ADOPTION OF E-PROCUREMENT IN FOREIGN AIDED PROJECTS IN BANGLADESH

Dissertation submitted in partial fulfillment of the requirements for the Degree of

Masters in Procurement and Supply Management

Submitted by

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Masters in Procurement and Supply Management

BRAC Institute of Governance and Development

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April, 2015


Dedicated
To
My Son
MAHIR

CERTIFICATE

This is my pleasure to certify that the dissertation entitled **"ADOPTION OF E-PROCUREMENT IN FOREIGN AIDED PROJECTS IN BANGLADESH"** is the original work of Muhammad Anisur Rahman that is completed under my direct guidance and supervision. So far I know, the dissertation is an individual achievement of the candidate's own efforts, and it is not a conjoint work.

I also certify that I have gone through the draft and final version of the dissertation and found it satisfactory for submission to the Institute of **BRAC Institute of Governance and Development, BRAC University, Bangladesh** in partial fulfillment of the requirements for the degree of Masters in Procurement and Supply Management (MPSM).

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DECLARATION

I hereby declare that the dissertation entitled **"ADOPTION OF E-ROCUREMENT IN FOREIGN AIDED PROJECTS IN BANGLADESH**"submitted to the BRAC Institute of Governance and Development, BRAC University for the degree of **Masters in Procurement and Supply Management** is exclusively my own and original work. No part of it in any form, has been submitted to any other University or Institute for any degree, diploma or for other similar purposes.

Dhaka: April, 2015.

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MUHAMMAD ANISUR RAHMAN

List of Abbreviation

ADP-Annual Development Programme
ADB-Asian Development Bang
B2B -Business to Business
B2C -Business to Customer
BTRC- Bangladesh Telecommunication Regulatory Communication
BWDB-Bangladesh Water Development Board
C2C -Customer to Customer
CGFR- Compilation of General Financial Rules
CIPS- Chartered Institute of Purchasing & Supply
CPTU-Central Procurement Technical Unit
DAE-Department of Agricultural Extension
EDI -Electronic Data Interchange
e-GP-Electronic Government Procurement
ERD-Economic Relation Division
EPS -Electronic procurement system
GDP-Gross Domestic Product
GoB-Government of Bangladesh
IAPP-Integrated Agricultural Productivity Project
ICT -Information and Communication Technology
IDB-Islamic Development Bank
IMF-International Monetary Fund
IMED-Implementation Monitoring Evaluation Division
ISP- Internet Service Provider
IT -Information Technology
JICA-Japan International Cooperation Agency
LDC -Least Developing Countries
LGED-Local Government Engineering Department
PROMIS -Procurement Management Information System
PPA -Public Procurement Act
PPR -Public Procurement Regulatory
PMBOK-Project Management Body of Knowledge
NATP-National Agriculture Technology Project
TAM -Technological Acceptance Model
TCT -Transactional Cost Theory
TOE -Technological, Organizational and Environmental
TPB -Theory of Planned Behavior
TRA- Theory of Reasoned Action
UNDP-United Nations Development Programme
WB-World Bank

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ABSTRACT

Most of the big projects are being implanted in Bangladesh, financed by foreign aids from different international organizations. In FY 2014-15, the foreign aids amounting BDT 4472 (mn) was allocated in the national budget. E-procurement adoptions make purchasing activities more effective in terms of both time and cost.

The objective of the study was to assess the adoption of e-procurement and value addition to the foreign aided projects in Bangladesh.

Organizational-Technological-Environmental research model was used. Data collection techniques focused on questionnaire. Random sampling was used in this study.

The result showed that 88.89 % of the participants were from public entities and 11.11% were from others. Management's positive attitude toward adoption of e-procurement helped allocating enough resources from available funds that brought the business partner close to each other. It also increased the partner's firm efficiencies. E-procurementwas compatible with most organization's business operations and existing information but not with those of the supplier. Thecomplexity was much experienced on business partner operation site. Technological infrastructures in most organization were sufficient. Organizations were benefited from cost saving after implementing e-procurement process though the initial installation cost was not negligible. Pressure for adoption of e-procurement came from competition among organization but not from supplier demand. Core value of effectiveness and efficiency of e-procurement acted as normative pressure. Regulatory body of Bangladesh and foreign financing agencies had an influence over the adoption of e-procurement. But regulatory bodies did not perform active role as it was expected.

To ensure good governance, transparency, eradication of corruption and building people trust on procurement process is necessary. To achieving the goals "Digital Bangladesh Vision 2021" adoption of e-procurement in all foreign aided projects is crucially needed.

Keywords: e-procurement, e-GP, TOE framework, PPR; PPA.

Chapter-1: Introduction

Chapter-01: Introduction

1.0 Introduction

1.1Foreign Aid:

Foreign aid is the international transfer of capital, goods or services from a country or international organization to other country for the benefit of the recipient country or its population.

The structure and scope of today's foreign aid can be traced back to the developments of the international organizations, including the United Nations, IMF, and World Bank. After the World War II, United Kingdom, France, and other European powers had provided assistance to their colonial possessions. Since the end of the Cold War, the United States has used foreign aid as part of peacemaking or peacekeeping initiatives.Foreign aid also has been used as a tool to promote smooth transitions to democracy and capitalism in many countries. Several non-European governments for example, Japan also implemented their own aid programs after World War II. Japan had developed an extensive foreign aid programprimarily to Asian countries as compensation, damages made by the war. Much of Japan's aid came through procurement from Japanese companies, which helped fuel economic development in Japan. By the late 20th century, Japan had become one of the world's two leading donor countries, and its aid programs had extended not only to Asian but also to non-Asian countries.

The vast majority of Official Development Assistance (ODA) comes from the Organization for Economic Cooperation and Development (OECD) countries. Nearly two dozen countries include western European countries; the United States, Canada, Japan, Australia, and New Zealand make up the OECD'sDevelopment AssistanceCommittee (DAC). However other countries of the world also make significant assistance to DAC. In 1970s the United Nations, set a benchmark of 0.7 percent of a country's gross national income (GNI) as foreign aid. However, only a small number of countries (Denmark, Luxembourg, the Netherlands, Norway, and Sweden) reached

that mark. Although the United States and Japan have been the world's two largest donors, their levels of foreign aid have fallen significantly short of the UN's goal.

There are typically five types of foreign aids (i) Food Aid; (ii) Commodity Aid; (iii) Project Aid; (iv) Programme Support; and (v)Technical Assistance.

Project Aid: Project aid is mostly to meet the implementation costs of various development projects. This aid, however, not only finances capital imports but also provides for related commodity imports, e.g., cement for construction as also payments for services. It is customary now for project aid to finance a part of local currency expenditure on projects(Planning Commission, Bangladesh).

1.2 Foreign Aided Project in Bangladesh

Bangladesh is a leading developing country. The foreign investment in public, private and NGO sectors contributes enormously to national GDP of Bangladesh. Most of the larger projects are being implanted in Bangladesh financed by foreign aids like WB, JICA, ADB, IBD etc. In FY 2014-15, the budget allocated BDT 447225.9 million against 181 foreign aided projects in Bangladesh (Planning Commission, Bangladesh).

Funding for the development programme come from government revenue. Bangladesh government also takes Grant/Loan from international lending agencies or from foreign government. Foreign Grant/loan comprises an important part of Bangladesh Government's Annual Development Programme (ADB).

In the ADP of 2014-15 fiscal years the allocation is BDT 86000.00crore (8600 million) among them BDT44722.59 crore (4472 million)is foreign aided project which is 52% of the total ADP (Planning Commission, Bangladesh).

In the development work, procurement expenditure of Government in Bangladesh (GoB) accounts for about 21% of the national budget which is about 70 % to 90% of ADP allocation each year (CPTU 2014d).

1.3 Background of Procurement

Procurement reform in Bangladesh was initiated in1999. The aim of this reform was to introduce governance in utilization of state budget for procurement of all necessary inputs for its operational purpose, consequently it would increase the capacity of public procurement system to achieve openness, acceptability, and transparency. The reform is also intended to improve integrity and accountability through a more efficient and effective procurement process in public sector, especially in governmental purchases. There is strong evidence of progressive importance of procurement regime in Bangladesh.

