

meet the desires and principles identifying with provider quality, administration and conveyance abilities.

2.8.3. Technology risk:

There are numerous e-acquirement innovations which could be utilized by firms. The issue here is finding the most reasonable one for the firm, since each innovation has its own particulars. For example, Internet Electronic Data Interchange (EDI) gives faster, successive information exchange and security potential; be that as it may, the cost of setting up an EDI framework is likewise more than setting up the web (Min and Galle, 2003).

The absence of generally acknowledged models hinders the mix of various e-acquisition arrangements over the store network.

The specialists demand that without generally acknowledged measures for coding, specialized, and handle determinations, reception of e-obtainment innovations will keep on being moderate and will neglect to convey the guaranteed benefits.

2.8.4. E-procurement process risk:

E-acquisition exchanges are made through electronic structures which are exchanged amongst purchasers and dealers. As it were, everything is reliant on electronic information trade. Along these lines, the security of this framework must be kept up by the two sections of this trade. Unapproved malevolent intercessions must be identified and checked by the firm, this hazard identifies with the security and control of the e-acquisition prepare itself. Such issues can be identified with, for instance information security and extortion counteractive action e.g. fake providers, fake offers and so forth.

There are likewise difficulties and dangers organizations need to consider while considering e-acquirement reception. Making the obtainment procedure more proficient and quicker can be accomplished with the utilization of e-acquisition arrangements. In any case, this requires the usage procedure must be arranged and executed altogether keeping in

mind the end goal to minimize the difficulties and dangers organizations may confront.

While backhanded buys can some of the time represent a major a portion of organization's general spending it is critical that likewise these buys are directed after organization approaches and guidelines. Utilizing e-obtainment just for backhanded buys to start with can go about as venturing stone for organizations before moving into exhaustive e-acquirement which likewise includes coordinate buys.(Patel et al., 2016)

(Corina, 2011) Discussed about the major impediment in adoption of e procurement. Broadly four head in barriers:

1. Management barriers- limited resource, resistance in change and information sharing
2. Organization barriers- different culture, different compatible internal and external, post supplier relationship
3. IT barriers- security, lack of compatibility, no common technology
4. User barriers- fear, change, lack of information skill system

But for using the ICT we still have limitations, many researchers already mentioned that ICT cost is the biggest difficulties to start new e-procurement solutions or even for upgrade for other new technology, by giving the cost more considerations and higher priority the services providers and vendors will try to provide more suitable services according to budgets, with lower prices, and this also reflecting on other aspects like the quality, and less system’s options.

Still the Electronic Document Interchange not very common to get used by companies to deal with suppliers and this happen only on advanced stages.

The ease back reconciliation of providers to the obtainment framework as one of the primary challenges in viably utilizing proper IT arrangements. Low quality of ace information remains a continuous issue.(Leukel & Maniatopoulos, 2005).

Some of users facing problems to deal with a system interface, sometime unfriendly interface, causing confusion, and lead to misunderstanding

system functions.

Most of e-procurement users are having problems to assess the process of support generally not only technically, because the e-procurement system's ICT solutions are only covered apart of the whole systems, and it is not easy to address the complexity of the processes, which means the usual problems in this case is integration problems.

Some of organization considering lack of experts is effecting the adoption of e-procurement, and this not only the problem it is also the lack of qualified employees, which have the capability to run the systems and do all related tasks.

The absence of qualified staff is an issue for just few of the TOP 200 organizations in Switzerland. Just 14.5 % of the respondents see an issue here.

This diverges from the consequences of a universal study by the Economist authorized by SAP, which was directed with 350 administration board individuals. 58 % of members reported that the absence of qualified staff and preparing was the best test to accomplishing most extreme proficiency in acquisition. It is very conceivable that, in correlation, organizations in Switzerland can rely on better instructed staff.

2.9. Adopting e-procurement on construction industry problems and difficulties:

(Martin, n.d.) On his research noticed that the majority of respondents on his survey identified at least one drawback in working with extranets these included:

- Expenses of drawings to plot to scale
- Copyright issues
- Computer aided design (PC supported outline) Training
- Email over-burden
- Foundation of other colleagues substandard

- A few areas can't get great web get to
- Similarity of drawing programming i.e. Apple Macs
- Part/Full time utilize – disarray
- Printing of drawings a noteworthy issue – must be conveyed!
- Framework not appropriately material to UK techniques and excessively resolute
- Quality and execution of individuals framework (variable)
- Absence of record bringing on significant trouble in checking substance
- Store network can't deal with extranet. I.e. require printed version in any case!
- Printing drawings (particularly shading) is tedious
- Contradictory hardware specs and preparing prerequisites

(Farzin & Teimoori Nezhad, 2010)on their research collected a very good facts provided by many researchers on e-procurement adoption barriers, listed by next table:

Table 2.5 Adopted from the Source (Farzin & Teimoori Nezhad, 2010)

No	Barriers from	Literature Refer
1	Upper Management Support / Lack of Leadership	Davila et al (2003)
2	Other Competing Initiatives	Kheng et al (2002).
3	Resistance to change	Davila et al (2003),Martin J. (2008)
4	Lack of a widely accepted solution	Davila et al (2003) J. (2008)
5	Magnitude of Change	Kheng C. Al-hawamdeh S. (2002)
6	Absence of a national IT approach identifying with e-acquisition issues	Carayannis et al (2005)
7	Absence of Flexibility	Carayannis et al (2005)
8	Bureaucratic broken ties	Carayannis et al (2005)
9	Confused strategies and developed connections	Carayannis et al (2005)
10	Absence of specialized skill	Davila et al (2003),Eadie et al.
11	Staff turnover	Kalakota et al (2001)
12	Log jam in the take-up of web administrations since the dotcom bubble burst	Panayiotou et al (2003)

13	Company access to the Internet	Smith J. (2006).
14	Religious protests to the Internet	Davila et al (2003),Martin J. (2008)
15	Inadequate evaluation of frameworks preceding establishment	Egbu et al (2004).
16	Security in the process - Data transmission to the wrong individual	Kheng et al (2002). -59% of Singapore sample cite security as the main barrier
17	Security in the process - Data transmission to the - wrong person Confidentiality of data	Panayiotou et al (2003)
18	Aversion of messing with reports - changes to records	Kalakota et al (2001)
19	Data transmission reassembly – incorrect reassembly of data transmitted in packets	Jennings D. (2001).
20	Halfway Data Display - inadequate records given	Jennings D. (2001).
21	Absence of applicable case law	Hawking et al (2004), Martin J.
22	Distinctive national ways to deal with e-acquisition	Carayannis et al (2005)
23	Confirmation of intent - electronic marks	Martin J. (2008), Egbu et al (2004).
24	Clarity of sender and offered data	Knudsen D. (2003), Raghavan et al (2004).
25	Enforceability of electronic contracts	Jennings D. (2001).
26	Data innovation speculation costs	Wong et al (2004), Martin J. (2008).
27	Cost of evaluation of frameworks to discover revise framework to satisfy errands	Wong et al (2004
28	Inner Compatibility	Davila et al (2003
29	External Compatibility	Davila et al (2003, Raghavan et al
30	Interest in perfect frameworks	Davila et al (2003

Corina (2011) Discussed about the major impediment in adoption of e procurement. Broadly four head in barriers:

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- IT barriers- security, lack of compatibility, no common technology
- User barriers- fear, change, lack of information skill system.

(Eadie, Heaney, & Carlisle, 2007) also added some important issues, which considered as barriers for e-procurement adoption for some

organizations, also they tried to arrange this list according to importance and affection of the adoption, the complete list of barriers ranked by their study was:

- Uncertain with regards to the legitimate position of e-acquisition
- Organization culture
- Upper administration bolster
- Try not to have the IT framework
- IT frameworks too expensive
- Absence of specialized aptitude
- Absence of e-acquirement learning/gifted work force
- Absence of business association with providers giving e-acquirement
- Security of exchanges
- Interoperability concerns
- No business advantage figured it out
- hesitance/failure to receive PC advances among subcontractors and providers,
- Absence of incorporated data administration framework, and
- Dread of actualizing a business procedure change.
- Duty parts and duties amid delicate process;
- The limit of the whole offering group to receive; network of bidders, openness to records unhindered, download time.
- Hesitance/powerlessness to receive PC innovations among subcontractors and providers.
- Legitimateness e-Procurement contracts.

Lewis Faupel and different analysts on their study communicated that there are a few instruments through which e-obtainment could influence results. To start with, e-obtainment could change the piece of bidders. By putting offering archives on the web and permitting cooperation online instead of face to face, e-acquirement encourages offering at a separation; then again, since it requires Internet get to, it might be more troublesome for unsophisticated bidders. Second, e-

obtainment may build the implementation of government standards and controls. In the manual acquirement framework, the paper trail and danger of review guarantee that guidelines are agreed to, yet this is blemished; e-acquisition includes an extra layer of intermediation, where the PC framework itself authorizes certain methods. Third, e-acquisition may avert dissent of access to non-favored providers. For instance, in a manual acquirement framework, an acquisition authority could, for a provider outside of a pre-determined cartel, guarantee that there were no duplicates accessible of offering records or decline to acknowledge an offer. The e-acquisition framework can't be controlled along these lines and gives access to all similarly .(Lewis-Faupel, Neggers, Olken, & Pande, 2014)

2.10. E-Procurement in Malaysia

As Malaysia develops, the Malaysian government is following up the changes in both sectors public and private, keeping update the all elements which consist of e-procurement to meet all needs of the Malaysian nation developing.

In Malaysia, little and medium endeavors (SMEs) contain more than 99% of business foundations and 80% of them are classified under miniaturized scale level (Department of Statistics, 2005), However, concentrates on how SMEs especially in Malaysia utilize e-acquisition innovation, components basic to its usage and its commitment are deficient. (Kamarulzaman & Mohamed, 2013)

With the potential advantages that e-acquisition innovation offers, it has pulled in many firms to logically apply e-obtainment in their acquiring exercises and provider determination. (Kamarulzaman & Mohamed, 2013).

One of the fundamental difficulties for an e-Procurement in Malaysia is the foundation of a proper and setting customized procedure. Each venture or activity should be established in an exceptionally watchful, diagnostic and dynamic procedure. This is by all accounts an extremely

troublesome undertaking, requiring an attention on numerous angles and procedures, a comprehensive vision, long haul center and goals, e-Procurement must be client driven and benefit arranged. This implies a dream of e-Procurement suggests giving more prominent access to data and additionally better, more equivalent administrations and methods for open and organizations.(Kaliannan, Awang, & Raman, 2009b).

As mentioned before on the research objectives, it will be very important for this research on Malaysia to extract the next important:

- How much growing e-procurement volumes due to greater concentration of business on core competences in Malaysia, what is the global market effect on Malaysia e-procurement.
- What the future of e-procurement in Malaysia looks like?
- It is expecting to find new other barriers for e-procurement implementation on Malaysia, such as language and culture, the study trying to prove these assumptions.
- It is obvious that economy usually have an effect on the e-business generally, is there any effect on e-procurement, also a financial capabilities difference between organizations for adopting e-procurement.

2.10.1. Issues and barriers on adopting E-procurement in the Malaysian construction industry

Many researchers on their assessments to the e-procurements adoption in Malaysia especially for construction industry found many issues and barriers, communications and work processes are considered the major impact issue to the e-procurement,

Besides communication and work process, a number of respondents stated that the implementation of e- Procurement would have a strong positive impact on contract administration and effective product/supplier searching. (Hashim et al., 2013)

The e-procurement strategy should be supported by business

strategy, many construction organizations invest in information technology to speed the internal operational process rather than as an implementation for marketing strategy.

(Mastor & Jabatan, 2005) contrast in some issues for the e-procurements in Malaysian construction industry as they explained:

2.10.1.1. Lack of alignment in Jurisdiction

This absence of arrangement in the lawful framework is considered as the most problems that are begging to be addressed in light of the fact that need encounters and comprehension in completing abroad development ventures. Thus e-acquisition has advance exasperated the lawful issues of executing all inclusive.

2.10.1.2. Confidentiality

Privacy issues are amplified with the utilization of IT as spillage of computerized data is effortlessly done, for example sending messages and replicating e-archives. This may have genuine effect, for example, question and budgetary misfortune on an organization. For example, prized formula, contract arrangement and other trade of private data transmitted over the Internet are subjected to unapproved get to and divulgence, and other security issues. .

2.10.1.3. Legal Liability

Lawful risk is the obligation of care and duties one owes to another. One might be sued or need to pay for harms on the off chance that one doesn't play out that obligation of care. The vast majority of the providers were worry over the legitimate relationship and liabilities issues, as there haven't any point of reference for the legally binding terms and liabilities between gatherings, for example, provider and government offices.

2.10.1.4. Insecurity in E-Transactions

Securing a PC is generally basic before, as one just needs to avert physical get to. In any case, shared frameworks, shared system assets or web servers that are normally utilized are subjected to

robbery, infection and worm assaults. Consequently this has made challenges in controlling access to a PC which contains classified data and thus putting the trustworthiness of the data at hazard.

2.10.2. Some solutions for problems, challenges and barriers of the E-procurement suggested by previous studies

Many issues raised during the adoption, implementing, also using the e-procurement systems for most sectors previous researchers trying to find the suitable solutions and providing suggestions to help the analyzing the existed issues,(Zou & Seo, 2006) on their research provide some useful points we can considering the most important as following :

- Expanded consciousness of organization's (or project's) reason and destinations.
- More easy to use frameworks.
- Decrease in cost of PC innovation.
- Incorporated data administration.
- Setting industry guidelines.
- Additional preparation.
- Enhance consciousness of advantages.
- Enhanced programming similarity.
- Expanding in house specialized ability
- More coordinated effort amongst ventures and foundation fields.
- More bearings and support from governments.

(Ibem & Laryea, 2015) giving some suggestions about how to enhancing and improving the e-procurement and related ICT systems as they said:

To begin with, there is a need to enhance the nature of, and access to ICT foundation the nation over. With the relocation of e-Procurement innovations to the cloud system in different domains, showing in anyplace get to and practical applications; enhancing access to Internet offices must be considered as a major aspect of a center methodology

to advance e-Procurement use in the South African development segment. Nations like the UK, USA, Australia and Canada known to lead adopters of e-Procurement in development have pervasive access to dependable web offices and this has added to minimum amount take-up of e-Procurement in these nations.

• Second, it has ended up basic that e-Procurement advancements that meet the human relationship necessity of the development business be produced. The current e-Procurement advances can be creatively utilized as a part of meeting the idiosyncrasies of the development segment and the social goals of the diverse nations.

• Lastly, expected and current clients of e-Procurement should know about the current security applications and procedures look to guarantee the wellbeing, security and trustworthiness of e-Procurement exchanges. To this end, learning sharing, trainings and expertise advancement projects are required in the nation's development area to enhance the information construct of partners with respect to e-Procurement.

Most importantly, it's about time that e-Procurement stage turned into the fundamental channel for conveying acquisition values and culture in this nation as this would make more mindfulness and empower a speedy move from the customary paper-based to e-Procurement technique in development acquirement.(Ibem & Laryea, 2015)

Many papers didn’t mentioned to the engineering technical procedures of e-procurement to eliminate the affection and influence of irresponsible management on the organizations, such as cheating, changing the tendering for certain organizations, and corruptions, on this study research as previous important facts and results which mentioned by researchers the study put an essential outlines for organization and culture behavior on the Malaysian organizations.

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1. Introduction

On this chapter we are highlighting our research approach for the methods we are using, research design which suitable for the research, and how we are starting collecting the data for this survey, also we are explain the sampling and population for the research, and how we analysis the collected data by appropriate statistics tools to get best results, and we are discuss the limitation of this research that we considered during the survey.

3.2. Research Approach

Non-trial outlines, for example, studies gives a quantitative or numeric portrayal of patterns, states of mind, or assessments of a populace by concentrating on a specimen of that populace. It incorporates cross-sectional and longitudinal studies utilizing surveys or organized meetings for information accumulation with the expectation of summing up from an example to a populace.(flowler, 2008)

Scientists gather information on an instrument or test as inquiries of the overview, gathering information may incorporate setting off to an examination site and watching the lead of individuals without fated request or coordinating a meeting in which the individual is allowed to talk direct about a subject, all things considered, without the usage of specific request.(Creswell, 2013)

Likewise, the kind of information broke down might be numeric data assembled on sizes of instruments or content data recording and reporting the voice of the members. Specialists make translations of the factual results, or they decipher the subjects or examples that rise up out of the information. In a few types of research, both quantitative and subjective

information are gathered, examined, and translated.