The legal regime of public procurement in Bangladesh was based on procedures and practice that date back to the British era. For example, the Compilation of General Financial Rules (CGFR), originally issued under the British rule, which broadly outlined the principles governing government contracts, remained the primary legal framework for public contracts and procurements (World Bank 2002). The two contract documents such as Form No. 2908 for supply of goods, and Form No. 2911 for works were instrumental within this legal framework in GoB procurement functions. Buildings on CGFR principles, government department and autonomous public bodies and corporations developed their own rules and codes of practices for public contracts and largesse's to follow (Hoquen.d.)

The World Bank initiated a study on status of formal procurement process in 1999 which recommended a reform of procurement process in Bangladesh (World Bank 2002). Following this, the Public Procurement Regulations (PPR 2003) was introduced. The PPR 2003 which was the breakthrough in Bangladesh public procurement system was supported by the Procedures for Implementation of The Public Procurement Regulations 2003. In 2006, Public Procurement Act (PPA 2006) came into force and later the Public Procurement Regulations (PPR 2008) was formed.

In this introduction chapter the researcher introduced the on-going research debates and trends on e-procurement adoption in Bangladesh, statement of the problem, the research objectives and research questions. The chapter also discusses the relevance of this study to government and public procurement regulatory authority, private entities, and academicians.

1.4 Current debate in adoption of e – procurement

E-procurement is not a new process in the developed countries; however Edie et al (2007)mention the main challenges for most developing countries to adopt e-procurement included;

(i) Legal difficulties such as lack of specific legal regulation, different national approaches and validity, enforceability and evidentiary problems

(ii) IT difficulties, the reason might be due to high costs involved in installing the proper IT system to have all the benefits of e-procurement process

(iii) Lack of security, security is a major concern when working on the internet.

Alam, 2012 also stated the challenges to implement e-GP in BWDB are as (i) Computer Competency, (ii) Lack of Bidder's Interest, (iii) Lack of Bidder's Interest, (iv) Software Problem, (v) Hacker, (vi) Electricity, (vii) Powerful Person of Government may create Obstacle, (viii) Logistic Support, (ix) Confidentiality, and (x) Central Databank

1.5 Statement of the problem

Before the advent of the internet, procurement functions were perceived by many to be routine and repetitive processes. This perception had been modified by the expanding capabilities of the World Wide Web in recent years. Most organizations used to have separate procurement offices, or preferred to assign people within the individual departments to specific procurement tasks. These processes had been labor-intensive, dominated by paper, thereby making them costly and inefficient.

Various business concerns had found it both appropriate and inevitable to embrace the use of internet facilities to enhance the performance of their tasks **(**Akintola & Oyediran, 2011**).** The increasing need for corporate procurement functions to streamline its processes and create more value to the business is pushing procurement managers to find new ways of making purchasing more efficient.

Over past few decades, e-procurement had been widely believed to be an avenue for integrating communities and countries into a global market economy. E-procurement in the public sector

had a lot of promise. Governments around the world had set very ambitious goals and are running programmes with considerable financial volume for the implementation of electronic service delivery in the public sector (Georg, 2010).

A government could negotiate good deal with suppliers when it is able to accumulate all of its purchasing information and negotiate as an entity. The negotiated agreements when made available in the e-procurement system can be accessed by the end users by logging into the system via the internet. The end users could place the order electronically utilizing the negotiated deals. The e-procurement system when interconnected with an organization's internal financial system minimizes the transaction processing costs. E-procurement via automating several administrative procedures and by enhanced monitoring abilities minimizes opportunistic behavior among purchasing officials (Ramanathan, 2004)

Lack of abundant and detailed elaborated research and findings on the aspect of e-procurement in Bangladeshis interrupting adoption of e-procurement in the public sector. More additional information about the capability of adoption technological-organizational-environmental framework is not clear in Bangladeshi public institute.

The main target of this research work is at filling the gap by focusing on those factors influencing adoption of e-procurement in foreign aided projects in Bangladesh

1.6 Objective of the study

1.6.1 General Objective

To assess the adoption of e-procurement in foreign aided projects in Bangladesh

1.6.2 Specific objectives of the study

i. To examine the organizational drivers in adoption of e-procurement in foreign aided projects in Bangladesh

ii. To determine the technological drivers in adoption of e-procurement in foreign aided projects in Bangladesh.

iii. To identify environmental drivers in adoption of e-procurement in foreign aided projects in Bangladesh

1.7 Research Questions

i. What are organizational drivers in adoption of e-procurement for foreign aided projects in Bangladesh?

ii. What are technological drivers in adoption of e-procurement for foreign aided projects in Bangladesh?

iii. What are environmental drivers in adoption of e-procurement for foreign aided projects in Bangladesh?

1.8 Significance of the study

The researcher believes the study would benefits the following groups:

1.8.1 Government and Procurement regulatory authorities

This research would provide understanding to government and policy makers of procurement in foreign aided projects in Bangladesh the supportive, influencing and accelerating factors in the process of adoption of e-procurement. The results of the study would encourage the government and responsible authorities to take necessary action to address challenges facing the adoption of e-procurement in foreign aided projects especially technological challenges, organizational challenges and environmental challenges

1.8.2 Academicians

This research would provide general understanding of e-procurement adoption in foreign aided projects in Bangladesh context. Also the research work would provide procurement academicians useful knowledge on technological factors, organizational factors and environmental factors affecting adoption of e-procurement and would discover issues which would need research on it. This would also work in bridging the gap between theories and practices of the application of e-procurement.

Chapter-2: Research Methodology

Chapter-02: Research Methodology

2.0 Introduction

Research methodology included, (i) the studydesign (ii) area of the study (iii) sample size (iv)sampling techniques (v) methods of data collection (vi)data analysis (vii) data reliability and (viii) data validity

2.1 Frame work of the research

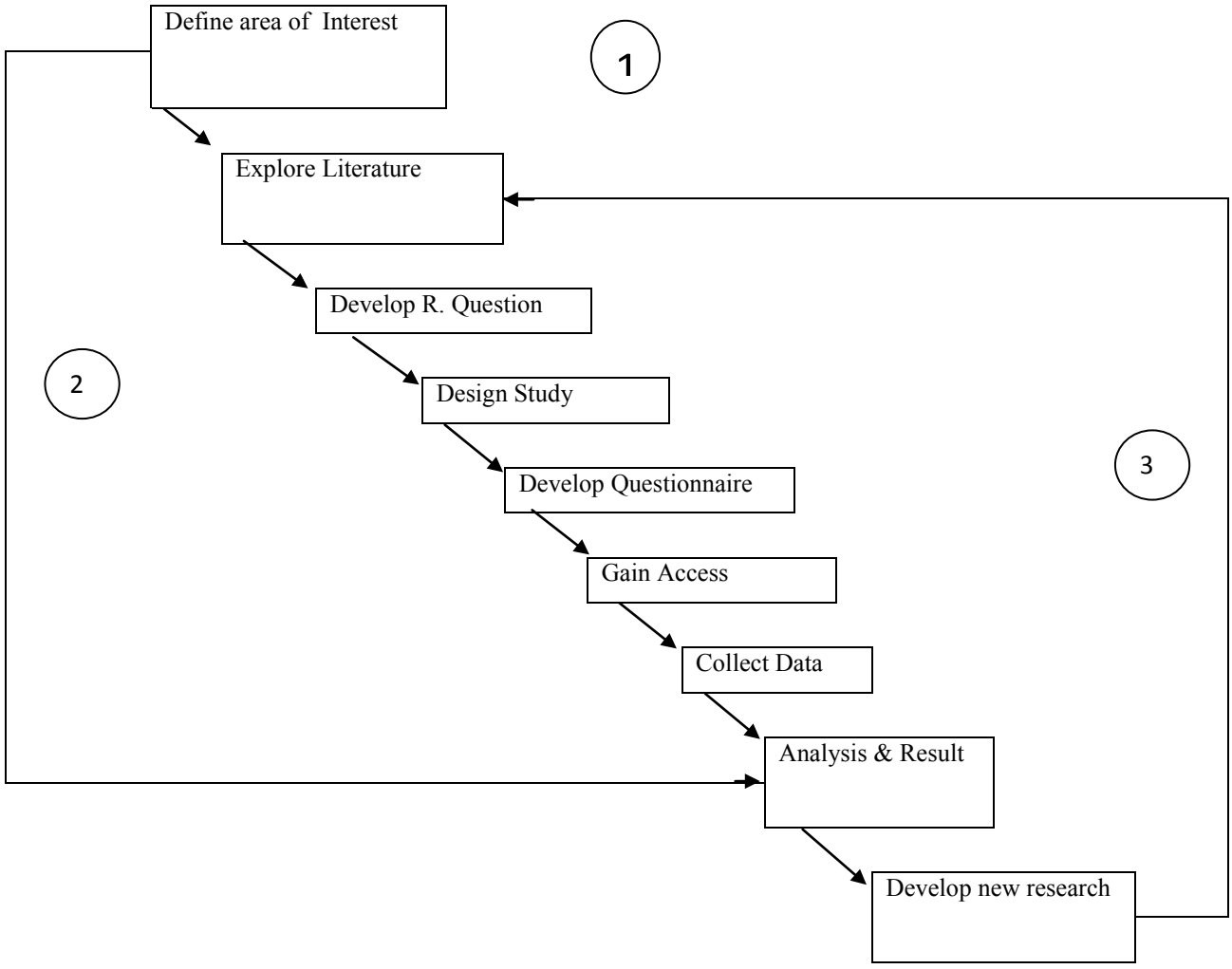


Figure 1: Methodology Framework of the research (Adopted from Alan, 2010)

2.2 Study design

A research design couldbe regarded as an arrangement of conditions for collection and analysis of data in manner that aims to combine relevance with the research purpose. For this research,qualitative approach was most suitable, as the purpose of this study is to gain a clear understanding of the adoption of e-procurement in foreign aided project in Bangladesh. The purpose of qualitative methods were to explore how the reality of the adoptionof e- procurement in connection with the technological – organizational-environmentalmodel

2.3 Data Collection Methods

According toKothari, (2004) there were two types of data primary and secondary. 'The primarydata were those which were collected for the first time and the secondary data werethose which had already been collected by someone else and which had already beenpassed through statistical processes

2.3.1 Primary Data

Primary data are first-hand information data collected specifically for the research project being undertaken. Primary data can be collected through observation, interviews, or the use of questionnaires (Saunders et al., 2003). For the purpose of this study, primary data was gathered mainly through aquestionnaire that was administered to a different response but purposively with therequired information.

2.3.2 Questionnaire

According to Saunders et al, (2003), questionnaires are defined as structured interviews taken face to face or by telephone as well as those in which the questions were answered without an interviewer being present. Saunders et al (2003) views the questionnaire is a very strong data collection tools within the survey strategy because each respondent is asked to respond to the same set of questions. It is quite easy in a large number of samples. Questionnaire permits wide coverage for minimum expense both in terms of money and effort. Questionnaires can draw more candidate and objective reply since the people don't have fear to be exposed (Richard

&Joseph, 2012). There were number of issues to be considered when the researcher wanted to design aquestionnaire. Some of them were:

- Questionnaire should be short and simple
- Attractive design of questionnaire set
- Design questionnaire according to logical and sequential structure
- Divide the questions into different parts that would correspond to the various issues that theresearcher wants to investigate into.
- Ask the easy questions first and the hard ones last.

To satisfy the conditions in the chosen subject area, the researcher divided the questionnaire into distinct parts which were:

- Part I: General organization information
- Part II: Innovation characteristics (Technological characteristics, organizational characteristics, and environmental characteristics)
- Part III: Perceived benefits

2.4 Sampling techniques

It is relevant to do research by using a sample rather than examining an entire population. It saves time, cost and human resources. For the purpose of thisstudy non-probability sampling was used to obtain a sample.

2.4.1 Non-probability Sampling

Non-probability sampling was that sampling procedure which did not afford anybasis for estimating the probability that each item in the population had of being included in the sample (Kothari, 2004). The sampling technique used for this study was a non-probability sampling with a mix of judgmental and purposively sampling. Judgmental sampling according to Saunders et

al, (2003) argue that self-selection sampling occurs when you allow each case, usually individuals, to identify theirdesire to take part in the research.

In this study, the researcher requested his classmate and colleagues to give their email address and also requested them of another email address those who are in working in the procurement activities in another organizations. The research area was selected Dhaka city because maximum head office is in Dhaka capital based. The respondent of this study was selected from different intellectual background and those who are directly involve in the procurement activities of public institutions and developmental UN agencies which is financed by foreign aids. The researcher sent the questionnaire with a request letter through their email. The project criteria was selected those are of minimum four years project duration and project worth/capital investment is around BDT 3500 million.

2.4.2 Sample Size

This refers to the number of items to be selected from the universe to constitute asample. The size of sample should neither be excessively large, nor too small. Itshould be optimum. An optimum sample is one which fulfils the requirements ofefficiency, representativeness, reliability and flexibility (Kothari, 2004).Data were collected from foreign aided projects inLGED, UNDP, NATP, IAPP, DAE andLGSP which are financed by WB, IDB, ADB, WB-OPEC and JICA etc. the researcher obtained 27respondents who were purposively selected

2.5 Data Analysis

Primary data collected from the questionnaires were summarized; coded and processed byusing MS Excel.Qualitative methods of data analysis were being used in analyzing the data collected. The methods used included descriptive analysis, frequencies and percentages to facilitate description of the characteristics of the sample.

2.5.1 Research Quality Issues

Before data entry, examination of validation of the research was done to ensure content validity and reliability. This study used qualitative methods of data analysis. Descriptive statistics of

frequency and percentages was used to describe the basic features of the data and to provide simple summaries about the sample and the measures.

2.5.1.1 Validity

The data collection instrument wasdesigned in such a way that they measure opinions of respondents towards adoption of e-procurement to the foreign aided projects in Bangladesh. The questioner was taken from a study that had been performed for the same purpose of research in Tanzania (Mohammed A, 2013). Issues developed fromconceptual framework (Technological characteristics, organizational characteristicsand organizational characteristics) were compared with issues obtained duringanswers obtained from questionnaires.

2.5.1.2 Reliability

Reliability in qualitative research means that the researcher must indicates the datacollecting method; assure that data are not simulated, data collection has been done accurately and if another researcher using the same method to collect the data, almost same or similar findings will be achieved. In the qualitative research, the researcher finally uses a subjective interpretation to analyze collected data, to increase the reliability in such research, the interpretation method should be mentioned(Mohammad, 2008). Data reliability is a cornerstone of making a successful and meaningful study. In order to collect reliable data, the researcher should design the questionnaires through an elaborate procedure which involved a series of revisions under the guidance of the study supervisors to ensure that fieldwork was conducted by use of high quality data collection.

2.5.2 Response Rate

The researcher succeeds to distribute 95 questionnaires in total to the public institutions and UN bodies those who are implementing foreign aided project. The researcher managed to collect only 27 questionnaires which wasequivalent to28%.

Chapter-03: Review of literature

Chapter-03: Review of Literature

3.0 Review of Literature

Many studies have been conducted since development of the concept of e-commerce around the globe. The flow of digitalization touched Bangladesh on time. Due to the growing concerns about efficiency in procurement process in terms of fairness, transparency, better visibility, cost reduction, timelines, accuracy, competitiveness etc. for private service and provisions for level of service for public sector, modernization of the procurement system and implement enhanced governance became prominent in this field. As far as governance in public procurement is concerned, along with improvement of efficiency in utilization of public financial resources, their effectiveness could also be enhanced through the reform in procurement systemsand now leveraged it through the widespread use of information and communication technology (ICT); thus the electronic government procurement (e-GP) is being introduced in many countries.

Bangladesh is particularly known for long delays in the process of awarding contracts. Implementation Monitoring Evaluation Division (IMED) compiled data on the elapsed number of days from bid invitation to award in 148 procurement cases in FY98. The normal time allowed is 150 days. The review showed that the awards were made in 240 days or less in only 29% of the contracts, another 28% were awarded within a year, and the rest took 500 days or more. Procurement delays increase costs, defer benefits, deter good firms from bidding and are often indicative of corrupt interference (Transparency, 2009).