The Quantitative Methods ought to be foreordained, instrument based inquiries, and many sorts of information as, an execution information,

Pre-decided, Instrument based inquiries, Performance information, mentality information, observational information, and registration information, lastly it will be factual examination, and Statistical elucidation.

3.3. Research design

The research study philosophy is Pragmatism with Abduction approach, quantitative, analytically and Descriptive, for all variables which defining the problems, difficulties and challenges of e-procurements by collecting all information which got and captured by investigation of research questionnaire.

A couple people dismiss expressive research as `mere delineation', awesome depiction is critical to the investigation wander and it has included enormously to the extent anybody is worried of the shape and nature of our overall population. Drawing in examination joins much government bolstered investigate including the people enrollment, the get-together of a broad assortment of social markers and financial information, for instance, family utilize outlines, time use studies, work and wrongdoing estimations et cetera.(De Vaus, 2002)

It is all about answering the study questions about e-procurement systems, and these questions representing the research objectives to answer them, and can express them for this type of research as descriptive research as following for an example:

How the e-procurement implementation in Malaysia? What are problems and issues facing e-procurement systems in Malaysia?

As mentioned for this research, for surveying an opinions and answering the questions it will be qualitative and quantitative research to give valuable numerical statistics to point to our results and situations which answering the research questions.

We chose this methodology for getting more flexibility to describe the current used e-procurement framework, processes, technologies, and review all previous listed issues, considering if there are any new findings which may added through this research, by collected quantitative data and do all mathematical analysis, and most of researchers telling that for our type of research is more suitable to give a good idea for e-procurement study for a geographical area and not suitable for case study, can be a start point for further studies in e-procurement systems in Malaysia.

3.4. Data collection

This research classified into two groups to simplifying the survey and reach the target of answering the research questions, first survey group is for organizations and firms which dealing with e-procurement systems and use it to provide the services to their customers, also including the vendors or e-procurement system creators, we try to simplifying the questions for this group to avoid the misunderstanding of questions and to go for exact target of the survey without interfering with some other competitors use for the questions.

The second survey group is the end user for the e-procurement systems, most of the questions are considered more easier than first group for the reason that experience are different, also the technical and processes skills are different.

The survey started with classification questions to considering and predicting the survey answers, then we divide the survey into three sections, e-procurement systems business issues, e-procurement systems technical issues, and e-procurement systems processes issues, to trying not to let the respondents confused about the questions and maximize the respondent's answers.

An organized poll comprising of shut finished numerous decision inquiries was utilized for this examination, the majority of the things in the survey are focused at measuring observations, with straight scale multi decision to accelerate the answers and be simpler to reply, Easy to comprehend and finish.

3.5. Research population and sampling

This study attended to target the organizations which related to e-business, procurement, and constructions industry, also the study targeting the programing developing companies which making the applications and integrated solutions for the e-procurements.

Population size for the study:

The study considering Malaysia country as geoFigureical area for the research, the study put conditions for the organizations targeted, which are capable financially to do business, working normally, having yearly revenue, within Malaysian Area, and related to construction industry, so by contacting the SSM organization which is The Companies Commission of Malaysia and asked for these companies, the total was 79,653 Companies.

For the organizations which making applications and systems for the e-procurements or related to the e-procurement systems the total was 41 company and this number is more accurate by contacting the Malaysia Digital Economy Corporation (MDEC) which more related to e-business to find the required information.

The total population is 79,694 companies.

Samples size calculations:

Since the population is greater than 50,000 company, the infinite formula will be used to find the exactly sample size for the study survey:

$$N = \frac{[Z^2 \times P \times (1 - P)]}{L^2}$$

Where:

N= sample size

P = percentage of activity observed (productive)

L = limit of error

Z = 1.645 for 90% confidence level

Z = 1.96 for 95% confidence level

Z = 2.58 for 99% confidence level

Most of researchers are recommending the 95% for confidence level as they examined this percentage practically, and this percentage chosen for UTAR recommendation also.

The Margin of Error (Confidence Interval) is, as recommended by most of researchers comparing to the population size and research natural, same is for the percentage of activity observed (productive) which 50% is, and this value considered the safest value for the researchers.

The calculation result will be 384 company as sample size for this research survey.

3.6. Data analysis

For this research the questions for the survey divided into groups, each group is represented a factor for this research, and these factor classified into sections for the research depends on issues we study like business, technical, and processes issues, for all these questions we are providing in this questionnaire we should find the relations for same questions between the main targeted groups, which they are the vendor/owners, and the e-procurement system end users.

The collected data are generally straight forward and transparent, particularly as it relates to Likert or other scales in surveys and we doing the analyses of ordinal data type.

To inspect the suitable investigations of scalar information or ordinal information, and when it's desirable over regard ordinal information as interim information, we will focus on Likert scales for the examination.

(Norman, 2010) is explained on his paper that Likert scale is non-parametric statistics, so there is no way to test the parameters, just only in case of small size samples to be accurate and not effecting the results conclusion, non-parametric statistics is not involve population parameters, no stringent distribution Assumptions “Distribution-free”, the data measured on scale ratio, interval or ordinal.

(Clason & Dormody, 1984) and (Boone & Boone, 2012) Likert scale data as summation, ratio, counting, or frequencies are all same for doing the statistical analysis of non-parametric analysis.

Answers data for all questions are processed as following:

- Collected answers and arranged as frequencies for each items of Likert scale as a number of respondents for each question.
- Questions which presenting an issue on the questionnaire are grouped as an average for each item of the Likert scale.
- Different number of respondents are ignored once it is less than 10% of the total number of the respondents, which not effecting the results.(Leite & Beretvas, 2010)
- For each issue now have two groups of respondents, with five Likert scale items to do the statistical analysis.

So the study is using the kruskal-wallis test for the non-parametric analysis of Likert scale for reasons such as; have three or more conditions that to want to compare; each condition is performed by a different group of participants; i.e. you have an independent measures design with three or more conditions, the data do not meet the requirements for a parametric test. (I.e. use it if the data are not normally distributed; if the variances for the different conditions are markedly different; or if the data are measurements on an ordinal scale).

If the vast majority of measurements science specialists considering the non-parametric systems in view of the rank, middle or range are suitable for examining these information, as are without dissemination strategies, for example, Cronbach's alpha test for reliability and consistency, classifications, frequencies, possibility tables and kruskal-wallis insights.

All information of this study will be examined by utilizing Statistical Package for the Social Sciences Statistics (SPSS) as the principle programming. The respondents' reactions were gone into SPSS and recurrence investigation of every things were utilized to answer the exploration questions.

3.7. Discussion

Starting with the type of data collected from many respondents, that geoFigureical area should be including with other areas not only Malaysia, to know whether culture is another important factor in our

study, also the organizations directors should be targeted as well, but usually they are not easy reachable, even so, the number of respondents of directors is less than three which considering on of the weak point of the study.

For descriptive Research, this method of the research is good but still got some issues considered by many researchers such is the reliability of data collected through the survey, many of researchers consider them less reliable than other methods, which mostly based on observations, data can be analyzed to give good results to create relatively picture about e-procurement and may useful for further researches.

One of the limitations of this method is not considered status which may not reported in all perceptions, and quality is not always developed in the research.

Descriptive research presents the possibility for error and subjectivity. For when a researcher designs a questionnaire, questions are predetermined and prescriptive, means the researcher may ignoring the data which not interesting for the research to prove the hypothesis, the researcher may influence the research reliability by this ignorance.

The method of sampling on this survey is stratified sample, it is to reform the statistical features of the population on a smaller scale.

Stratification means that specific characteristics of individuals (e.g., gender, females and males) are represented in the sample and the sample reflects the true proportion in the population of individuals with certain characteristics.(Creswell, 2013)

Before sampling, the population is divided into characteristics of which respondents are more capable financially to deal with e-procurement systems, these respondents are having more knowledge by the supports of their organizations, and the sample was top 1000 organizations chosen for the survey, the issue here is some end users are not considered for the survey, which are not capable financially and more active and having more knowledge for the e-procurement systems.

Likert scale is one of the famous questionnaire methods for collecting data, but still there are many different ways to analyze the ordinal data which considered the results of Likert scale method, and as a non-parametric statistics it is not correct to use the normal methods for analysis as a continues data, as many researchers said it can be only for small sized samples, but in this case in this research it can't be use.

There is another issue can be considered as limitation for this research that there are many statistics sciences experts having an argument about the data analysis of Likert-type data which is ordinal data, some of experts trying to avoid using the averaging and correlations, but we conclude that for better result for the research analysis we do the analysis for most of experts agreed on using the right method for the analysis, we very careful for the questions meaning and defining the variables of the questionnaire.

CHAPTER FOUR

4. ANALYSIS AND RESULTS

This chapter will describe the sampling information and how the questionnaire have been develop to maximize the benefits from respondents, trying to analyze reasons for answers been like this, list all questions for the survey with respondent's answers totals and percentages, also in this chapter all analysis required for the survey's results done with help of SPSS to get the answers required for study questions.

4.1. The respondents:

The total population for this research is 79,694 organizations, the sample size is 384 organizations, and this survey done online by using google forms, the total respondents is 84 and only 78 respondents completed the surveys and the result for online survey for total emails which sent for the survey as following table (table 4.1).

Table 4.1 Numbers of survey emails sent response

Total number of survey emails sent	Emails answered by Auto reply emails	Emails answered by wrong delivery	Emails successfully sent	Total number of respondents
1000	73	19	908	84

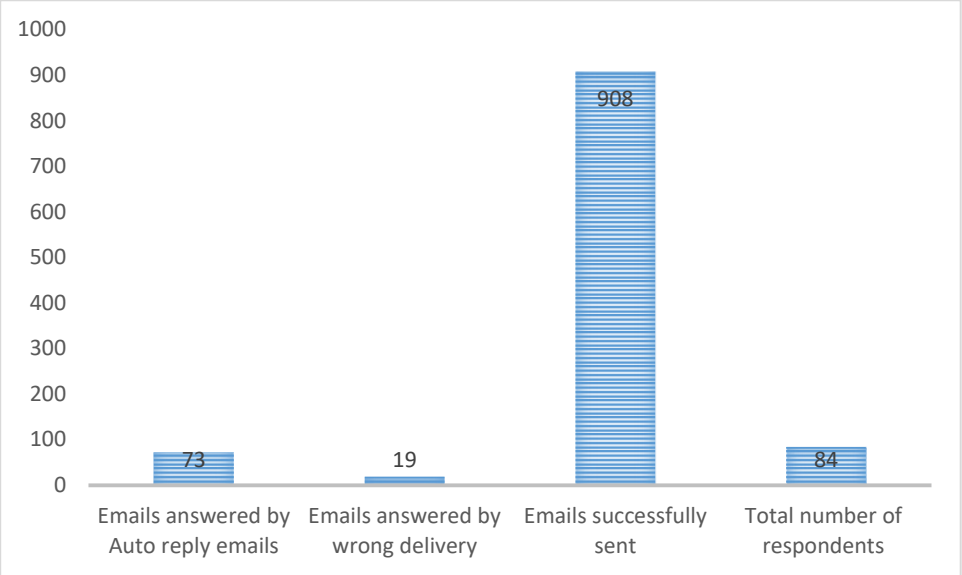

Figure 4.1 Numbers of survey emails sent response

By following the researchers recommendations for online questionnaire that better to increase the number of targeting respondents, which the study survey here targeting a thousand organizations, and the total respondents were 84 organizations, the survey divided into two surveys, and the total questionnaire questions for both surveys are 168 questions.

The total number of respondents comparing to the number of questionnaire emails are low for many reasons, the study is listing them as they experienced this stage of research as following reasons:

- Most of employees of the companies and organizations are careless sometimes because of amount of jobs and work tasks they are doing.
- The organizations ICT systems and equipment can detect the emails and treat them as junk emails, so they won't reach their destinations and targeted persons.
- Some persons in charge and employees got afraid of some kind of responsibility, and may something harm the business if they answered.

- The survey conducted in English language which may considered a difficult for some employees or they need to put some extra efforts to answer the survey.
- Length of the survey considered long and maybe it is complex comparing to the other simple and short surveys.

The respondents of the surveys are explained as following:

4.1.1. The e-procurement systems owners and vendors survey:

It is preferred to make this group for the survey for many reasons such as, more experience about the e-procurement systems, applications, processes, and practices, also they know more about business and projects tasks needs, more capable to conducting training programs and developing employees skills, and the response for the survey was as following:

4.1.1.1. Total respondents for owners/vendors

Table 4.2 Total respondents for owners/vendors

Total respondents	Respondents completed the survey	Respondents didn't complete the survey
36	33	3

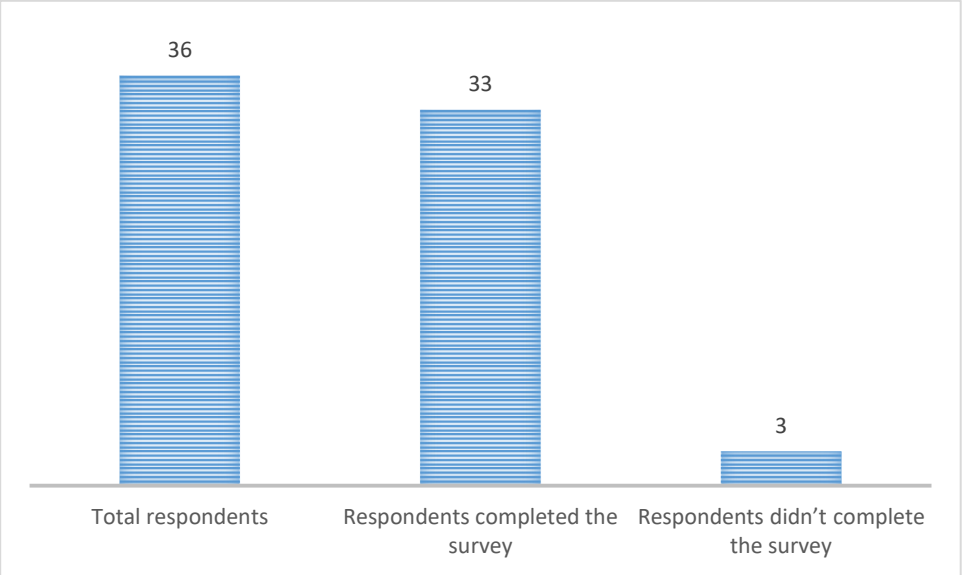

Figure 4.2 Total respondents of owners/vendors

4.1.1.2. The owners/vendors positions

For next table list of the respondent's positions on their organizations:

Table 4.3 Respondents position titles for owners/vendors

Position title	Construction Engineer	Programmer	Manager	System Administrator	Sales Manager	Employee	Administrator	Sales
Total: 35	8	2	2	3	5	11	2	5

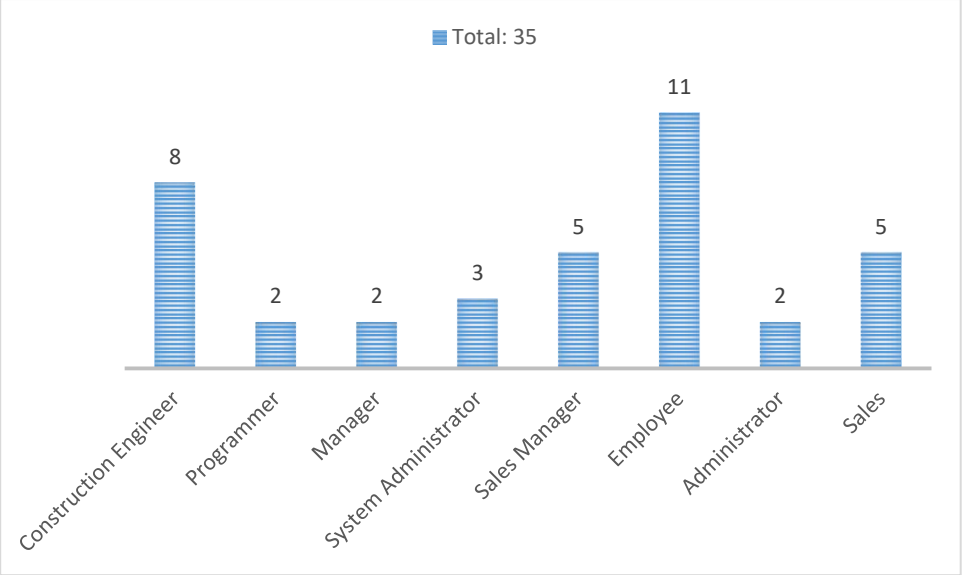

Figure 4.3 Respondents position titles for owners/vendors

4.1.1.3. Respondent's industries for owners/vendors

To make this survey more professional and maximize the benefits the industry questioned as the next table of answers showing:

Table 4.4 Respondent's industries for owners/vendors

Industry	Constructions	Information technology	Marketing and sales	Material procurement
Total: 36	29	2	4	1

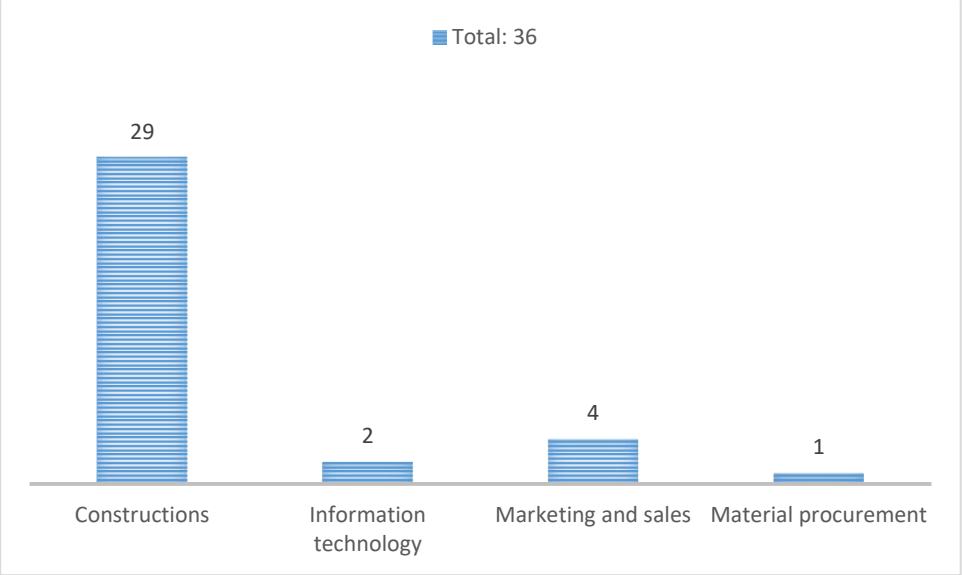

Figure 4.4 Respondent's industries for owners/vendors

Here it can see that construction industry respondents are major between the respondents.

4.1.1.4. Organization's Employees Number for owners/vendors

The most important thing on the respondents that the evaluations for respondents capabilities to use the e-procurements systems and applications and providing or developing applications that providing e-procurement functions, the answers quality is considered here, and to take the indications for that, the respondents have been questioned about the total number of employee in their organizations, also the number of the employees which dealing with e-procurement systems or developing e-procurement systems and how long these organizations using or dealing with e-procurements, so next tables (Tables4.5, 4.6, and 4.7) summarizing the respondents answers:

Table 4.5 Organization's Employees Number for owners/vendors

Organization's Employees Number	Less than 20 Employees	more than 100 and less than 200 Employees	More than 200 Employees
Total: 34	4	17	13

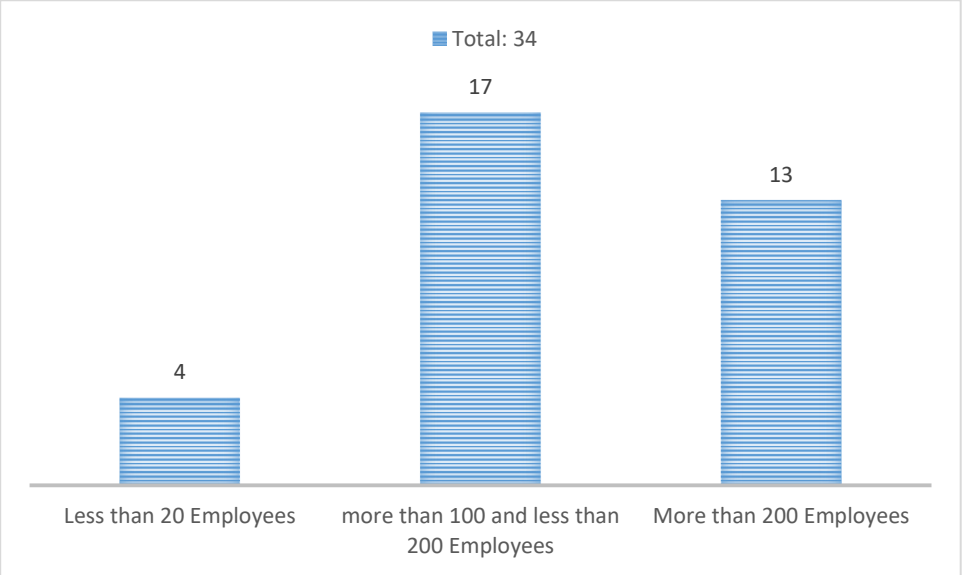

Figure 4.5 Organization's Employees Number for owners/vendors

As major of respondents are constructions, so it is expected that number of employees for vendors/owners organizations to be high, which means it is good for the research to be more strong financially and more capable to deal with e-procurements applications.

4.1.1.5. Organization's persons in charge of e-procurement for owners/vendors

Table 4.6 Organization's persons in charge of e-procurement for owners/vendors

Organization's persons in charge of e-procurement	Less than 4 Employees	more than 7 and less than 11 Employees	More than 9 and less than 15 Employees
Total: 34	11	16	7

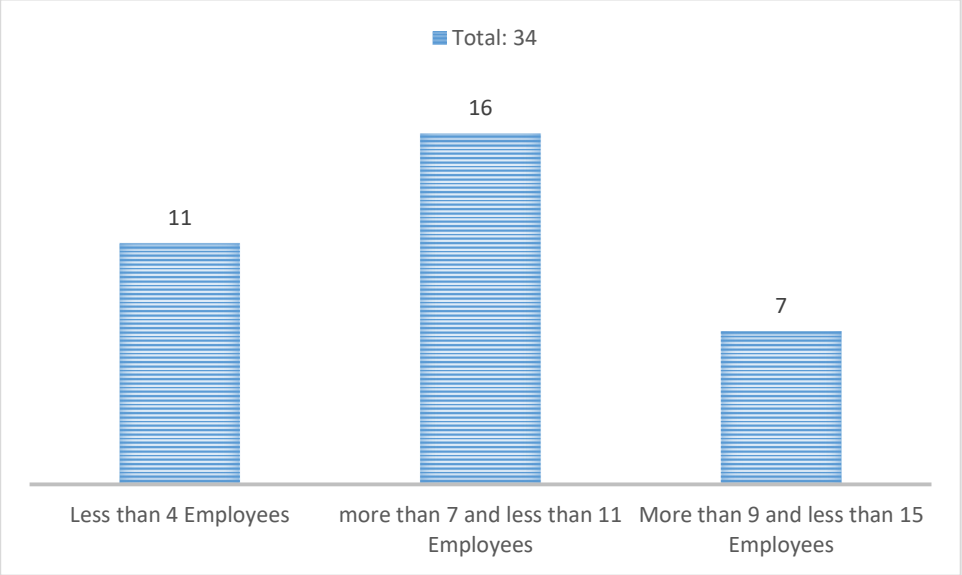

Figure 4.6 Organization's persons in charge of e-procurement for owners/vendors

The last Figure showing that a quit high number is responsible for e-procurement, which reflecting the how much the vendors/owners giving considerations to the e-procurement applications.

4.1.1.6. Organization's time duration dealing with e-procurement for owners/vendors

Table 4.7 Organization's time duration dealing with e-procurement for owners/vendors

Organization's time duration dealing with e-procurement (years)	Less than 2 years	more than 3 and less than 5 years	More than 6 and less than 8 years
Total: 33	11	16	7

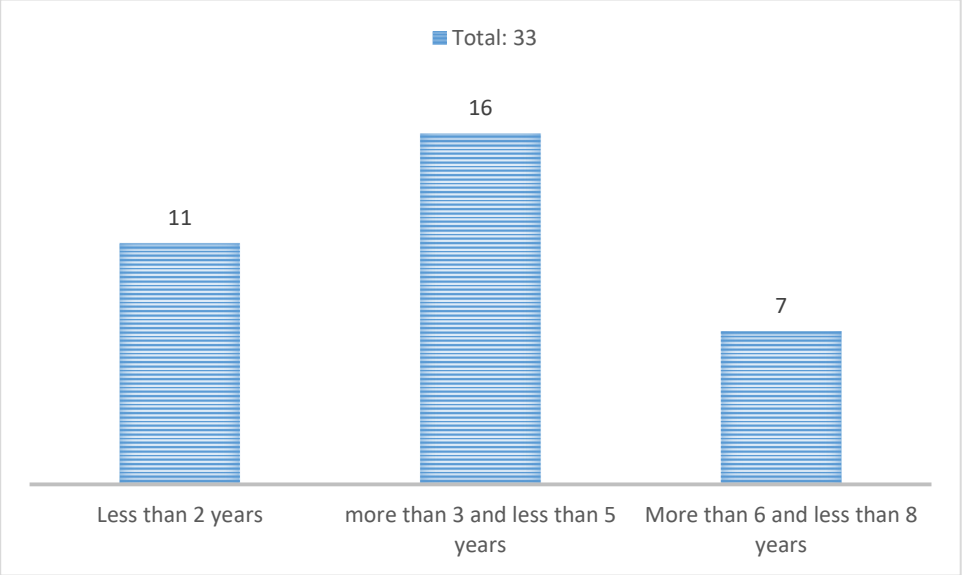

Figure 4.7 Organization's time duration dealing with e-procurement for owners/vendors

4.1.2. The e-procurement systems End users respondents:

The end user for e-procurement is different than e-procurement owners and vendors, which these respondents are more using for the e-procurement system to satisfying their needs, finding good chancing to do business, they are knowing what is more problems for them in the e-procurements application, and issues in processes or practices, they are more capable to detect problems on e-procurement systems, finally the e-procurement applications existed to serve these kind of users, for these reasons the study conducted the survey for them as well, and the response for the survey was as following:

4.1.2.1. Total respondents for End users:

Table 4.8 Total respondents for End users

Total respondents	Respondents completed the survey	Respondents didn't complete the survey
48	45	3

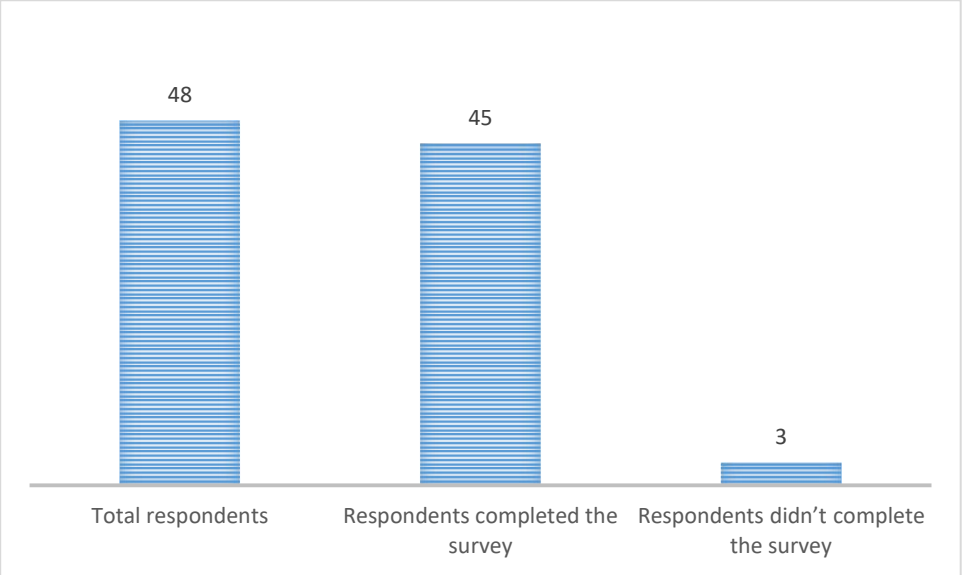

Figure 4.8 Total respondents for End users

The total respondents for which completed the survey is very high percentage comparing to total number of respondents, which means the end users group is paying more attention to the survey.

4.1.2.2. Respondents position titles for End users

For next table list of the respondent's positions on their organizations:

Table 4.9 Respondents position titles for End users

Position title	Construction	System Engineer	Manager	Networking	Sales Employee	Employee	Administrator	Marketing and	Procurement	Developer	Project manager
Total: 47	11	1	7	1	5	12	2	5	1	1	1

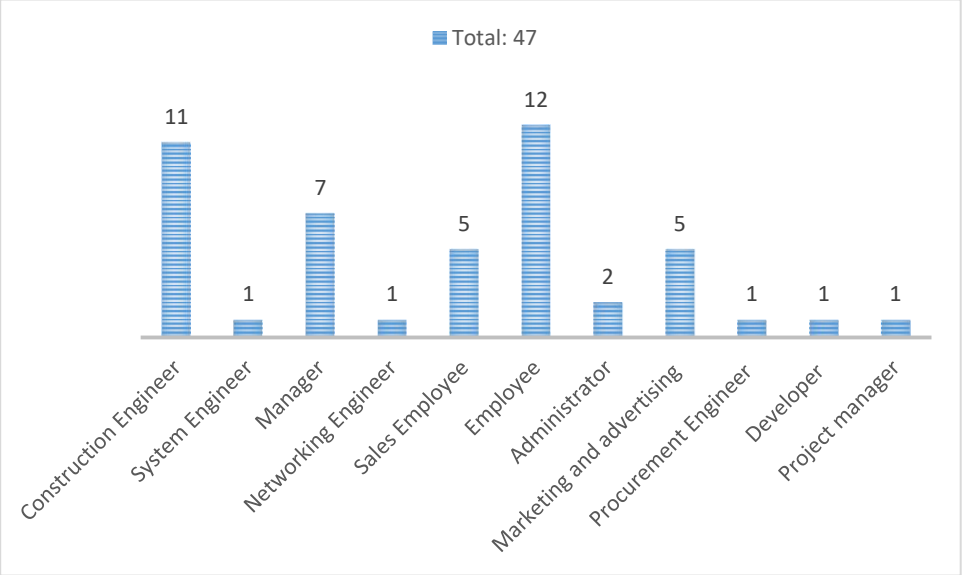

Figure 4.9 Respondents position titles for End users

Last table and Figure is showing that many persons prefer to just mentioned they are employees, and maybe they want to avoid and harm or inconvenient matter, the construction engineers are high number of respondents which means they study targeted more organizations care about constructions.

4.1.2.3. Respondent's industries for End users:

To make this survey more professional and maximize the benefits the industry questioned as the next table of answers showing:

Table 4.10 Respondent's industries for End users

Industry	Constructions	Information technology	Marketing and sales	Material procurement	H.R services	Individuals businessmen	Manufacturing	Warehousing	Safety Systems
Total: 47	16	3	7	2	1	9	5	3	1

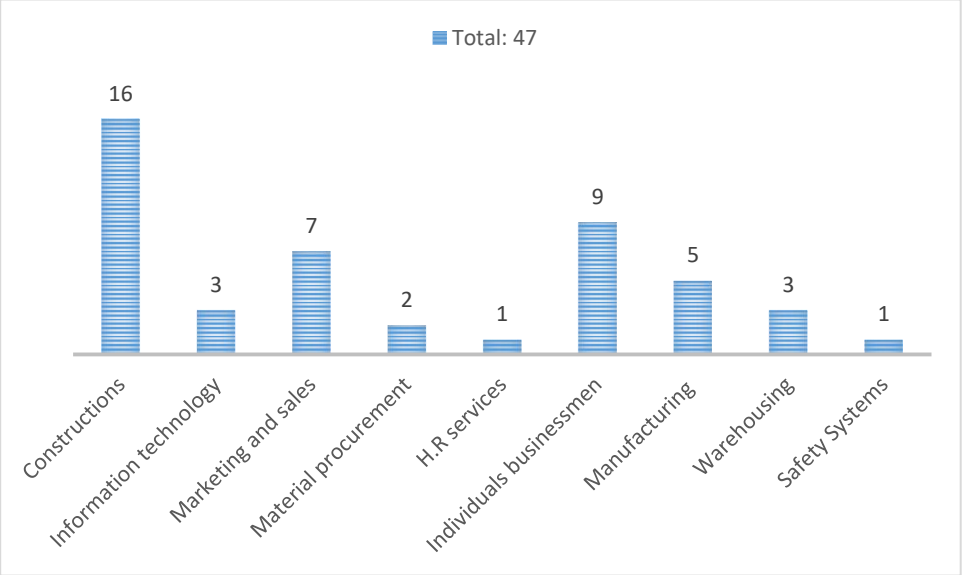

Figure 4.10 Respondent's industries for End users

As showing on the last table and Figure many construction industry targeted by the study, and there are different industries for the respondents, business men is not an industry but it reflecting there are some respondents which doing a normal business and caring or dealing with e-procurement.

4.1.2.4. Organization's Employees Number for End users

It is same here for e-procurement's end users also which is the most important thing on the respondents that the evaluations for respondents capabilities so the respondents have been questioned about the total number of employee in their organizations, also the number of the employees which dealing with e-procurement systems or developing e-procurement systems and how long these organizations using or dealing with e-procurements, so next tables (Tables 4.11, 4.12, and 4.13) summarizing the respondents answers:

Table 4.11 Organization's Employees Number for End users

Organization's Employees Number	Less than 20 Employees	more than 30 and less than 100 Employees	more than 200 and less than 500 Employees	More than 1000 Employee
Total: 46	17	11	13	5

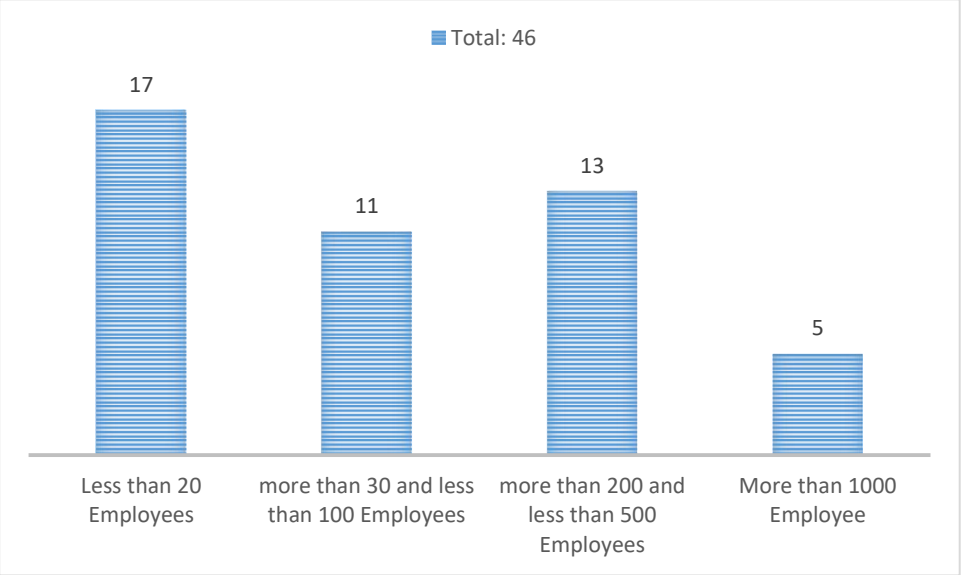

Figure 4.11 Organization's Employees Number for End users

As an end users group it is very clear that number of respondents are high for small organizations, and this means that they are mostly users for the systems, also the number the number of medium organizations (200-500) employees are also high, which means the systems are used effectively for the respondents organizations.

4.1.2.5. Organization's persons in charge of e-procurement for End users:

Table 4.12 Organization's persons in charge of e-procurement for End users

Organization's persons in charge of e-procurement	Less than 4 Employees	more than 4 and less than 10 Employees	More than 9 and less than 15 Employees	More than 15 Employee
Total: 46	14	4	12	16

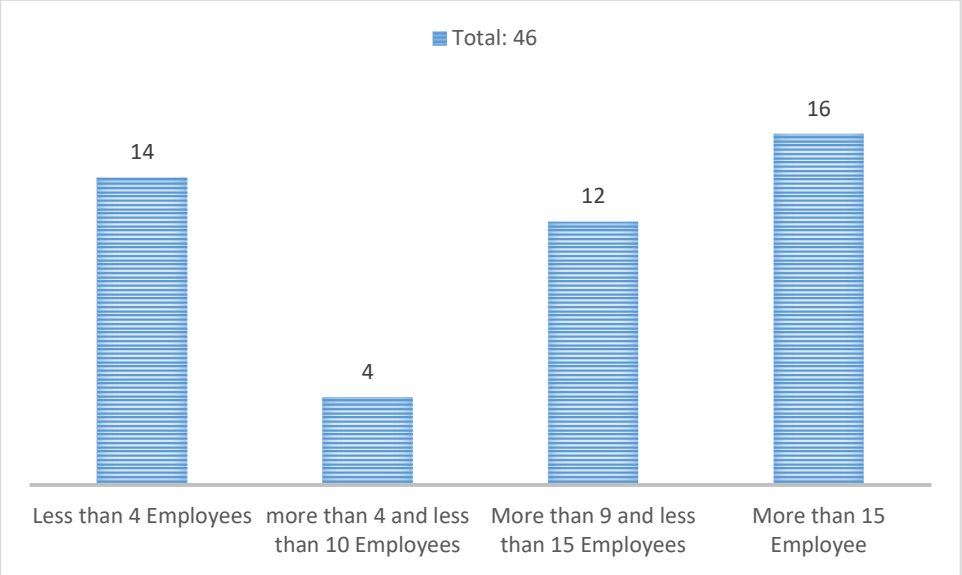

Figure 4.12 Organization's persons in charge of e-procurement for End users

The last table and Figure showing that total respondents which having more employees working on e-procurement system is high, and this is explained as these respondents organizations are dealing with sales and marketing mostly, for small organizations it expected that total number of employees dealing with e-procurement is high.

4.1.2.6. Organization's time duration dealing with e-procurement for End users

Table 4.13 Organization's time duration dealing with e-procurement for End users

Organization's time duration dealing with e-procurement (years)	Less than 2 years	more than 3 and less than 5 years	More than 6 and less than 8 years	More than 8 years
Total: 33	21	8	13	4

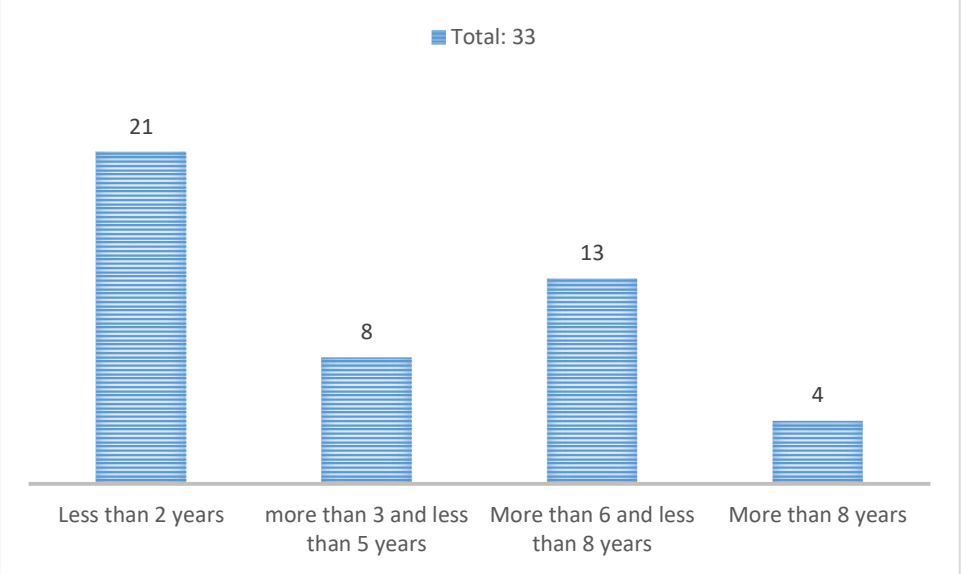

Figure 4.13 Organization's time duration dealing with e-procurement for End users

Last table and Figure showing that by time going on many organizations of end users starting dealing with e-procurement, especially end users with small organizations, also high number of respondents are (6-8) years where this end users mostly belong to big organizations.

4.2. The survey questionnaire results

The survey questions style are mostly Linkert questions and all data are for the answers are ordinal data, so in this questions style it is easy to answer the questions and get more respondents, the study questionnaire survey answers should answering for the next sections the objectives questions of the study form both surveys of end user survey and owners/vendors survey:

4.2.1. The owners/vendors survey:

In this section of the survey all questionnaire questions reviewed according to the study's objectives with appropriate analysis, for the next each objective analysis in only for the owners/vendors perspective:

4.2.1.1. The e-procurement types, processes, and practices:

This part of study questions investigated the types, technology classification used in industries in Malaysia, also checking whether there are problems by measuring the vendors and owners satisfactions to use these types currently.

- First part of questions are normal questions to know the current used types and technology for e-procurement , which each respondent can choose more than one answer to know the exactly common types used by frequency ,the answers were as following:

Table 4.14 E-procurement types for owners/vendors.

The E-procurement type	B2C – Business to customer	C2B – Consumer to business	C2G – Citizens to government	C2C – Consumer to consumers	G2G - Government to government
Total 43	17	3	12	10	1

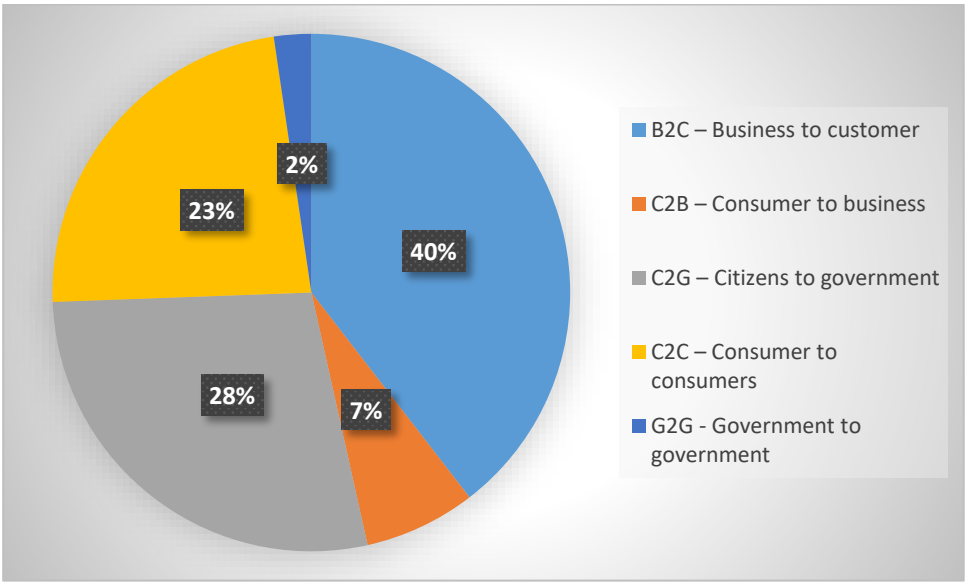

Figure 4.14 E-procurement types for owners/vendors

For Malaysia business nature especially for e-procurement business this Figure reflecting how the business for e-procurement, the last Figure maybe reflecting the existed situations, but only G2G considered a mistake by respondents because no such e-procurement business between same government in Malaysia known, or it is stated lately with no studies conducted on it yet.

- Here are questions about the e-procurement systems models are using currently in Malaysia which each respondent can choose more than one answer to know the exactly common models used by frequency:

Table 4.15 E-procurement Models used

Model Type	e-Informing	e-Sourcing	e-Tendering	e-Reverse auctioning	e-MRO	Web based ERP	e-Ordering	e-Markets
Total 97	3	7	19	1	11	12	30	5

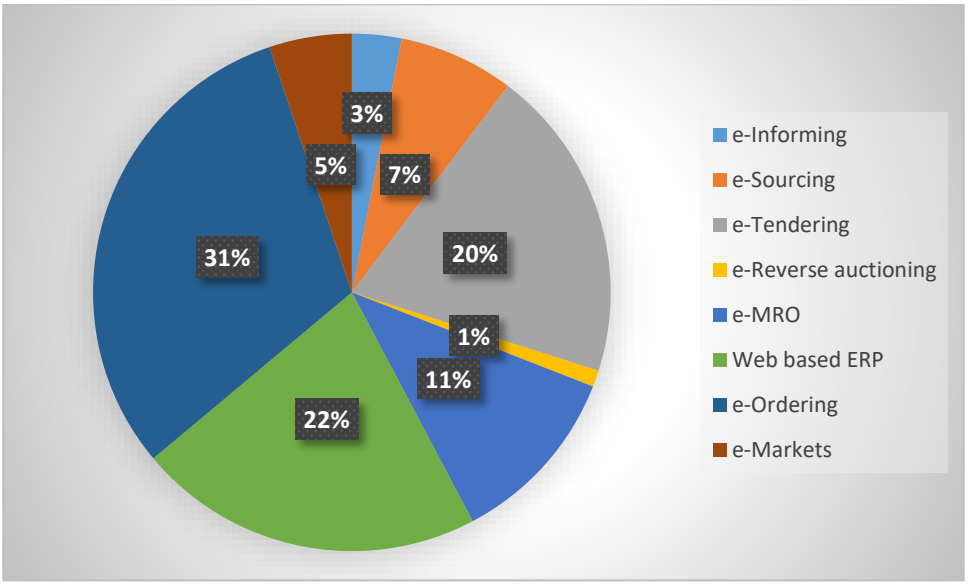

Figure 4.15 E-procurement Models used

4.2.1.2. The e-procurement problems, difficulties, and challenges:

- Issues mentioned by the respondents on the questionnaire:

This part of survey of owners/vendors asking respondents to list problems in E-procurements for all aspects, so by collecting these answers and their frequency the results were tabulated as next tables and Figures.

Table 4.16 Issues mentioned by the respondents on the questionnaire

No	Issues	No. of respondents	Percentage of issue
1	there is no support from Government	1	3%
2	infrastructure problems for implementing E-procurement	2	5%
3	clients don't have enough experience	4	11%
4	customers don't following up all procedures of e-procurement	1	3%
5	no clear strategy for e-procurement business	1	3%
6	vendors the careless of the owners employee about the systems training	1	3%
7	lack of experts for system vendors	3	8%
8	lack of programing developers	2	5%
9	no clear assignments for work tasks	1	3%
10	good quality e-procurement is expensive	1	3%
11	corruption from customers	2	5%
12	customers high management not good influencing	1	3%
13	customers don't trust the e-procurement systems	3	8%
14	material suppliers not qualified for e-procurement	2	5%
15	contracting not transparent in e-procurement system	2	5%
16	e-procurement systems having technical problems	5	14%
17	owners complaining because of application technical problems	1	3%
18	sometimes need help from other international vendors or system developers	1	3%

19	owners not satisfied with the vendors support	2	5%
20	no quality control for the e-procurement systems	1	3%
	Total	37	100%

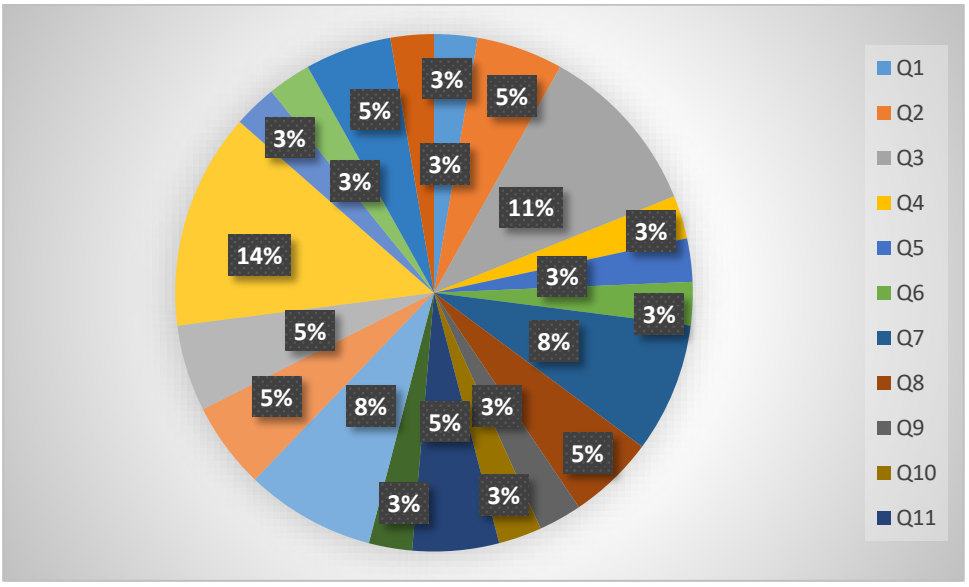

Figure 4.16 Issues mentioned by the respondents on the questionnaire

Many issues, problems listed on the questionnaire, for last table and Figure it is summarize the next points which considered high ranking:

- Customers don't trust the procurements systems.
- Customers don't have experience and technical skills.
- For owners e-procurement applications having some technical problems.
- Customer corruptions may affecting the systems work.