In Bangladesh contract awards provide opportunities for procurement. There are reports of wide-ranging corruption, political control and pressure from trade unions in the procurement process. Public trust in the process is generally absent. The World Banks evaluation of Bangladesh concluded that the implementation of procurement process is far from satisfactory, due to the following problems, (1) poor advertisement, (2) short bidding periods, (3) poor specifications, (4) nondisclosure of selection criteria, (5) contract awards by lottery, (6) one-sided contract documents, (7) negotiations with all bidders and rebidding without adequate grounds, occurrence of corruption involving donor agency are not uncommon at nationally or globally and or other

levels. The interesting finding is that procurement happens to be one of the lucrative areas, where corruption of above nature, therefore, the quality of public administration must be improved and accountable, which are an integral part of good governance(Shakeel, 2010).

Hoque (n.d) recognized the procurement law in Bangladesh as modern, but he expressed concerned about the level of accountability, transparency and efficiency in public procurement were far from satisfactory. Taking the experience of some Southeast Asian Nations, he noted from Jones (2007) that some common problems with public procurement systems are fragmented procurement procedures; lack of professional procurement expertise; absence of open competitive tendering, especially for foreign suppliers; widespread corruption; and the lack of transparency.

Alam, SR.(2013) cites at NAPM (2001), the main reasons behind the poor adoption of e-procurement system, are the overall ineffectiveness of the business process, the difficulties of integration with back office systems and the lack of common standards. He stressed on perceiving ICT by public institutions as the only solution. He highlighted the remarks by Ontology.org that the both public institutions and vendors would benefit from a common platform where the former can get information to make a purchase decision and the later can reach potential customers more than usual.

GeBIZ (2005) reported that e-procurement technology performance of countries like Bahrain, Norway, Italy, Singapore, Turkey, India, and Malaysia indicate it helped them to increase competition among bidders in public works and services evidenced by eighteen countries' governments were obtaining best quality and price ratio after implementing public e-procurement technology. Peru, Pakistan, New Zealand, Italy, Fiji, and Hong Kong (China) also obtained best quality of governance by implementing e-procurement in government level. Singapore government using GeBIZ on-stop e-procurement portal which enhance transparency in government procurement, easy access to information, increase procurement efficiency, global reach among the bidders and suppliers, and increase more competition among bidders.

Somasundaram wrote for ADB (2011), government departments in India those implement e-GP system reported the key benefits such as average number of bidders per tender were increased;

tender premium had decreased by about 15%; and the cycle time taken to evaluate tenders was decreased.

Leipoid (2007) appraised that effective e-GP program could offer the opportunity of adding value to the relationship between government buyers and private business through delivering a broad range of benefits to taxpayers, the economy and the community generally. And the online technology provided the potential to significantly reform the accountabilities and performance of public procurement systems. An e-GP system could automate the procurement procedures and implement control the processes in which neither purchasing agencies nor bidders from the public procurement process. Thus e-GP helped governments to reduce the opportunities foe corruptive, fraudulent, collusive, and even coercive. Moreover, the bad practices (attacking bidders on their way to the bid submission, manipulating access to procurement notices, submitting overprized bids, bypassing mandatory public procurement procedures, colluding with competitors, or bribing public procurement officials etc.) could be prevented by using e-GP systems. However, he considered e-GP as not the guarantor for improved governance and reduced corruption. He mentioned the need for strong political will, leadership, and management to design and implement appropriate e-GP systems which would ensure a maximum of transparency and compliance. He also mentioned about the efficiency gains (reduced costs and time) as the key benefits of e-GP; the technologies provide a high level of security through encryption and digital signature. Further, the introduction of e-GP in a country activates the majority of suppliers to get ready and connected for the web-based government business. In doing so, public procurement laws provide support to e-Procurement a basis for policies and procedures as part of legislation up to more comprehensive and prescriptive way.

3.1 THEORETICAL STUDIES

3.1.1 Introduction

In this chapter researcher described theoretical part, adoption theories, and empirical studies andresearch model. The review of related literature was aimed at providing the necessaryframework within which the problems was presented, analyzed and interpreted.

Comprehensive reviews of the theories had been clarified. Those theories explainede-procurement adoption include:

☐The Institutional Intervention Theory (King et al, 1994);

☐Transaction Cost Theory (TCT) (Williamson, 1985)

☐Innovation Diffusion Theory (IDT)(Rogers,1983,2003)

☐Theory of Planned Behaviour (TPB)(Ajzen,1991) and

☐Theory of Reason Action (TRA) (Ajzen and Fishbein, 1980)

3.1.2 Definition of Terms

3.1.2.1 Project:A Project is a temporary endeavor undertaken to create a unique product, service, or result (PMBOK, 4th edition).

3.1.2.2 Subprojects: Projects are frequently divided into more manageable components Or 'Subprojects" – although the individual subprojects can be referred to as projects and managed as such (PMBOK, 4th edition).

3.1.2.3 Program: A program is a group of related projects managed in a coordinated way to obtain benefits and control, not available from managing them individually (PMBOK, 4th edition).

3.1.2.4 Portfolio: A portfolio refers to a collection of projects, programs, sub portfolios, and operations managed as a group to achieve strategic objectives (PMBOK, 4th edition).

3.1.2.5E- Business

E-business is defined as internet-enabled tools that facilitate supply chain integrationwith key suppliers and customers by helping them execute transactions, coordinateand collaborate for achieving better supply chain performance (Stanislav, 2012).

3.1.2.6E-commerce

E-Commerce is about doing business electronically. It is based on the processand transmission of data, including text, sound and video. It encompassesmanydiverse activities including electronic trading of goods and services, online deliveryof digital content, electronic fund transfers, electronic share trading, electronic billsof lading, commercial auctions, online sourcing, public procurement, directconsumer marketing, and after-sales service (Jobodwana,2009). Electronic commerce (e-commerce) is the wireless transfer of business information and transaction via electronic data interchange(EDI), e-mail, electronic bulletin boards, fax machines and electronic funds transfer (Emmanuel,2012)

3.1.2.7 E-Procurement

Many authors define E-procurement in many ways. Some are given below:

1. E-procurement is defined as the digitalization of important aspects of thepurchasing process, such as search, selection, communication, bidding or awarding of contracts (Sun et al,2012)

2. E-procurement means, the integration of technological tools into purchasing activities taking place within supply chains while performing their operations (Hatice& Mehmet, 2012)

3. E-procurement is to use the internet, to operate the transactional aspectsof requisitioning, authorizing, ordering, receipting and payment processes for therequired services or products (CIPS, 2009).

4. E-procurement incorporates all purchasing activities such as purchaser request, authorization, ordering, delivery and payment by utilizing electronic means such as internet, web technology and e-commerce (David, 2009)

5.E-procurement is defined as purchasing through internet and other information networks(Malcom, 2009)

6. E-procurement means the use of information technologies to facilitate business tobusinesspurchase transactions for materials and services (Wu et al.,2007).

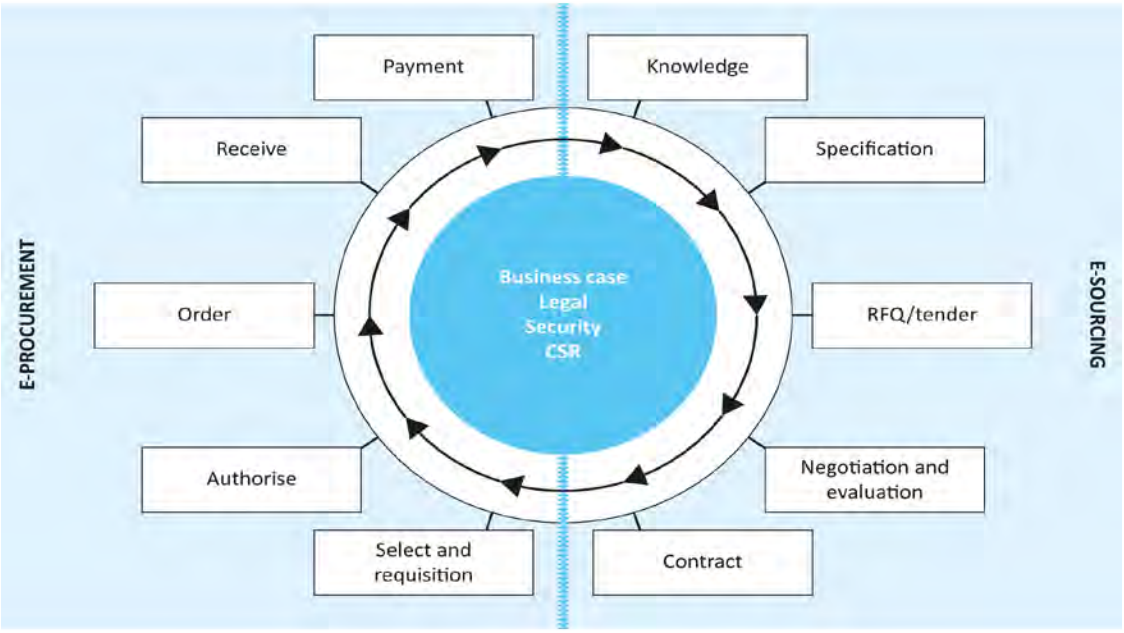
3.1.2.8 Value

Here the value means the total value that is created in e-procurement transactions regardless of whether it comes from the firm, the customer, or any other participant in the transaction process (Mandela, 2007).

3.1.3 e-Purchasing Process

Offering wider access to knowledge and information, especially from global sources. The internet offers unrestricted, constant access to formal information resources via websites, databases, libraries, expert agencies etc. Facilitating 24/7 global business, the internet and e-mail allow companies to offer service and maintain communication across office hours, international time zones and geographical distances. Supporting paperless communications (e.g. electronic mail messages), business transactions (e.g. electronic ordering and payment) and service delivery (e.g. web-based information and education services). Creating 'virtual' relationships, teams and organizations, by making location irrelevant to the process of data-sharing, communication and collaboration. CIPS defines e-purchasing as 'the combined use of information and communication technology through electronics means to enhance external and internal purchasing and supply management process. E-procurement specifically address the 'purchase-to-pay' stage of the purchasing cycle: the stage from when a purchase has been approved to the receipt of the product, and then the payment for the product. The term 'e-sourcing' refers to the earlier stages in the process, when a need is identified and requisitioned, the market is surveyed, and suppliers are appraised and pre-qualified, and relationships with suppliers are set up.

Figure 2: A typical e-Purchasing Process



Source: CIPS sourcing module 2014

3.1.4 Components of e-procurement

Different authors came up with different view on components for adoption of e-procurement:

3.1.4.1 E-sourcing

E-sourcing is defined as a process of finding new possible suppliers using the internet in general or more specific marketplace. According to Paulo E-sourcing increase news sources of supply which ultimately increases the competitive forces during the tendering process (Paulo, 2009). E-sourcing discovered and accessed new suppliers through internet and web technology (Damavandi, 2011). E-sourcing or contract management encompassed all aspects of the commercial process from market analysis, advertising, tendering including auctions, evaluation, contract negotiation, award and management (MoD e-procurement Strategy and Plan, 2008 - 2012).

3.1.4.2 E-Catalogs

E-Catalog is an important concept for e-Marketplaces. In definition, e-Catalog is an organized descriptive list of goods or services made available by vendors to potential buyers via the

Internet. This online database of goods and services from multiple vendors facilitates the sale of goods and services by providing information about them. This information should both include technical specifications, price, picture, etc. and allow comparison with similar goods and services.

There are three functions in e-Catalog are (i) Creating the e-Catalog, (ii) Managing the content of e-Catalog; and (iv) Searching and finding goods and services

Successful e-procurement depends on highly organized and searchable catalogues and the real-time management of content. However creating and maintaining searchable and usable e-Catalog is an intensive and time consuming task.

3.1.4.3 E-tendering

E-tendering is defined as the process of sending request for exchange (RFX) to suppliers and receiving the responses via the Internet. The data concerned e-tendering focuses on the product or service. In this process, there may be preselected criteria set up for a possible initial screening process where a selected number of suppliers qualify for the negotiation phase. That process phase does not include closing of the contract. Supplier 'stake place in the invitation is promoted to next tender phase of the procurement process (Paulo, 2009).According to Damavandi, (2011), e-tendering requested of information and price from suppliers and receiving feedback electronically.

3.1.4.4 E-awarding

That involved secure tender opening (e.g. being only able to open tenders which hadbeen submitted by the closing date and time), tender evaluation and tender award. That is facilitated by electronic procurement system (Daniel, 2009)

3.1.4.5 E-contracting

That involves the establishment of an agreement with suppliers and can result of e-tenderingand e-award stage for the next e-procurement process (Daniel, 2009)

3.1.4.6 E- Auctioning

E-reverse auctions enabled the purchasing company to buy goods and services from the supplier that had the lowest price or combination of lowest price and other conditions as well via internet technology. The auction was most often traded in real-time and ends in a closing bid between the buyer and the supplier. Took place in the negotiation phase of the procurement process. (Paulo, 2009)

3.1.4.7 E-Signature and Digital Signature

While adoption of e-signatures has become widespread in the private and public sector, consumer awareness has been, in some ways, limited by a lack of understanding as to how digital signature technology fit into the picture. While electronic signatures have been recognized as a legal concept in federal law since the year 2000, there is anecdotal evidence to suggest that to the average person, a digital signature is the same thing. However, this is certainly not the case and the terms are not definitely and not interchangeable.

E-Signature: An electronic signature is, like its paper equivalent, a legal concept. According to the U.S Electronic Signatures in Global and National Commerce Act, an e-signature is an "electronic sound, symbol, or process attached to, or associated with, a contract or other record and adopted by a person with the intent to sign a record.

Digital Signature: A digital signature, on the other hand, refers to the encryption / decryption technology on which an electronic signature solution is built. A digital signature alone is not a type of electronic signature. Rather, digital signature encryption secures the data associated with a signed document and helps verify the authenticity of a signed record. Used alone, it cannot capture a person's intent to sign a document or be legally bound to an agreement or contract.

3.1.4.8 E-Payment

The payment provisions in e-GP allows tender security & performance security to online through Banks; and registration fees, tender documents fees, renewal fees to pay through payment gateway. It facilitates a tender dropping system to virtual tender box. The e-GP has been supported by an 'Online Helpdesk System' on board.