Other problems are all same ranking which known by most of researchers in Malaysia country.

4.2.2. For The End user survey e-procurement systems problems, difficulties, and challenges:

In this section of the survey all questionnaire questions reviewed according to the study's objectives with appropriate analysis, for the next each objective analysis in only for the End user perspective, issues mentioned by the respondents on the questionnaire:

This part of survey of End users asking respondents to list problems in E-procurements for all aspects, so by collecting these answers and their frequency the results were tabulated as next tables and Figures.

Table 4.17 Issues mentioned by the respondents (End users) on the questionnaire

Question No	Issues	No. of respondents	Percentage of issue
1	third party installation team have no experience	2	5%
2	venders to familiar with business processes and practices	1	2%
3	no easy language interface	1	2%
4	systems got complicated procedure sometimes	3	7%
5	no email notifications and short messages	1	2%
6	no e-tender monitoring	4	10%
7	no quality control	3	7%
8	Not fully integrated systems	2	5%
9	cannot share all required data for more transparent	5	12%
10	no flexibility for auctions dead lines	1	2%
11	no enough data about products and services	4	10%
12	no clear information about procurement procedures	3	7%

13	delay of feedback for complains	1	2%
14	no notifications for missed documents on contracting	1	2%
15	no good qualified customer services	4	10%
16	no quantity information about the buildings contract	3	7%
17	no information about construction material specifications	1	2%
18	no easy way to evaluate the tender by the system tools	1	2%
	Total	41	100%

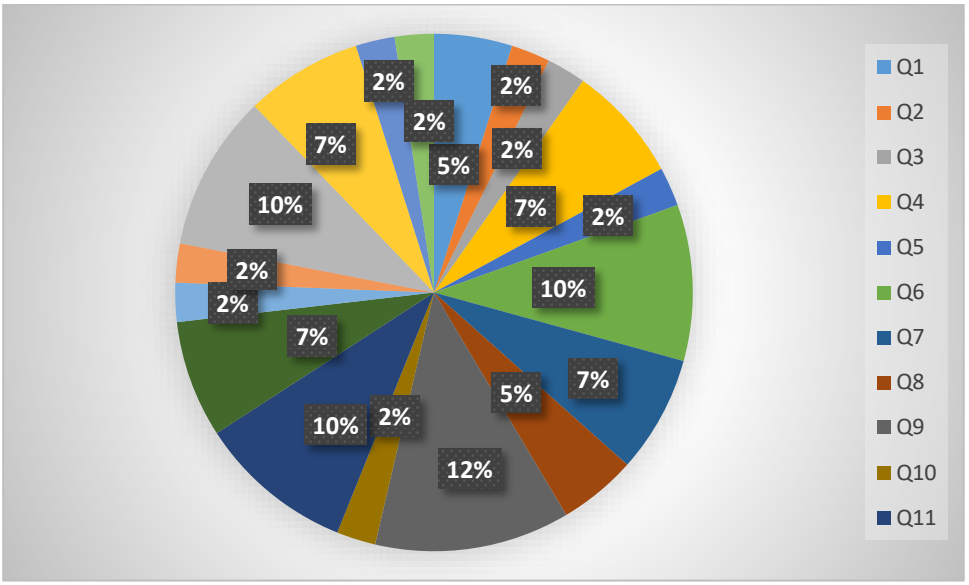

Figure 4.17 Issues mentioned by the respondents (End users) on the questionnaire

As explained by looking to last table and Figure we can summarize the major issues and problems which having high ranking for the end user group as following:

- Transparency issues are higher ranking for the end users group, which important to make good business and build the trust.

- E-Tender is important stage for projects and e-procurements systems, once there is no equality of wrong procedures and processes it will affect the e-procurement systems work.
- Products data and information are mostly important it should be provided to customers in details.
- For any business customer care is essentially, e-procurement customer care should be offered by systems providers and owners to make successful use of e-procurement.
- Some customers need a good training program to use the e-procurement effectively.
- For constructions projects information are required about building and other engineering specifications and drawings, also quantities, manuals, and special requirements.
- The e-procurement systems should be simple, easy to use and with more options for customers.

4.2.3. Comparison for the answers of the two groups

In section of this chapter the comparison is considered important for just two groups of respondents to check the answer relations for each aspect as following:

4.2.3.1. The e-procurement types, processes, and practices:

In this part, the study used many questions of Likert scale and combined into one result with percentages, these questions measuring vendor /owners satisfactions and opinions about the existed types of e-procurements system types, polices, processes, and procedures , all questions considered having same similarity.

For end user group's questions investigated the types, technology classification used in industries in Malaysia, also checking whether there are problems by measuring the end users satisfactions to use these types currently, the study didn't question respondents in details to avoid the misunderstanding and get more accurate answers.

In this part, the study used many questions of Likert scale and combined into one result with percentages, these questions measuring End users satisfactions and opinions about the existed types of e-procurements system types, polices, processes, and procedures.

The following table 4.18 and Figure 4.18 are showing the both responses of Vendors/Owners and end users for the Likert scale of the questions:

Table 4.18 Responses of Vendors/Owners and end users for e-procurements types and processes questions

	Excellent	Good	Not sure	Poor	Very Poor
Vendors/Owners respondents	46%	37%	7%	7%	3%
Vendors/Owners respondents	33%	37%	11%	14%	5%

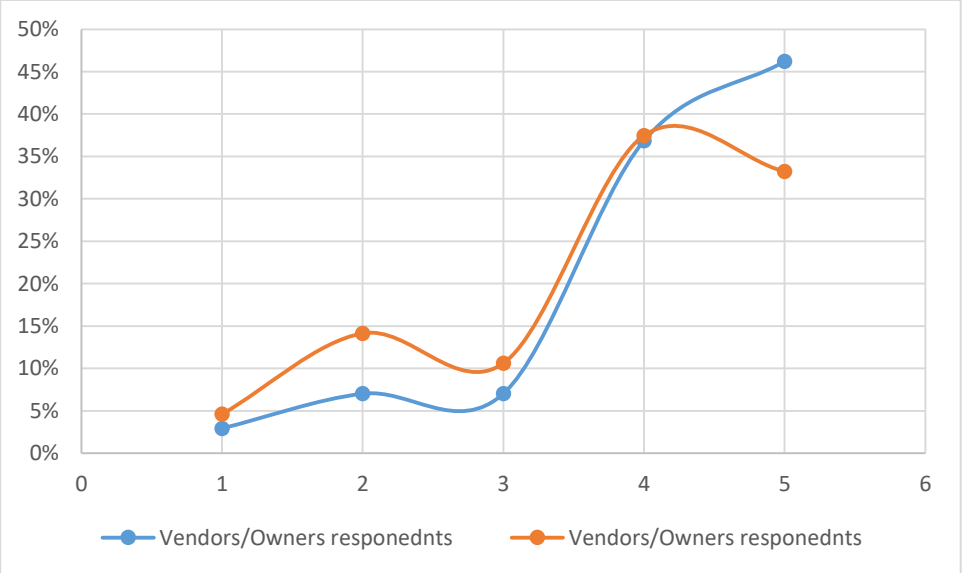

Figure 4.18 Comparison responses of Vendors/Owners and end users for e-procurements types and processes questions

The Figure showing that vendors/owners are more satisfied with types, processes, and technology types used in Malaysia's industries, almost same number of respondents agree that e-procurement types, process, and

technology are good.

4.2.3.2. The e-procurement benefits:

E-procurement having many benefits and the study identifying weather these benefits in Malaysia are same comparing to the other countries for many industries and for construction projects, with total 27 questions for vendors/owners group, also for end users group E-procurement having many benefits and the study identifying weather these benefits in Malaysia are same comparing to the other countries for many industries and for construction projects, with total 24 questions, checking the benefits satisfactions and opinions for all benefits and for three major parts like business, technically and processes for e-procurements, by checking the benefits satisfactions and opinions for all benefits and for three major parts like business, technically and processes for e-procurements, the results combined for these questions answersThe following table Figure is showing the both responses of Vendors/Owners and end users for the Likert scale of the questions about e-procurement's benefit satisfactions currently in Malaysia:

Table 4.19 Responses of Vendors/Owners and end users for e-procurements benefits questions.

	Excellent	Good	Not sure	Poor	Very Poor
Vendors/Owners respondents	57%	30%	9%	3%	1%
Vendors/Owners respondents	30%	34%	13%	16%	6%

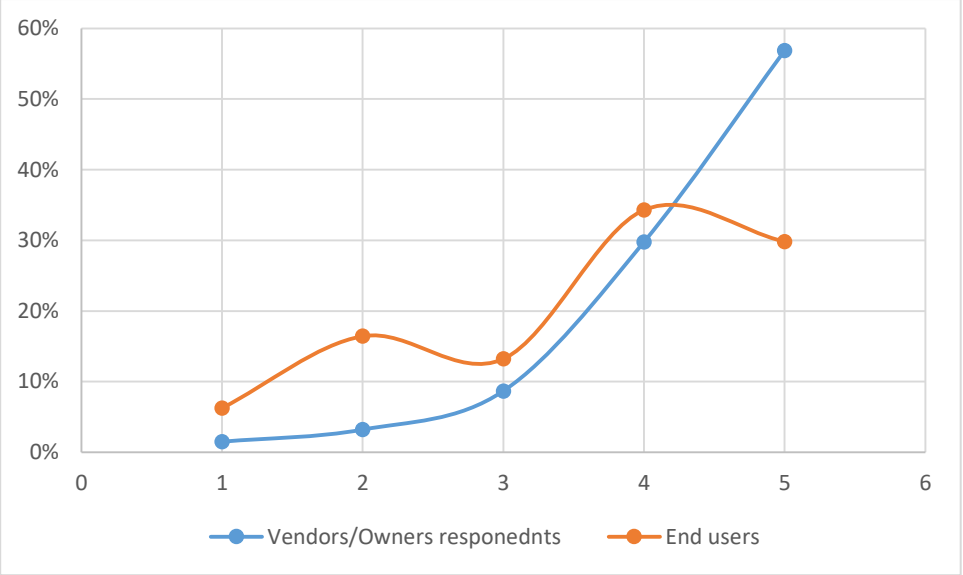

Figure 4.19 Comparison Responses of Vendors/Owners and end users for e-procurements benefits questions

The Figure is showing that vendors/owners are more comfortable with questions and more satisfied, vendors/owners are considered higher than vendors and giving high rank for excellent benefits, the end users are slightly different for good and neutral rank but giving higher rank for poor benefits and very poor rank more than vendors/owners.

4.2.3.3. The e-procurement problems, difficulties, and challenges:

This part of the study is considered most important part for studying e-procurement systems and applications, it can help to know whether there are some issues related e-procurement systems, for owners/vendors group the total number of the questions on this part is 59 question divided into three groups such as business issues, technical issues, and processes issues because each kind of issues have their own nature, so it will be difficult to do some kind of analysis for them together, the end users more able to declaring and providing accurate answers more than vendors/owners, the total number of the question on this part is 46 question divided into three groups such as business issues, technical issues, and processes issues because each kind of issues have their own

nature, so it will be difficult to do some kind of analysis for them together and these issues as following:

- Business issues:

  The questions on this part were questioning the respondents about their opinions for all issues related to business procedures, processes, and the total number of these questions is 10 questions answered as following percentages:

  Here same as previous sections the study having three parts of issues related to business, Technical, and processes and procedures issues to compare between the vendors/owners group and end users group as following comparison between the two groups for business issues in the questionnaire on the next table and Figure:

Table 4.20 Responses of Vendors/Owners and end users for e-procurements business issues questions

	Excellent	Good	Not sure	Poor	Very Poor
Vendors/Owners respondents	49%	36%	8%	4%	2%
Vendors/Owners respondents	31%	34%	13%	17%	5%

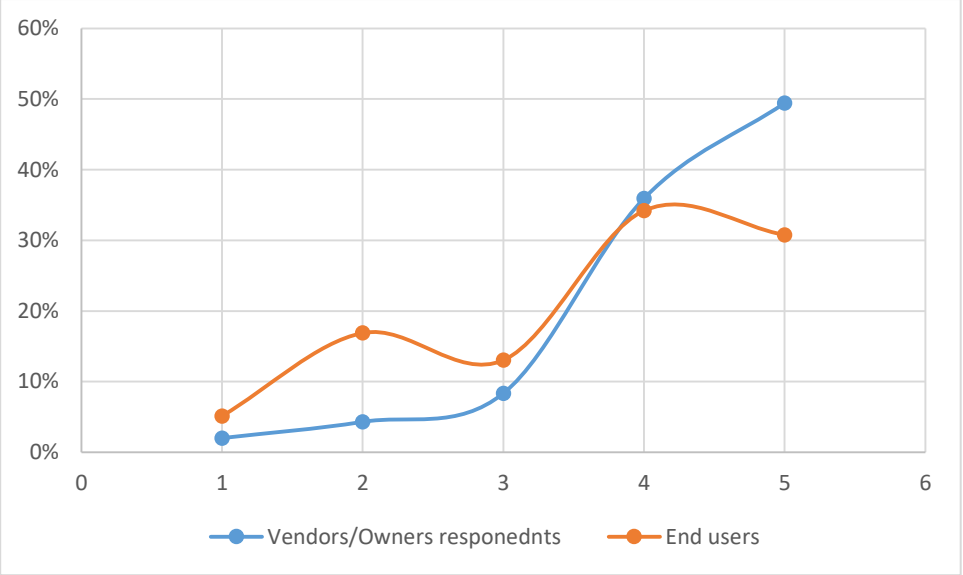

Figure 4.20 Comparison responses of Vendors/Owners and end users for e-procurements business issues questions

The end users on the Figure 4.30 showing that totally less satisfied than vendors/owners group, the questions natural is asking about whether the e-procurement having less problems and barriers, but considered both groups having same high rank about Good.

4.2.3.4. Technical issues:

This section is having more relations with ICT, and all applications used for e-procurement systems, for the vendors/owners group the questions on this part were questioning the respondents about their opinions for all issues related to technical problems and barriers for e-procurement systems and applications, such as flexibility, security, technical experience, training programs, and other technical points, the total number of these questions is 22 questions answered, next table and Figure are showing the comparison between the two groups.

The questions for end users group were questioning the respondents about their opinions for all issues related to technical problems and barriers for e-procurement systems and applications, such as flexibility, security, technical experience, training programs, and other technical points, the total number of these questions is 12 questions answered.

Table 4.21 Responses of Vendors/Owners and end users for e-procurements technical issues questions

	Excellent	Good	Not sure	Poor	Very Poor
Vendors/Owners respondents	52%	34%	6%	6%	2%
Vendors/Owners respondents	23%	29%	18%	21%	9%

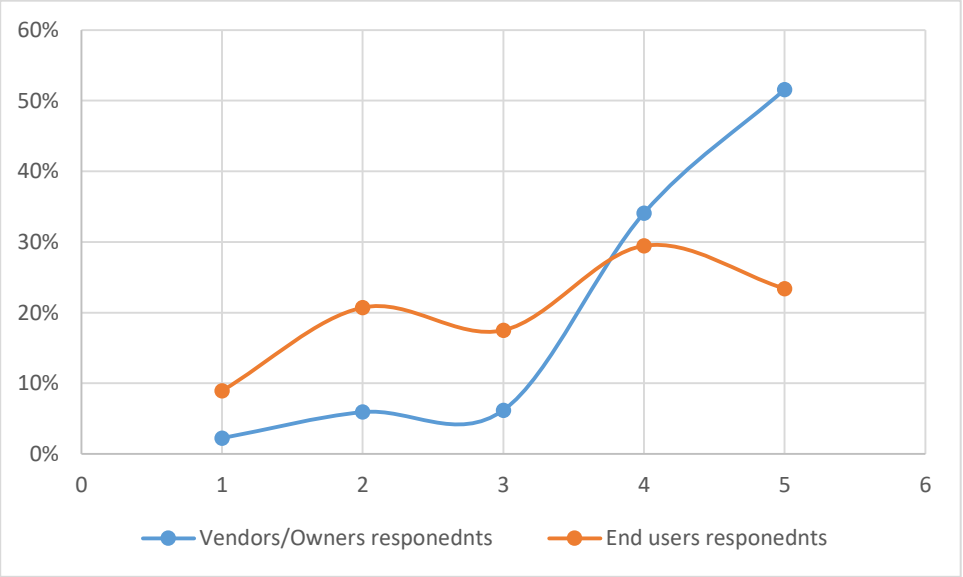

Figure 4.21 Comparison Responses of Vendors/Owners and end users for e-procurements technical issues questions

Clearly the end users group found more problems and barriers related technical issues, but the satisfaction for vendors/owners group is more than end users group, also the end users group percentage is higher for those don't know or not sure, both groups agree that no much technical issues with good percent (29-34), vendors/owners group curve show that there is not too much technical problems.