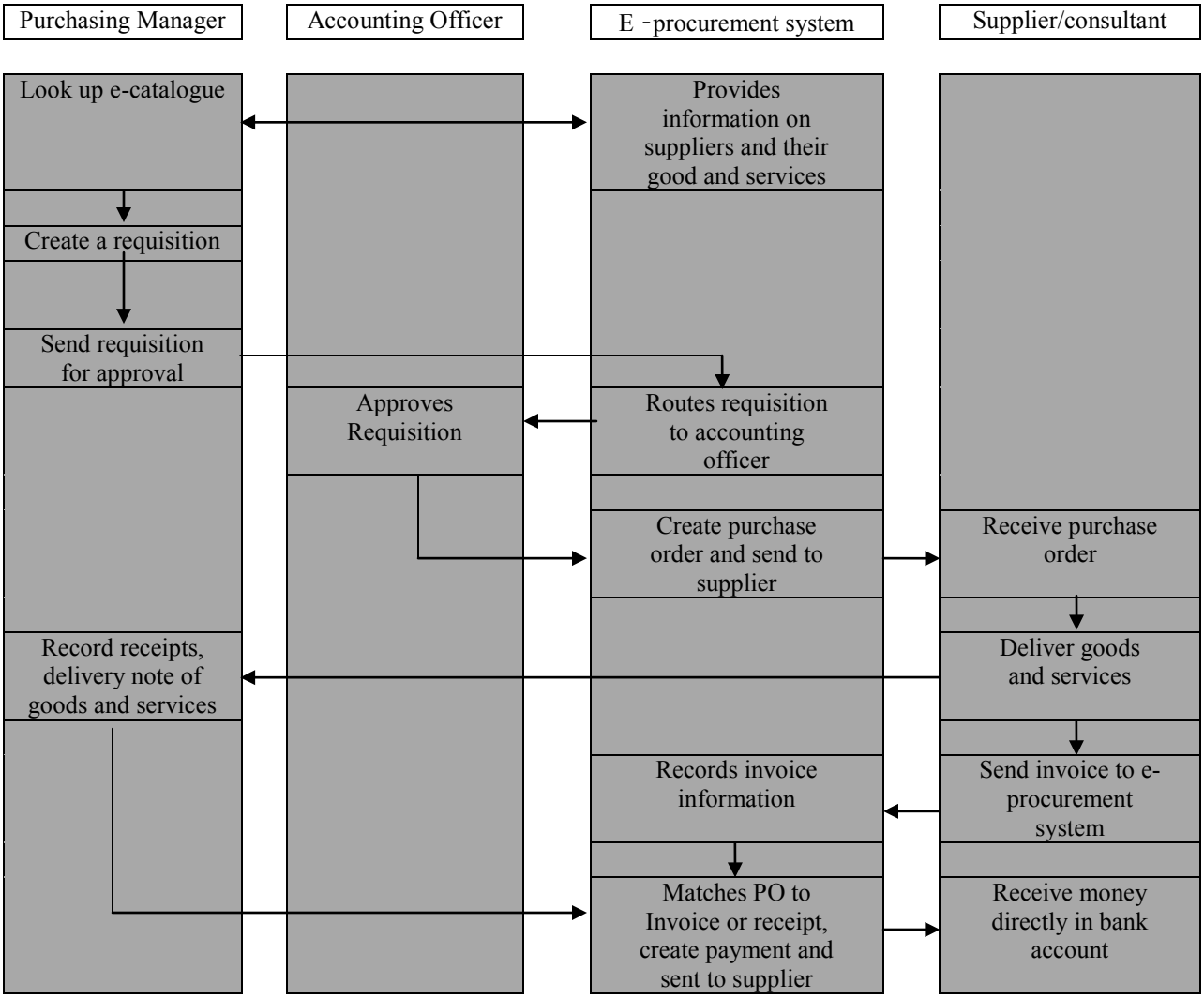
3.1.4.9 E-Informing

E-informing is a part of e-procurement that did not involve transactions or call offs but instead it handled gathering and disseminating of purchasing related information. E-informing is hard to link to one single phase in the procurement process. It takes place anywhere in the procurement process (Paulo, 2009).

3.1.5 E-procurement system model

E-procurement system referred to a system which automates all activities inprocurement process such as storing requests, approval management, authorization and interfacing with company financial system (Damavandi, 2011). The system offered a secure, efficient and transparent preparation and administration of all tender-related documents, removing unnecessary paper work and providing secure data flow throughout the entire process. At the same time, it guaranteed the secrecy of offers,and at the opening time of the procedures, allowed the simultaneous submission ofthe offers. Moreover, the e-procurement system generates reports of ex-post monitor of procedures and reducing the possibility of corruptive deviations. It constructed in such a way as to maintain at all times a copy of all data and all actions performed on it (Kashta, 2009). The e- procurement system reduced the application time, facilitated and standardized the process of introduction with thetender conditions (American Chamber of Commerce in Albania, 2010).

Figure 3: Model of e-procurement system



Sources: (Adopted from Samir, 2008)

3.1.6 Benefits of e-procurement

Since the Internet starts acting as a tool of supply management in the mid-1990s, enterprises tried to get the benefits from implementing e-procurement. They are like: cost reduction, process streamlining, improved contract compliance, increased spends under management and more (Aberdeen Group, 2005).

The following were main benefits identified by different authors:

(David, 2009)

- Reduction in cost and procurement cycle time
- More effective budget control by limiting the expenditures and enhanced reporting
- Minimizing ordering and administrative errors
- Enabling originator to concentrate on strategic aspect of purchasing
- Decreasing the product price
- Enhanced information management
- Better payment process (if it is integrated with e-procurement)

(Joni, 2009)

- Reporting
- Centralized purchasing
- Transparency of purchasing and costs
- Corporate-wide cost category control
- Budget overdraft control
- Reduced mistakes and manual work

(Chipiro ,2009)

- Price reduction
- Improved contract compliance
- Shortened Procurement cycle times
- Reduced administration costs
- Enhanced inventory management
- Improved visibility of customer demand
- Improved visibility of supply chain
- Reduced operating and inventory costs
- Negotiated unit cost reduction
- Increased accuracy of production capacity
- Enhanced decision making

3.1.7 Risk of e-procurement

E-procurement had a lot of benefits but still it is not totally free from all risks

3.1.7.1 Internal business risks:

Adopting e-procurement system in a firm needs the integration of this system with another information infrastructure of this institute. All the systems such as accounting, human resources, asset management, inventory management, accounts payable, production planning, and cash management systems must be integrated before performing the e-procurement process (Hatice& Mehmet, 2012). Implementing an e-procurement solution not only requires that the system itself successfully performsthe purchasing process, but also it would have to integrate with the existing information infrastructure (Parida et al, 2006)

3.1.7.2 External Business Risks

E-procurement solutions do not need only internal information systems integration but also needs interactions with external constituencies; mainly customers and suppliers. External constituencies are needed to develop internal systems that facilitate the communication through electronic means, an issue that demands technology investments as well as incentives for these constituencies. E-procurement process would be successful only if suppliers have an access to the internet and would have to provide sufficient catalogue choices to satisfy the requirements of their customers. Suppliers, especially in low margin industries, maybe hesitant or even unable to meet such demands without guarantees of future revenue streams (Parida et al, 2006, Hatice& Mehmet, 2012)

3.1.7.3 Technology Risks

Many companies don't have clear understanding of which e-procurement technologies best suit the needs of their company. The significance of this risk factor seems to suggest the need for clear and open standards that would facilitate inter-organization e-procurementtechnologies. Without widely accepted standards for coding, technical, and process specifications, e-procurement technology adoption would be slow and failto deliver the benefits as excepted (Parida et al, 2006, Hatice& Mehmet, 2012)

3.1.7.4 E-procurement Process Risks

E-procurement transactions are performed through electronic forms which are transferred between buyers and sellers. Therefore, the security of that system would have to be maintained

by the two parties of this commerce. Unauthorized malicious interventions would have to be detected and counteracted by the firm (Hatice& Mehmet, 2012). Organizations must be confident, that unauthorized actions would not disrupt production or other supply chain activities when committing to e-procurement process (Paridaet al, 2006)

3.2 Adoption Theories

Bangladesh is a developing country. Only few studies have been performed about the adoption and outcome of E-procurement in least developing countries (LDC). In developing countries there are a category of states that portray different characteristics and these counties face specific challenges for each. To understand thesecharacteristics which are at the heart of the question whether developing countries would adopt e-procurement or not, a thorough understanding of technology adoption and structural behavior and patterns in developing countries is required. For the purpose of this research the researcher used both organizational and individual adoption theories. The research was conducted in public institutions projects funded by foreign aids which were characterized by organization and individual characteristics.

3.2.1 Organizational Adoption Theories

Adoption decision of an organizational depends not only on adopted innovation but also on the adopting organization. The factor model suggests that an organization needs to weight innovation and organization dimensions both at a time because the equality of technological superiority and fit with the adopting organization was not automatically guaranteed. Structured, members' attitudes toward technology, and decision making practice can be important organizational characteristics of adoption decision making (Frambach, 1999)

3.2.1.1 Institutional Theory (IT)

Institutional theory is deemed to be the most appropriate theory to understand the factors that enable the adoption of e-procurement in an organization and suited to understand the behavior of public organization. An institution is any standing social entity that exerts influence and regulation over other social entities (King et al, 2003). An institution that adopt new technology like e-procurement are government authorities, international agencies, professional and trade industry association, research-oriented higher education institutions, trend setting corporations,

multinational corporations, financial institutions, labororganization and religious institutions.. The model shows the dimensions of institutional action toward adoption of e-procurement into supplypush side and demand pull side. This model is adopted from King et al, (2003)

Table 1: Dimensions of Institutional Intervention

	SUPPLY PUSH	DEMAND PULL
INFLUENCE	KNOWLEDGE BUILDING Funding of research projects KNOWLEDGE DEPLOYMENT Provision of education services SUBSIDY Funding of development of prototypes INNOVATION DIRECTIVE Direct institutional operation of production facilities for innovation I	KNOWLEDGE DEPLOYMENT Training programs for individuals and organizations to provide base of skilled talent for use SUBSIDY Procurement of innovative products and service MOBILIZATION Programs for awareness and promotion II
REGULATION	III KNOWLEDGE DEPLOYMENT Require education and training of all citizens SUBSIDY Modification of Legal, administrative or competitive barriers to innovation and trade STANDARDS Establishment of standards under which innovative activity might be encouraged INNOVATION DIRECTIVE Establishment of requirements for investment in R&D by organizations	IV SUBSIDY procurement support for products and process that facilitate adoption and use STANDARDS Require conformance with other standards that essentially mandate use of particular products or process INNOVATION DIRECTIVE Require that specific innovative products or process be used at all times

Source: King et al, (2003)

King et al, 2003, divided the cell into four quadrants with the specific action/strategies, force that an organization needs to ensure the adoption of e-procurement. Institutional Theory (IT) divided

the organization into four main quadrants which are (i) Influence –Supply push quadrant**,** ii**)** Influence-Demand pull, iii) Regulation –Supply push and iv) Regulation-Demand pull. Influence in an institution means exerting of persuasive control over the practice, rules, and belief of those under the institutions. Supply push means the organization produces innovative products whichare need to be adopted new technology (King et al, 2003).The following are the actions which should be implemented under four above quadrant:

- **Knowledge Building**: It was undertaken to provide the base of scientific andtechnical knowledge required to produce and exploit innovation. Research projects are used as the main tool to create knowledge in an organization. The organization directly or indirectly funded knowledge building programmesin order to facilitate the innovation and adoption of e-procurement
- **Knowledge Deployment:** Stimulation of dissemination of new knowledge either in the form of knowledgeable individuals and organization or in theform of repositories of knowledge in schools and libraries. The majorobjective of knowledge deployment is to stimulate the dissemination ofnew knowledge (i.e. e-procurement) among adopting organizations (King et al., 1994).
- **Subsidy:** A subsidy is provided whenever an institution uses its resources orauthority to defray the otherwise unavoidable costs or risks to innovators andusers in the process of innovation and diffusion in use. It targets activity toachieve a specific end. The government may set aside special funds and other incentives like provision of electrical power and training to enhance the adoption of e-procurement
- **Mobilization:** Basically it means the encouragement of decentralized actors and organizations to think in a particular way with respect to an innovation. The most common instruments for mobilization is promotion and awareness campaign. Building awareness influences to a large extent the decision to adoption of e-procurement in an organization.
- **Standard setting**: These are form of regulations set to constrain options of decentralized actors and organizations in line with larger social or institutional objectives. They are voluntary or a force of law. Standard appears as an instruments for institutional intervention, in innovation in several ways. They stimulate or speed up investment in innovation (i.e. e-procurement)
- **Innovation Directives**: A command to produce innovations, to use them, or to engage in some activity that would specifically facilitate production and/or use. Some forms of innovation

directives are included to require organizations to alter their structures or operations in way that affect innovation and diffusion, establishment of requirements for investment in R&D by organizations and require that specific innovative products or process to be used at all times. A government through its statutory power can provide specific norms that regulate the adoption of e-procurement.

3.2.1.2 Transaction Cost Theory (TCT)

Transaction Cost Theory had been developed to analysis the "comparative costs of planning, adapting, and monitoring task completion under alternative governance structures". The unit of analysis in TCT was a transaction, which "occurred when a goods or service was transferred across a technologically separate interface (Williamson, 1985). Application of e-procurement depends on the specific transaction circumstance. Transaction cost theory reveals how the organization would go to reduce the transaction related costs. Under this theory three characteristics are taken into the consideration:

- Asset specificity deals with the extent specific transaction and uniqueness of asset for specific transactions. Asset specificity affects the transaction because of the risk derived through opportunistic behavior. The factors are deeply interdependent and when one increases or decreases, this variation requires analysis in relation to the effects reflected in the interdependencies among all of the various factors.

- Uncertainty, it is related to technological changes and complexity of the e-procurement that the government/organization would enter into it.

The theory focuses more on how the government engagement into e-procurement would reduce the cost of transaction in an effective manner. The application of e-procurement in relation to this theory focuses more on the characteristic where thereis a low in asset specificity for each transaction done at the organization as well aslow uncertainty of the technological changes to lead more gain by shift procurement activities from decentralized layer of public hierarchies toward transparency market. According to transaction cost approach, a higher transaction frequency provides higher incentives for both buyers and sellers to improve their coordination. As suche-procurement application in the organization decreased transaction cost by increase the potential benefits (Pani and Agrahari, 2007).Williamson (1985) argued that twohuman and three

environmental factors led to transactions costs arising. The two human factors are: Bounded rationality and opportunism. Bounded rationality means humans are unlikely to have the abilities or resources to consider every state-contingent outcome associated with a transaction that might arise. Opportunism: Humans will act to further their own self-interests

3.2.1.3 Innovation Diffusion Theory (IDT)

Roger, (1983& 2003) explained the process of innovation diffusion amongst potential adopters during the introduction of technological innovations (i.e. e-procurement). He had shown, reduction of uncertainty behavior increases adoption process. Eventhough innovations typically offer its adopters novel ways of tackling day-to-day problems, the uncertainty as to whether the new ways would be superior to existing ones presents a considerable obstacle to the adoption process. To counter this uncertainty, potential adopters were motivated to seek additional information, particularly from their workplace peers (Brancheau&Wetherbe, 1990)

Rogers (1983, 2003) classified adopters of any new innovation or idea into five categories: innovators, early adopters, early majority, late majority, and laggard. Rogers's model suggested that innovations should differ fundamentally from existing choices in order to lure potential for adoption. According to Rogers these differing aspects are very important for adoption, are listed below:

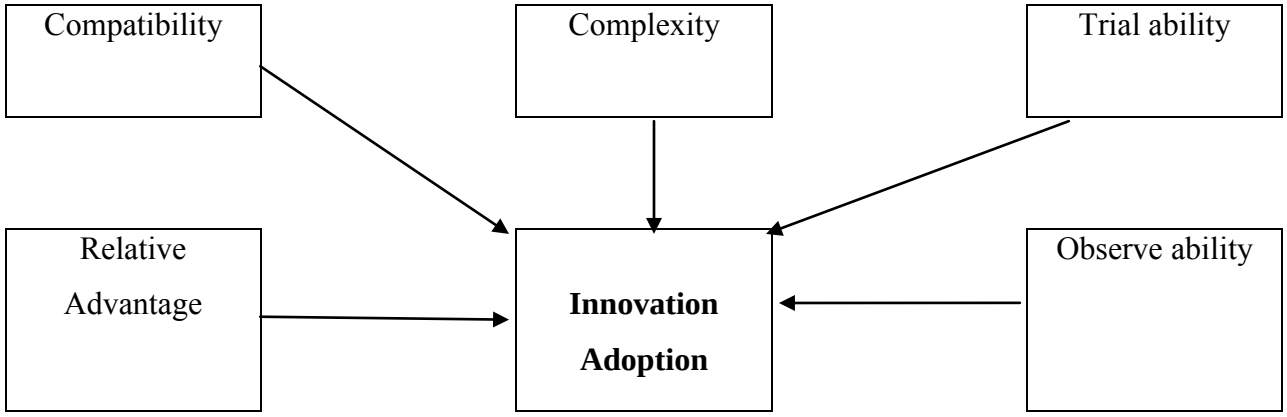
- **Relevant advantages:**Advantages of new methods compare to existing alternatives proportionally associate with rate of adoption. The greater the advantages the better and faster the adoption. Rogers defined these criteria with aspects of economic profitability, low initial cost, social prestige, and time effort savings

- **Complexity of innovation:** If an innovation was difficult to understand oruse, it would have negative effects on diffusion.

- **Trial ability of innovation:** The possibility to experiment with and to getexperience from an innovation. At an early stage, when the diffusion has juststarted, this can only be done on a limited basis. Profiles of the first adopt of innovation influences late adopter. Late adopters can rely on experience and knowledge from early adopters.