4.2.3.5. Processes and procedures issues:

The questions on this part were questioning the respondents for both groups about their opinions for all issues related to e-procurement business problems and

barriers for e-procurement systems and applications, such as flexibility, security, technical experience, training programs, and other technical points, the total number of these questions is 22 questions answered for vendors/owners group and 22 questions also for end users group.

Many issues related to processes and procedures for both of respondent groups are considered on these surveys, and can see the difference between two groups clearly as the next table and Figure showing:

Table 4.22 Responses of Vendors/Owners and end users for e-procurements Processes and procedures issues questions

	Excellent	Good	Not sure	Poor	Very Poor
Vendors/Owners respondents	49%	36%	9%	4%	2%
Vendors/Owners respondents	30%	33%	14%	16%	7%

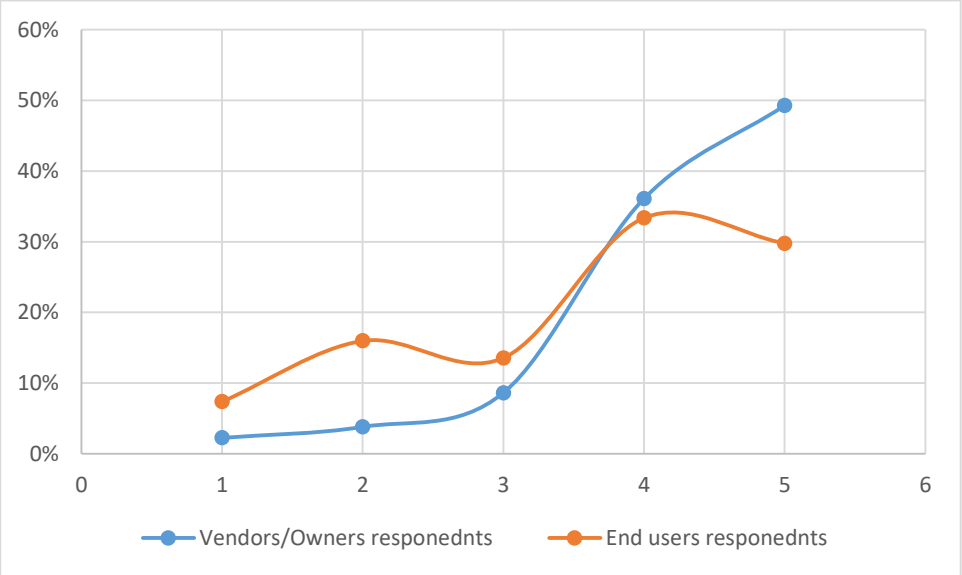

Figure 4.22 Comparison Responses of Vendors/Owners and end users for e-procurements Processes and procedures issues questions

End users group is not totally satisfied, the percentage of Poor ranking is high comparing with vendors/owners group, vendors/owners group is more satisfied and giving high rank for the Excellent item, with almost 20% difference with end users group, still percentage of Not sure item is high for end users but this Figure is showing a high percentage of Not sure item also for vendors/owners group.

4.3. Using Statistical Package for the Social Sciences Statistics (SPSS)

By using the SPSS applications on the two groups of questionnaire the study can make the analysis for both groups, the nature of both groups assumed are independents, so to find any kind of relations between these two group better to conduct correlation test, for Likert scale it will be not accurate, but for accumulated percentage can use for changing of data nature.

4.3.1. Reliability test

in this case of the study the researchers recommended to use Cronbach's Alpha test for reliability and checking the correlations between the two groups and study weather these groups are connected somehow, Cronbach's Alpha is used in cases of multiple Likert scale and accumulated, and to finding the relations to do appropriate analysis the next table is showing the results for Cronbach's Alpha tests:

Table 4.23 Cronbach’s Alpha Reliability Statistics

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.995	.995	5

As it is very clearly the samples having very high reliability which are very close to one, so all data from the questionnaire answers are accurate, and became more accurate by taking the response average for every item of Likert scale, the researchers mentioned that high value is not considered wrong sometimes, so to make sure that result is correct then have to make correlations test to measure the internal consistency.

Table 4.24 Inter-Correlation (Consistency) Statistics

Inter-Item Correlation Matrix

	E-procurement types, technologies, and models	E-procurement Benefits	E-procurement Business Issues	E-procurement Technical Issues	E-procurement processes and procedures issues
E-procurement types, technologies, and models	1.000	.960	.989	.934	.985
E-procurement Benefits	.960	1.000	.983	.973	.984
E-procurement Business Issues	.989	.983	1.000	.971	.999
E-procurement Technical Issues	.934	.973	.971	1.000	.975
E-procurement processes and procedures issues	.985	.984	.999	.975	1.000

The last table is showing how these groups internal consistency, it is a clear the table showing that all values are very close to one, means it is very high correlations, and these results approving the following:

- The diagonal similarity on the table each group of answers having mutual and equal effect.
- The values are all excellent inter-correlation or consistency, so there is no need to delete any items to improve the consistency, which is may will affect the whole values.
- By comparing the values we can found the difference between Technical issues and other issues that the lowest value, which means the consistency is less than others and this is approving that

there is different for the evaluation of the end users and Vendors/owners can see clearly.

4.3.2. Kruskal-Wallis test

As the questionnaire research having two groups, each have their own opinions, it is important to know whether there are differences between these two groups towards the e-procurement systems, by using this tool may can find out, next tables are the outputs of the tool:

Table 4.25 Kruskal-Wallis test

Test Statistics[a,b]

	E-procurement types, technologies, and models	E-procurement Benefits	E-procurement Business Issues	E-procurement Technical Issues	E-procurement processes and procedures issues
Chi-Square	.099	.535	.098	.273	.098
df	1	1	1	1	1
Asymp. Sig.	.753	.465	.754	.602	.754

a. Kruskal Wallis Test

b. Grouping Variable: group

By analyzing the table the Alpha parameters (chi-square) are mostly lower than P parameter, which means there is no significate difference for all e-procurement issues, types and procedures, but only for benefits of the e-procurement there is significate difference, and once check the data of the survey, can see the difference between two groups is reached 30%, which considered high comparing to the other aspects of the survey.

4.4. Discussions:

In this section of the study a review and discussion for all last results on this chapter, and the discussion will be for respondent's types and their organizations, the results for both surveys, and the statistics test which performed on results.

4.4.1. The survey respondents:

The number of respondents considered low comparing to the total number of emails sent for the survey, but the best point here is the accuracy is high which means the respondents are about the e-procurement systems and applications, and some respondents neglected which answered just few questions, less than six questions.

According to Gay & Diehl, (1992), generally the number of respondents acceptable for a study depends upon the type of research involved - descriptive, correlational or experimental.

For descriptive research the sample should be 10% of population. But if the population is small then 20% may be required.

Many researchers are estimated the response ratio and decided on the more adequate response ratio for the survey depending on many factors such as reliability, confidence, and survey length, for this research it is considered high confidence but with a little low reliability, and also a little long than usual comparing to other online surveys.

(Nulty, 2008) on his paper mentioned that some researchers considering the acceptable ratio for online survey is up to 20% with support of other factors such as reliability , confidence and total population for the survey.

The response ratio is almost 22%, it considered low response for the reasons mentioned earlier, and not an adequate ratio for the survey, but it is enough for giving a good idea about the e-procurement systems in Malaysia,

For some respondents some answers were in Malay language, and translation done with help of some local Malaysian students, but there is no good tool to measure weather the translation is correct or not.

The short time for survey affecting on the total number of respondents, also the length of the surveys considering long, and maybe some question got complexity which affecting the correct answer or increasing the number of incomplete respondents.

For end users group can see that number of employees which dealing with e-procurement are high especially for SME comparing to same category

of Vendors/owners group, this explaining that these SME are working for marketing and sale in common.

The total number of employees of vendors/owners in construction industry are high, and considering the number of construction organizations which not that much can conclude that most of construction engineers of these organizations answered the questionnaire, this means all from same organizations.

The end user industry differentiation in Malaysia is investigated, and the results approving that many of end users are using the e-procurement for many activates within the organizations and for many industries not only constructions industry.

4.4.2. The survey's questions:

In this section of the discussion the study is about the e-procurement types, technologies and model question's results, e-procurement benefits, processes and procedures question's results, also the related issues mentioned by the respondents on the e-procurements in certain country like Malaysia.

4.4.2.1. E-procurement types, technologies and models:

Few questions were asked to the vendors/owners only, these questions considered more complex and experience need technically and for processes as well, for e-procurements models questions it is clearly that percentage of business to consumer B2C is considered high, the reasons that many customers are dealing with marketing online with organizations and companies, whatever the type of material the customer procure is, but what is the explanation of the high percentage of customer to government C2G, which is 28%, this is usually because of the government procurement from the individuals or business men for the constructions small tasks.

The results showing that 20% of the vendors/owners are dealing with e-Tendering for constructions and other industries in Malaysia and considered a high ratio for using e-procurement applications, 31% is for

e-Ordering means many organizations are ordering their material online by using ICT, for maintenance works, operation, and repairing 11% maybe a fit ratio for construction works comparing with total number of respondents which belong to construction industry, 22% for Web based ERP is considered a little high, because of the yearly expenses of this type of system, but considered easy to deal with at work for e-procurement.

By comparing the response of both targeted groups for measuring the satisfactions on the existed and current types, models, and technology of the e-procurement usually the vendors/owners are more satisfied, and this could be illustrated in reasons; first reason is the vendors/owners they care about their business to be in good image, the other reason is they got the knowledge about whole e-procurement applications or systems, end users group results with 10% not sure about the questions, which reflecting the knowledge about thee-procurement applications and types, and for vendors/owners it is a little different than expected with percentage of 7% of Not sure, maybe because of questions misunderstanding or complexity of the questions.

4.4.2.2. The e-procurement benefits:

The results showing that both groups of survey agree that e-procurement benefits are Good, but for Excellent the vendors/owners group is high with difference about 20%, and high percentage of Poor for end users, the end users are more close to systems during daily work, and employees which in charge they are more capable to detect these issue about benefits, generally both are agree for most of benefits aspects, (Eei, Husain, & Mustaffa, 2012) mentioned to the same result.

4.4.2.3. The e-procurement business issues:

To be more careful about this issues, the business operations and problems related are deciding the e-procurement strategy, the response Good over all, with less satisfactions for end users, and can see this for Poor and Excellent items, the end users group agree that e-procurement good for business but not that good comparing to vendors/owners group.

4.4.2.4. The e-procurement Technical Issues:

Referencing to the technical knowledge of the end users group about the e-procurement systems the evaluation is different than vendors/owners group, can see this difference for Excellent items which reached 30% between two groups, and high percentage for Poor items.(Kajewski, 2010) and (Ronchi, Brun, Golini, & Fan, 2010) on their papers got same matters and issues.

4.4.2.5. The e-procurement processes and procedures:

Almost same response for both groups comparing to the other previous issues, the difference is clear for Excellent and Poor items, most of e-procurement types having their own processes and procedures, and also the ICT affecting the systems and applications used for the e-procurement procedures and processes, with different vendors and services providers the end users need to have knowledge for each one chosen to deal with, and still the end user satisfied on the e-procurements, but here maybe conclude those respondents belong to big size organizations which providing an appropriate training and help to work on these kinds of e-procurement applications, many researchers mentioned to these issues on their papers such as (Vitkauskaite & Gatautis, 2008), (Grilo & Jardim-Goncalves, 2011), (Bakar et al., n.d.), (Boer et al., 2001), and (Wong & Sloan, 2004)

4.4.3. Using Statistical Package for the Social Sciences Statistics (SPSS) :

Why the study used to do the statistics analysis for the data of the questionnaire answers, the point for using these tools to provide the evidence for reliability of these data, and not only for this, also to check the connections and correlations between these two groups to know how they affect each other.

To study the reliability of the answers data for both group the study used a

Cronbach's Alpha, this tool chosen because it is the most recommended by the researchers for this type of data, the questions are on Likert scale, to apply the required analysis the data combined into percentages, for accumulated data with percentages the Cronbach's Alpha is most suitable tool.

The reliability test results showing that data are very reliable which value is 0.995 which almost one, the good thing about this test it is telling with just one number how the reliability of the data is, and should be more than 0.7 to be reliable until reaching 1.0 as a value, that means the error for variance is less than or equal to 0.005.

On table 4.33 it shows that inter-correlation between the answers is very strong and can see values are all excellent correlation, so there is no need to delete any items to improve the correlations, which is may will affect the whole values.

By comparing the values we can found the difference between Technical issues and other issues that the lowest value, which means the consistency is less than others and approving that there is different for the evaluation of the end users and Vendors/owners can see clearly, these results and discussion can be found on many researchers papers for end users and vendor behaviors such as (Melorose, Perroy, & Careas, 2015), (Stephens & Valverde, 2013), (Yusoff, 2011), (Eadie, Perera, & Heaney, 2011), (Vaidya, Sajeev, & Callender, 2006), (Kaliannan, Raman, & Dorasamy, 2009) and (Nation, 2006).

For checking the statistics difference between the two groups the study conducted a Kruskal-Wallis test, for all survey samples as percentage of the Likert scale data, the result is showing in table 4.34, Alpha parameters (chi-square) are mostly lower than P parameter, which means there is no significate difference for all e-procurement issues, types and procedures, but only for benefits issues of the e-procurement there is significate difference, which Alpha parameter is equal to 0.273 and less than p value which equal to 0.602.

CHAPTER FIVE

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

E-procurement system is one of the important tools which used on e-business, and the business nowadays are effecting too much by the ICT and new applications and systems which depends on it, so what is the electronic procurement's current situation in Malaysia, and how vendors/owners and end users are satisfied, by looking the study results it can conclude the following:

5.1.1. The e-procurement types, processes, and models:

With help of literature review, the questionnaire developed to answer the research's questions, the survey's results for both groups in survey are satisfied with existed types generally, with difference that end users have less satisfactions for the reasons which discussed in last chapter, the statistics reliability test showing that consistency and reliability is very high for the e-procurement types with each variable in the survey.

By performing the statistics test for the two respondents groups it is obviously both groups are same for a little difference not considered for the test, so there is no significant difference.

Issues for types, models and technologies used in e-procurement considered not high as showing on the results, but end users still less satisfied than vendors/owners group, most of end users group are having less knowledge about e-procurement, and this is reflected on the results, can also found same results for the researchers such as (Chong & Preece, 2014), (Moreland & Record, 2013), and (Melorose et al., 2015).

By comparing the research results of questions about types used in e-procurement in Malaysia and other countries which provided in the previous studies we can conclude that most of these types, and models are used in Malaysia, sometimes with other names or definitions, but they are doing same functions, (Kaliannan, Awang, & Raman, 2009a) mentioned on this on their papers

5.1.2. The e-procurement benefits:

During the study and results of surveys questionnaire also comparing and statistics analysis, it is very clear that end user group is not satisfied with the benefits of the e-procurement systems, the comparison is showing this result wit support of statistics analysis difference test which approved the significant difference between two groups.

The difference between two groups conclude that end users are not happy with services and benefits of e-procurement, but this is not true which can see the curve of satisfaction is good but once again compare with vendors/owners group the end users less satisfactions, the reason is the end users are dealing for e-business sometimes with short period of time, means they expecting the benefits return faster than vendors/owners, and this representing that most of end users are SME, but both groups are ranking Good for benefits which is generally good result also, some researchers mentioned to these issues on their papers , (Yusoff, 2011) , (Fernandes & Vieira, 2015), and (Baharuddin, 2014).

Issue listed by questionnaire answers are not related to the benefits itself, but benefits totally related to other issues which reducing the e-procurement systems benefits, but this not seen clearly for the statistics analysis for results data, and may the reasons are the combinations of the results as a cumulated percentages of Likert scale.

The solution in this case is providing and spread more knowledge about e-business and preparing a good training programs targeting the users for SME as a priority and reset of user types, the Malaysian government support is appreciated to monitoring and control other illegal issues, these issues can reduce the benefits for dishonesty treatments of some organizations, (Yusoff, 2011), and (Mohammadi, 2013).

5.1.3. The e-procurement technical matters:

It is noted the technical details for the Electronic procurement are having less considerations by the researchers, especially for Malaysia country, this effected and made some restriction on the research to compare between Malaysia country and other countries, the results showing that most of end users are not satisfied with technical part of the e-procurement, the reason as an assumption that most of technical parts always there are a need for specialists, and for any technical issue may will faced the end users of the e-procurement the first think on their mind is " this problem is because of electronic procurement technology" , and this problem could be internet speed or any other infrastructure issue.

Both groups on the survey listed the major technical issue in Malaysia such as, infrastructure of ICT, no more experts for developing systems, no integrated solutions for e-procurement and no good training for them, here we can conclude the reason is usually in case is business matter, so why organizations need to do or fix last few issues if there is no good margin of revenue, most of previous facts listed by some researchers such as (Tanner, Wölfle, Schubert, & Quade, 2008), (Assar, Boydens, & Boughzala, 2011), and (Aman & Kasimin, 2011).

5.2. The research limitations

There are some limitations facing the study during the research conducting, some of these limitations were a researcher's mistake, others were out of researcher's control, these limitations affected the results and the research efficiency somehow.

The time duration for the survey considered short so this affecting the number of the respondents, some questions of the questionnaire are complex and misunderstanding for these questions could happen, some questions having different many interpretation which may be considered for business or processes questions, so this will reduce the accuracy of the survey results, the questions should be more clear, simple, with direct

meaning, questions should be more in details for experts which are usually the vendors/owners group.

The respondents are not mostly belong to construction as specialists of construction industry procurement, this percentage of sharing the questionnaire should be higher to reach more higher level of accuracy, the surveys questionnaire emails got some limitations by sending through internet or through the organizations ICT, and because of firewalls the survey emails sometimes considered as email junks, and will never reach the destinations or any responsible employee.

Confidentiality and business security about running business and technology used considered an issue for the respondents to answer the questionnaire, also the employee sometimes got careless toward the researching studies conducted, or have no free time to answer the questionnaire.

The knowledge about the Electronic procurement systems and application for respondents are not common in Malaysia for certain organizations, this causing misunderstanding for the questions and reducing the accurate answers.

Some respondents are more capable to express their own thoughts and answers in their own native languages, not in English language which the official languages for the researches usually, this causing sometimes a delay for the study and maybe the translation is not that accurate and leading to misunderstanding for the answers.

The study didn't conduct any interview for experts and users for the e-procurement, and to maximize the results and the research study benefits it should be mixed with good qualitative research depending on interviewing the related qualified experts and users, extracting the details about e-procurement really situations, technologies, procedures and processes used in Malaysia.

Generally some organizations in Malaysia didn't provide a good help for the research, such as the organizations which providing the information and data about industries in Malaysia, the study overcome these issues by searching on internet , but it was time consuming comparing to available time for the research.

5.3. Recommendations/Further work

5.3.1. Recommendations:

During the study and the questions results and analysis the study can recommend some important point for improving the e-procurement systems adopting and implementations and to reduce the barriers, problems, next are these points as recommendations for the study:

- The organizations and Malaysian government should pay more attentions to spread the knowledge about electronic procurement systems, related processes and procedures to reach new level of success toward the e-business.
- The Malaysian government have to do some extra financial support for the SME organizations to adopting the new technologies, provide more free of charge training programs which targeting the customers with more relations to e-procurement systems.
- It is the responsibility of organizations for both public and private sectors to develop more efficient systems and fully integrated solutions for e-procurement.
- Under Malaysian government supervision and by its supports there workshops and international meetings should arranged and dedicated for e-procurement systems and related studies discussions.
- Make more globalization for the e-procurement by adding multi-languages interfaces to the all e-procurements online applications, paying considerations for some global regions cultures.
- The ICT developers companies are required to do more customizations for the electronic procurement integrations, especially for construction industry by integrating the systems to the related industrial systems such as BIM, and other financial systems.

- The organization’s high management and Malaysian government need to care about transparency and corruption issues for e-procurement systems and improve the procedures and legal frames to protect the e-business processes generally.
- More attentions and management offers should be paying to direct the e-procurement toward the sustainability issues, weather procuring a material used in projects, or the engineering matters by adding more sustainable conditions for all activities on procurement processes.

5.3.2. Further work:

Electronic procurement is very rich field for researching, and become more wide and with many classifications, processes, and types, for Malaysia country the electronic procurement is very good sector to research to enhance the major aspects of the e-procurements.

As continue work for the study it can be for the technical details of the systems, and how the technical aspects dealing with e-procurement processes with legal frame, ICT may considered a very important factor for the e-procurement success, how can improve this factors effect to raise the efficiency of the electronic procurement, and other thing is what is the response of the organizations to change their ICT systems to add more features and adopting new processes for the new e-procurement systems which continuing updating by system vendors.

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APPENDICES

Appendix A

Survey for E-procurement Vendors and owners

A survey for finding problems and barriers for using and implementing E-procurement

General Questions

1. **What is your position in your organization?**

   _____

2. **What is the industry of your organization belong to?**

3. **What is the major activity of your organization?**

   _____

4. **How many employees you have in your organization (approximately)?**

5. **How many persons in charge of E- procurement system in your organization?**

   _____

6. **How long your organization been adopting e-procurement?**

   _____

7. **Can you describe the problems you are facing in case you have any?**

   _____

   _____

   _____

8. **What is your organizations classify your e-procurement system is it.(choose one or more answer)**
Mark only one oval.

- B2C – Business to customer C2G –
- Citizens to government C2C –
- Consumer to consumers C2B –
- Consumer to business
- G2G - Government to government

9. **Does your e-procurement system supporting. (choose one or more answer)** *Mark only one oval.*

- e-Informing e-Sourcing
- e-Tendering e-Reverse
- auctioning e-MRO
- Web based ERP
- e-Ordering e-Markets
-

Business Part

Related to all the electronic procurement system (e-procurement) you are using with customers or creating for customers to use.
Note: you can describe as 1 is poor, 5 is excellent, 3 if you don't know or you are not sure

10. **How do you describe your e-procurement system for governments?** *Mark only one oval.*

	1	2	3	4	5	
Very Poor						Excellent

11. **How do you describe your e-procurement system for governments?** *Mark only one oval.*

	1	2	3	4	5	
Very Poor						Excellent

12. **How do you describe the system for private sector?** *Mark only one oval.*

	1	2	3	4	5	
Poor						excellent

13. **How do you describe the system is good for individuals which do not familiar with E-procurement?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

14. **How do you consider your system as a good tool for customer to save money?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

15. **How do you consider your system efficiency?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

16. **How do you describe your system design customer satisfaction at the beginning of use?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

17. **How is all your customers' satisfaction about the system in general?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

18. **How do you describe the system for saving time?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

19. **How do you describe system ease of use for inexperience customers?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

20. **How do you describe the system cost price comparing with other similar systems?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

21. **How do you describe the system expenses cost increasing by using time by the customers?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

22. **How do you describe the experience of your customers to deal with your system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

23. **After providing the system to customers how do you describe your customer reputation?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

24. **How do you describe information sharing on your system for both buyers and suppliers?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

25. **How do you describe the real time access to product and services on your system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

26. **How do you describe the customer satisfaction for number of interface languages available for the system?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

27. **How do you describe the system for international business use?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

28. **What the customer's satisfaction for business models you provide through the system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

29. **What is the customer's satisfaction about your system flexibility on business operations?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

30. **How do you describe your system supply chain management performance?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

31. **What do you describe the speed of adding new services to the system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

32. **What do you describe the speed of changing some services to the system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

33. **How do you describe the readiness of your company to supply the system to new customers?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

34. **How do you describe your customers trust in your systems?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

35. **How do you describe your customer's cooperation during system implementations?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

36. **How do you describe your customer's feedback on your system activities and behavior?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

37. **How do you describe your system capability of generating reports?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

38. **How do you describe your system capability of generating reports?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

39. **How do you describe the system capability to do all tasks of constructions procurement?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

40. **How describe your systems capability to meet special customer requirement on construction procurement?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

41. **How do you describe your free services to your customers?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

42. **How do you describe your income for invest your money on e-procurement system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	excellent

Technical Part

Note: you can describe as 1 is poor, 5 is excellent, 3 if you don't know or you are not sure

43. **How do you describe your system security for transactions?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

44. **How do you describe the system privileges levels for users on your system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

45. **How do you consider your system software bugs free?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

46. **How do you describe your customer satisfaction about data hosting in case you do hosting?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

47. **How do you describe your ability to add suitable system hardware?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

48. **How do you describe the customer's technical skills to deal with your systems?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

49. **How do you describe your customer efficiency for using available ICT?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

50. **How do you describe the system problems free?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

51. **How do you describe your system technical training program?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

52. **How do you describe the system ability to modifying on customers request?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

53. **How do you describe the speed of your maintenance actions on systems?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

54. **How do you describe your system ability to expand and add more functions?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

55. **How do you describe your system financial transactions speed?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

56. **How do you describe your customer infra structure for install your systems?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

57. **How do you describe your system flexibility to install?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

58. **How do you describe your system compatibility to integrate with other portals and systems?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

59. **How do you describe your system periodical preventing maintenance?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

60. **How do you describe your system ability to exporting data?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

61. **How do you describe your system ability for backup data?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

62. **How do you describe you r system ability to trace transactions?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

63. **How do you describe your system ability to trace user's actions?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

64. **How do you describe your customer's technical feedback on your system activities?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

65. **How do you describe your system Mobile handsets friendly use?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

66. **How do you your capability for upgrading and adding new services comparing to other similar companies?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

67. **How do you describe your system ability to swap by other systems without any technical problems?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

68. **How do you describe your technical team's experience?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

69. **How do you describe your development team efficiency?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

70. **How do you describe your system efficiency with dealing with engineering maps and drawings?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

Processes Part

Note: you can describe as 1 is poor, 5 is excellent, 3 if you don't know or you are not sure

71. **How do you describe your system data interchanging?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

72. **How do you describe the experience of vendors and suppliers to deal with the system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

73. **How do you describe your organization counteracting against fake suppliers and vendors?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

74. **How do you describe your list of options for e-procurement systems provided to your customers?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

75. **How do you describe your e-procurement implementation according to your customers? Plan?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

76. **How do you describe your customer satisfaction on your system implementations?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

77. **How do you describe the customer satisfaction on e-procurement practices provided by your systems?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

78. **How do you describe your system direct and indirect purchases operations?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

79. **How do you describe the speed response of decision maker for operations generally?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

80. **How do you describe the customer's management support for e-procurement operations?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

81. **How do you describe the process methodology of your system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

82. **How do you describe your supply chain management process?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

83. **How do you describe the influence of customer's managers on e-procurement process?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

84. **What do you think about your system e-Auction process practices?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

85. **What do you think about your system e-tendering process practices?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

86. **What do you think about your system e-tendering honesty?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

87. **What do you think your customers requirement on e-tendering stages?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

88. **How do you describe the e-Awarding practices of your system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

89. **What do you think of high management influence for e-Awarding process?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

90. **How do you describe the legal frame of e-contracting processes of your system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

91. **How do you describe your response for e-contracting negotiation?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

92. **How do you describe your inventory processes on your system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

93. **How do you describe the e-ordering processes in your systems?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

94. **How do you describe the system e-invoice efficiency?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

95. **How do you describe the documentation processes for your system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

96. **How do you describe the correction actions for all system processes mistakes?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

97. **How do you describe the e-payment processes on your system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

98. **How do you describe your management response for lack of products or contracts information?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

Appendix B

E-procurement Survey for End Users

General Questions

1. **What is your position in your organization?**

2. **What is the industry of your organization belonging to?**

   _____

3. **How many employees you have in your organization (approximately)?**

   _____

4. **Can you describe the problems you are facing in case you have any dealing with e- procurement systems?**

   _____

Business Part

Note: you can describe as 1 is poor, 5 is excellent, 3 if you don't know or you are not sure

5. **How do you describe the e-procurement system you are using for governments?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

6. **How do you describe the e-procurement system you are using for private sector?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

7. **How do you describe the system is good for individuals which do not familiar with E-procurement?**
   Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

8. **How do you consider your system as a good tool for customer to save money?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

9. **How do you consider the system efficiency?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

10. **How do you describe your satisfaction on the system design for at the beginning of use?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

11. **How is all your satisfaction about the system in general?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

12. **How is all your satisfaction about the system in general?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

13. **How do you describe the system for saving time?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

14. **How do you describe system ease of use for inexperience customers?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

15. **How do you describe the system expenses cost increasing by using time?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

16. **After using this system, how do you describe your reputation?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

17. **How do you describe information sharing on your system for both buyers and suppliers?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

18. **How do you describe the real time access to product and services on the system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

19. **How do you describe your satisfaction for number of interface languages available for the system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

20. **How do you describe the system for international business use?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

21. **What the satisfaction for business models that provided by system's vendors or system's owners through the system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

22. **What is your satisfaction about your system flexibility on business operations?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

23. **How do you describe the system supply chain management performance?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

24. **How do you describe the system supply chain management performance?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

25. **What do you describe the speed of adding new services to the system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

26. **What do you describe the speed of changing some services to the system on your requests?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

27. **How do you describe your trust in the systems?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

28. **How do you describe the vendor's cooperation during system implementations?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

29. **How do you describe the system capability of generating reports?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

30. **How do you describe the system capability to do all tasks of constructions procurement?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

31. **How describe your systems capability to meet your special requirement on construction procurement?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

32. **How do you describe your free services from vendors or system owners to you as a customer?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

33. **How do you describe your income for invest your money on e-procurement system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

Technical Part

Note: you can describe as 1 is poor, 5 is excellent, 3 if you don't know or you are not sure

34. **How do you describe the e-procurement system security for transactions?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

35. **How do you describe the system privileges levels for users?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

36. **How do you consider your system software bugs free?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

37. **How do you describe your satisfaction on hosting in case the system does hosting?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

38. **How do you describe the owner or vendor's technical skills to deal with the systems?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

39. **How do you describe your efficiency for using available ICT?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

40. **How do you describe the system problems free?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

41. **How do you describe the system technical training program if there is any?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

42. **How do you describe the speed of your maintenance actions on systems done by the vendor?** *Mark only one oval.*

43. **How do you describe the system financial transactions speed?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

44. **How do you describe the system ability to trace transactions?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

45. **How do you describe the system ability to trace user's actions?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

46. **How do you describe the feedback function on the system activities for system's owner or vendor?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

47. **How do you describe your system Mobile handsets friendly use?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

48. **How do you describe your ability to swap to other systems without any problems?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

49. **How do you describe your ability to deal with more complex systems?** *Mark only one oval.*

50. **How do you describe the vendors or owners development efficiency for the e-procurement Systems?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

51. **How do you describe the system efficiency with dealing with engineering maps and drawings?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

Processes Part

Note: you can describe as 1 is poor, 5 is excellent, 3 if you don't know or you are not sure

52. **How do you describe the system data interchanging on the e-procurement system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

53. **How do you describe the experience of vendors and suppliers to deal with the system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

54. **how do you describe the list of options of e-procurement systems which provided to you ?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

55. **How do you describe your satisfaction on e-procurement practices provided by the systems?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

56. **How do you describe the system direct and indirect purchases operations?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

57. **How do you describe the speed response of decision maker for operations generally?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

58. **How do you describe your management support for e-procurement operations?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

59. **How do you describe the process methodology of the system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

60. **How do you describe the supply chain management process of the system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

61. **How do you describe the influence of your managers on e-procurement process?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

62. **How do you describe the documentation processes on the system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

63. **How do you describe the documentation processes on the system?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

64. **What do you think about the system tendering process practices?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

65. **How do you describe the repayment processes on your system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

66. **What do you think about the system tendering honesty?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

67. **What do you think about your requirement on tendering stages?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

68. **How do you describe the e-Awarding practices of the system?** *Mark only one oval.*

1	2	3	4	5

70. **What do you think of high management influence for e-Awarding process?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

71. **How do you describe the legal frame of contracting processes of the system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

72. **How do you describe your response for e-contracting negotiation?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

73. **How do you describe the inventory processes on the system?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

74. **How do you describe the e-ordering processes in the systems?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

75. **How do you describe the system e-invoice efficiency?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

76. **What do you think about the system e-tendering process policies?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

77. **How do you describe the correction actions for all system processes mistakes?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

78. **What do you think about the system e-Auction process practices?** *Mark only one oval.*

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

79. **How do you describe your management response for lack of products or contracts information?**
Mark only one oval.

	1	2	3	4	5	
Poor	⬭	⬭	⬭	⬭	⬭	Excellent

APPENDIX C

The results calculations for respondents:

1. Responses of Vendors/Owners for e-procurements types and processes questions

Questions	Excellent	Good	don't know	Poor	Very Poor	Total
How do you describe information sharing on your system for both buyers and suppliers?	17	13	2	1	1	34
How do you describe the real time access to product and services on your system?	16	13	4	1	1	35
How do you describe the customer satisfaction for number of interface languages available for the system?	11	15	3	4	1	34
What the customer's satisfaction for business models you provide through the system?	18	9	2	4	1	34
How do you describe your system supply chain management performance?	17	13	1	2	1	34
Total number of respondents for each item	79	63	12	12	5	171
Percentage of response for each item	46%	37%	7%	7%	3%	100%

2. Responses of Vendors/Owners for e-procurements benefits questions

	Excellent	Good	Not sure	Poor	Very Poor	total
How describe your systems capability to meet special customer requirement on construction procurement?	21	11	2	1	0	35
How do you describe your income for invest your money on e-procurement system?	22	10	1	2	0	35

How do you describe your e-procurement system for governments?	21	2	11	1	0	35
How do you describe your e-procurement system for private sector?	20	3	10	0	3	36
How do you describe the system is good for individuals which do not familiar with E-procurement?	20	11	3	0	1	35
How do you consider your system as a good tool for customer to save money?	19	13	1	1	0	34
How do you consider your system efficiency?	23	10	2	1	0	36
How is all your customers' satisfaction about the system in general?	23	12	1	0	0	36
How do you describe the system for saving time?	25	7	2	0	0	34
How do you describe system ease of use for inexperience customers?	23	9	0	3	0	35
How do you describe the system cost price comparing with other similar systems?	19	11	3	1	0	34
How do you describe the system expenses cost increasing by using time by the customers?	21	12	1	1	0	35
After providing the system to customers how do you describe your customer reputation?	23	10	1	0	0	34
How do you describe information sharing on your system for both buyers and suppliers?	17	13	2	1	1	34
What is the customer's satisfaction about your system flexibility on business operations?	20	11	2	2	0	35
How do you describe your customers cooperation's during system implementations?	14	14	5	1	1	35
How do you describe your system ability to expand and add more functions?	22	10	1	2	0	35
How do you describe you r system ability to trace transactions?	18	15	1	1	0	35
How do you describe your system ability to trace user's actions?	19	10	3	1	1	34
How do you describe your system Mobile handsets friendly use?	11	16	6	1	1	35

How do you describe your system efficiency with dealing with engineering maps and drawings?	23	7	2	2	1	35
How do you describe your system data interchanging?	23	7	3	1	0	34
How do you describe your organization counteracting against fake suppliers and vendors?	14	11	5	3	1	34
How do you describe your customer satisfaction on your system implementations?	22	11	0	1	0	34
How do you describe the customer satisfaction on e-procurement practices provided by your systems?	20	12	2	0	0	34
What do you think your customers requirement on e-tendering stages?	13	11	5	1	3	33
How do you describe the e-payment processes on your system?	15	9	6	2	1	33
Total number of respondents for each item	531	278	81	30	14	934
Percentage of response for each item	57%	30%	9%	3%	1%	100%

3. Responses of Vendors/Owners for e-procurements business issues questions

	Excellent	Good	Not sure	Poor	Very Poor	total
How do you describe the experience of your customers to deal with your system?	18	14	1	1	1	35
How do you describe the real time access to product and services on your system?	16	13	4	1	1	35
What do you describe the speed of adding new services to the system?	18	13	3	1	0	35
How do you describe the readiness of your company to supply the system to new customers?	17	12	2	2	1	34
How do you describe your customers trust in your systems?	14	13	4	3	1	35
How do you describe your customers cooperation's during system implementations?	14	14	5	1	1	35

How do you describe your customer's feedback on your system activities and behavior?	20	12	2	1	0	35
How describe your systems capability to meet special customer requirement on construction procurement?	21	11	2	1	0	35
How do you describe your free services to your customers?	12	13	5	2	2	34
How do you describe your income for invest your money on e-procurement system?	22	10	1	2	0	35
Total number of respondents for each item	172	125	29	15	7	348
Percentage of response for each item	49%	36%	8%	4%	2%	100%

4. Responses of Vendors/Owners for e-procurements technical issues questions

	Excellent	Good	Not sure	Poor	Very Poor	total
How do you describe your system security for transactions?	25	7	2	1	0	35
How do you describe the system privileges levels for users on your system?	24	9	1	1	0	35
How do you describe your ability to add suitable system hardware?	15	10	3	3	3	34
How do you describe the customer's technical skills to deal with your systems?	17	11	1	5	0	34
How do you describe your customer efficiency for using available ICT?	18	12	2	3	0	35
How do you describe your system technical training program?	15	12	3	4	0	34
How do you describe your system financial transactions speed?	18	9	3	3	2	35
How do you describe your customer infra structure for install your systems?	15	11	2	5	2	35
How do you describe your system flexibility to install?	22	12	1	0	0	35

How do you describe your system compatibility to integrate with other portals and systems?	14	15	1	2	1	33
How do you describe your system periodical preventing maintenance?	21	12	0	1	1	35
How do you describe your system ability to exporting data?	16	14	1	1	1	33
How do you describe your system ability for backup data?	22	11	1	1	0	35
How do you describe you r system ability to trace transactions?	18	15	1	1	0	35
How do you describe your system ability to trace user's actions?	19	10	3	1	1	34
How do you describe your customer's technical feedback on your system activities?	13	15	3	3	1	35
How do you describe your system Mobile handsets friendly use?	11	16	6	1	1	35
How do you your capability for upgrading and adding new services comparing to other similar companies?	14	15	3	2	1	35
How do you describe your system ability to swap by other systems without any technical problems?	11	12	7	3	2	35
How do you describe your technical team's experience?	23	9	0	2	0	34
How do you describe your development team efficiency?	18	15	1	0	0	34
How do you describe your system efficiency with dealing with engineering maps and drawings?	23	7	2	2	1	35
Total number of respondents for each item	392	259	47	45	17	760
Percentage of response for each item	52%	34%	6%	6%	2%	100%

5. Responses of Vendors/Owners for e-procurements Processes and procedures issues questions

	Excellent	Good	Not sure	Poor	Very Poor	Total
How do you describe the experience of vendors and suppliers to deal with the system?	12	12	5	2	2	33
How do you describe your organization counteracting against fake suppliers and vendors?	14	11	5	3	1	34
How do you describe your list of options for e-procurement systems provided to you customers?	11	15	3	2	2	33
How do you describe your e-procurement implementation according to your customers plan?	23	10	1	0	0	34
How do you describe your customer satisfaction on your system implementations?	22	11	0	1	0	34
How do you describe the customer satisfaction on e-procurement practices provided by your systems?	20	12	2	0	0	34
How do you describe your system direct and indirect purchases operations?	12	15	4	2	0	33
How do you describe the speed response of decision maker for operations generally?	11	19	2	0	1	33
How do you describe the customer's management support for e-procurement operations?	14	13	4	2	0	33
How do you describe the process methodology of your system?	17	12	3	1	0	33
How do you describe your supply chain management process?	21	10	2	0	0	33
How do you describe the influence of customer’s managers on e-procurement process?	13	11	5	3	1	33
What do you think about your system e-Auction process practices?	20	10	2	1	0	33
What do you think about your system e-tendering process practices?	20	9	3	1	0	33

What do you think about your system e-tendering honesty?	18	10	2	1	2	33
What do you think your customers requirement on e-tendering stages?	13	11	5	1	3	33
How do you describe the e-Awarding practices of your system?	15	12	3	3	0	33
What do you think of high management influence for e-Awarding process?	21	11	1	0	0	33
How do you describe the legal frame of e-contracting processes of your system?	12	13	3	3	2	33
How do you describe your response for e-contracting negotiation?	10	13	5	2	3	33
How do you describe your inventory processes on your system?	15	16	1	1	0	33
How do you describe the e-ordering processes in your systems?	17	11	3	2	0	33
How do you describe the system e-invoice efficiency?	14	17	1	1	0	33
How do you describe the documentation processes for your system?	19	12	0	0	2	33
How do you describe the correction actions for all system processes mistakes?	21	10	2	0	0	33
How do you describe the e-payment processes on your system?	15	9	6	2	1	33
How do you describe your management response for lack of products or contracts information?	21	8	4	0	0	33
Total number of respondents for each item	441	323	77	34	20	895
Percentage of response for each item	49%	36%	9%	4%	2%	100%

6. Responses of End users for e-procurements types and processes questions

	Excellent	Good	Not sure	Poor	Very Poor	Total
How do you describe the system for governments?	14	20	6	6	2	48
How do you describe the system for private sector?	17	19	4	4	4	48
How do you describe information sharing on your system for both buyers and suppliers?	13	17	6	8	2	46
What the satisfaction for business models that provided by system's vendors or system's owners through the system?	15	16	6	10	0	47
How do you describe the system supply chain management performance?	19	14	3	9	2	47
How do you describe the system capability to do all tasks of constructions procurement?	16	20	5	3	3	47
Total number of respondents for each item	94	106	30	40	13	283
Percentage of response for each item	33%	37%	11%	14%	5%	100%

7. Responses of End users for e-procurements benefits questions

	Excellent	Good	Not sure	Poor	Very Poor	Total
How do you consider the system as a good tool for customer to save money?	13	15	6	12	2	48
How do you consider the system efficiency?	14	17	4	11	1	47
How do you describe your satisfaction on the system design for at the beginning of use?	11	18	4	10	3	46
How is all your satisfaction about the system in general?	14	16	6	9	2	47
How do you describe the system for saving time?	19	18	3	5	1	46

how do you describe the system expenses cost increasing by using time	19	18	6	2	2	47
After using this system, how do you describe your reputation?	21	15	4	7	0	47
How do you describe information sharing on your system for both buyers and suppliers?	13	17	6	8	2	46
How do you describe the real time access to product and services on the system?	15	18	9	3	1	46
How do you describe your satisfaction for number of interface languages available for the system?	12	11	5	11	8	47
How do you describe the system for international business use?	11	12	8	12	3	46
What is your satisfaction about the system flexibility on business operations?	11	15	7	12	1	46
How do you describe the system capability of generating reports?	12	19	3	6	7	47
How do you describe the system capability to do all tasks of constructions procurement?	16	20	5	3	3	47
How describe your systems capability to meet your special requirement on construction procurement?	14	21	7	1	4	47
How do you describe your income for invest your money on e-procurement system?	22	13	8	3	1	47
How do you consider your system software bugs free?	15	18	6	7	1	47
How do you describe the owner or vendor's technical skills to deal with the systems?	14	9	11	9	3	46
How do you describe the system problems free?	11	17	2	9	8	47
How do you describe the system financial transactions speed?	12	17	3	10	4	46
How do you describe the system ability to trace transactions?	8	16	6	14	3	47

How do you describe the system ability to trace user's actions?	11	15	10	7	3	46
How do you describe the system data interchanging?	10	11	13	8	5	47
How do you describe the list of options of e-procurement systems which provided to you?	16	18	6	5	2	47
Total number of respondents for each item	334	384	148	184	70	1120
Percentage of response for each item	30%	34%	13%	16%	6%	100%

8. Responses of Vendors/Owners for e-procurements business issues questions

	Excellent	Good	Not sure	Poor	Very Poor	Total
How is all your satisfaction about the system in general?	14	16	6	9	2	47
how do you describe the system expenses cost increasing by using time	19	18	6	2	2	47
How do you describe information sharing on your system for both buyers and suppliers?	13	17	6	8	2	46
What the satisfaction for business models that provided by system's vendors or system's owners through the system?	15	16	6	10	0	47
How do you describe the system supply chain management performance?	19	14	3	9	2	47
What do you describe the speed of adding new services to the system?	13	12	9	10	3	47
How do you describe your trust in the systems?	13	17	6	8	3	47
How do you describe the vendors cooperation's during system implementations?	14	18	4	9	1	46
How do you describe the system capability to do all	16	20	5	3	3	47

tasks of constructions procurement?						
How do you describe your free services from vendors or system owners to you as a customer?	8	12	10	11	6	47
Total number of respondents for each item	144	160	61	79	24	468
Percentage of response for each item	31%	34%	13%	17%	5%	100%

9. Responses of End users for e-procurements technical issues questions

	Excellent	Good	Not sure	Poor	Very Poor	Total
How do you describe your system security for transactions?	9	13	8	15	2	47
How do you describe the system privileges levels for users?	13	12	5	11	6	47
How do you describe your satisfaction on hosting in case the system do hosting?	11	21	9	5	1	47
How do you describe the owner or vendor's technical skills to deal with the systems?	14	9	11	9	3	46
How do you describe the system problems free?	11	17	2	9	8	47
How do you describe the system ability to trace transactions?	8	16	6	14	3	47
How do you describe the system ability to trace user's actions?	11	15	10	7	3	46
How do you describe the feedback function on the system activities for system's owner or vendor?	14	12	9	8	4	47
How do you describe your ability to swap to another systems without any problems?	8	9	17	8	4	46
How do you describe your ability to deal with more complex systems?	14	17	4	9	3	47
How do you describe the vendors or owners development efficiency for the e-procurement systems?	12	11	8	9	6	46

How do you describe the system efficiency with dealing with engineering maps and drawings?	6	13	9	12	7	47
Total number of respondents for each item	131	165	98	116	50	560
Percentage of response for each item	23%	29%	18%	21%	9%	100%

10. Responses of End users for e-procurements Processes and procedures issues questions

	Excellent	Good	Not sure	Poor	Very Poor	Total
How do you describe the experience of vendors and suppliers to deal with the system?	14	17	11	1	3	46
How do you describe the system direct and indirect purchases operations?	10	16	12	4	5	47
How do you describe the speed response of decision maker for operations generally?	11	8	15	9	4	47
How do you describe your management support for e-procurement operations?	21	13	6	5	2	47
How do you describe the process methodology of the system?	13	11	10	7	5	46
How do you describe the supply chain management process of the system?	19	14	4	8	2	47
How do you describe the influence of your managers on e-procurement process?	15	17	9	6	0	47
How do you describe the documentation processes on the system?	17	22	5	2	1	47
What do you think about the system e-tendering process practices?	13	11	7	9	5	45
How do you describe the e-payment processes on your system?	11	16	4	11	3	45
What do you think about the system e-tendering honesty?	8	14	5	12	7	46

What do you think about your requirement on e-tendering stages?	19	20	3	3	2	47
How do you describe the e-Awarding practices of the system?	12	14	6	5	9	46
How do you describe the e-Awarding processes of the system?	9	16	8	11	3	47
What do you think of high management influence for e-Awarding process?	11	20	5	8	2	46
How do you describe the legal frame of e-contracting processes of the system?	14	16	3	9	5	47
How do you describe your response for e-contracting negotiation?	16	19	2	8	2	47
How do you describe the inventory processes on the system?	13	17	4	10	3	47
How do you describe the e-ordering processes in the systems?	18	15	5	7	2	47
How do you describe the system e-invoice efficiency?	17	12	3	9	5	46
What do you think about the system e-tendering process policies?	11	15	7	11	3	47
How do you describe the correction actions for all system processes mistakes?	10	13	11	7	5	46
What do you think about the system e-Auction process practices?	14	19	4	7	2	46
How do you describe your management response for lack of products or contracts information?	16	17	2	9	2	46
Total number of respondents for each item	332	372	151	178	82	1115
Percentage of response for each item	30%	33%	14%	16%	7%	100%