Observe ability: Observe ability means to what extent usability and result of an innovation could be visible. Innovations which did not have clear visible benefits andresults would be adopted slower than those with obvious benefits.

Figure 4: Innovation Diffusion Theory (IDT)



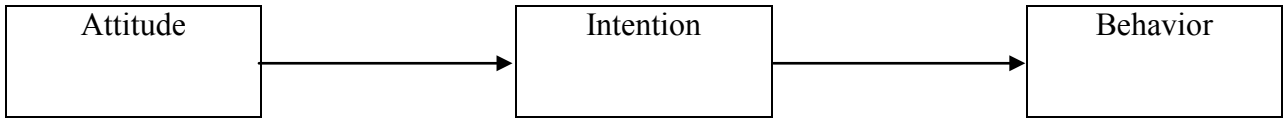
Source: Roger, (1983, 2003)

3.2.2 Individual Adoption Theories

Organizational innovations that would have to be incorporated in the work processes of organizational members depend on the experience of individuals. An innovation must be accepted by its target "user" group in order to benefits the organization (Bhattacherjee, 1998). Hence, it is important to assess the acceptance of innovations at the level of organizational members because if acceptance among the target group is lacking, the desired consequences cannot be realized and the organization may eventually discontinue the innovation adoption process. There were many examples of organizational innovations that only succeed with the acceptance of organizational members. Some specific cases are computer technology for sales and marketing professionals, medical technologies for health care professionals (Frambach, 1999)

3.2.2.1 Theory of Reasoned Action (TRA)

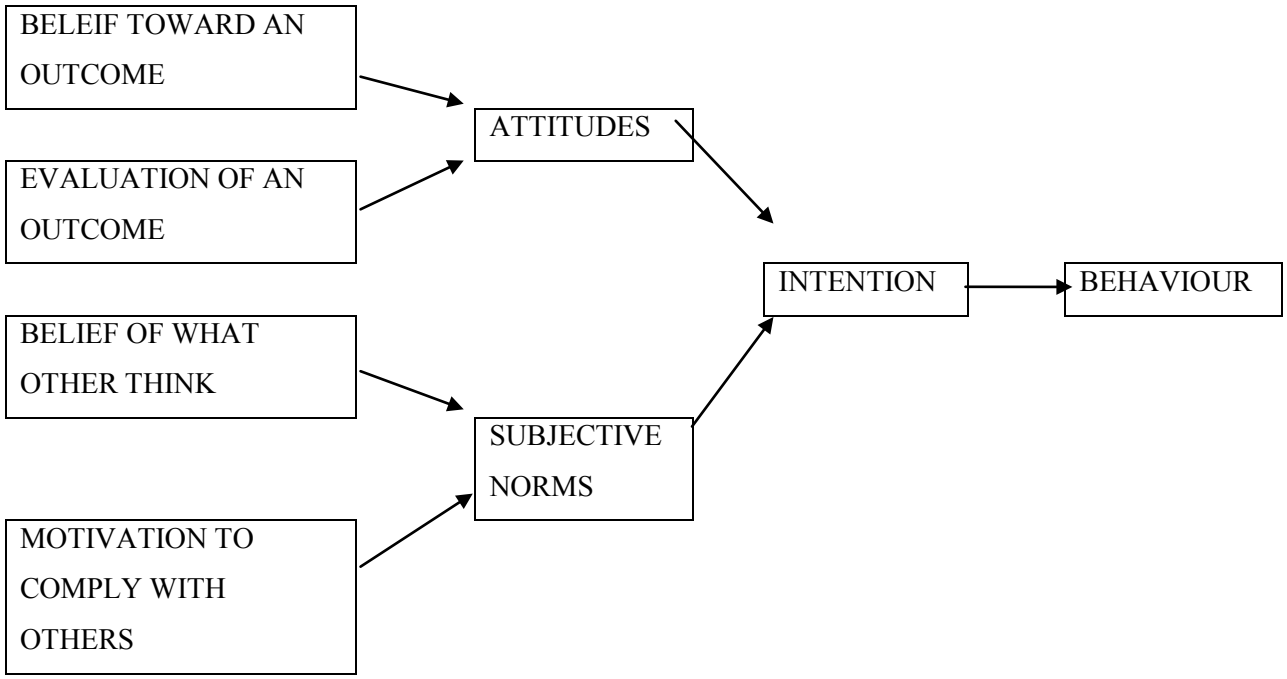
Ajzen and Fishbein, (1980) developed a versatile behavioral theory called Theory of Reasoned Action. This theory detailed the factors and inputs that result in any particular behavior. Very simply, the model looks like this:



According to TRA, an individual's actual behavior is directly influenced byhis/her behavioral intention to use. Intention affected by individual's attitude towards that behavior and subjective norm. Attitude defined as "an individual's positive ornegative feelings about performing the target behavior". Whereas, subjective norms defined as "the individual's perception that most people who are important to himthink he should not perform the behavior in question" (Singh and Kumar, 2011)

According to TRA an individual's behavior (e.g. acceptance of e- procurement system) is directly influenced by behavioral intention which in turn is affected bythat individual's attitude towards that behavior and subjective norm (Rahim, 2008)

Figure 5: Theory of Reasoned Action model

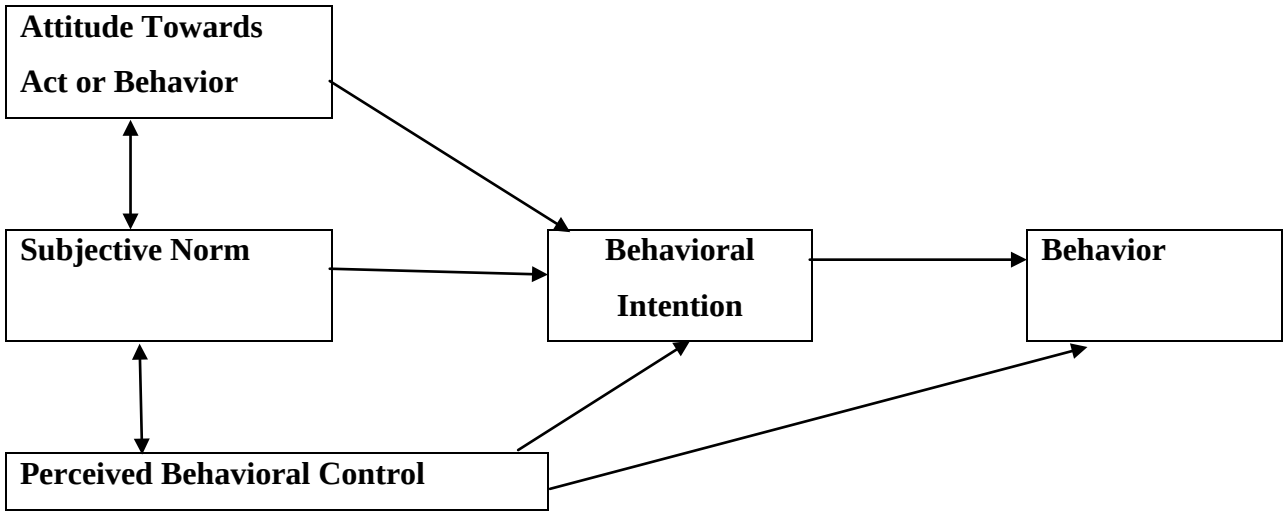


Sources: Ajzen and Fishbein, (1980)

3.2.2.2 Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour (TPB) was also developed from the Theory ofReasoned Action (TRA). Ajzen (1985, 1991) extended TRA by adding perceivedbehavioural control to the original TRA model as an additional determinant ofintention and behaviour (Kittipong, 2008). TPB posited that individual behavior was driven by behavioural intentions where behavioural intentions were a function ofan individual's attitude toward the behaviour, the subjective norms surrounding the performance of the behaviour. Attitude toward the behaviour defined as theindividual's positive or negative feelings about performing behaviour. It determined through an assessment of one's beliefs regarding the consequences arising frombehaviour and an evaluation of the desirability of these consequences.

Figure 6: Theory of Planned Behavior model



3.3 EMPIRICAL STUDIES

3.3.1 Introduction of e-procurement in Bangladesh

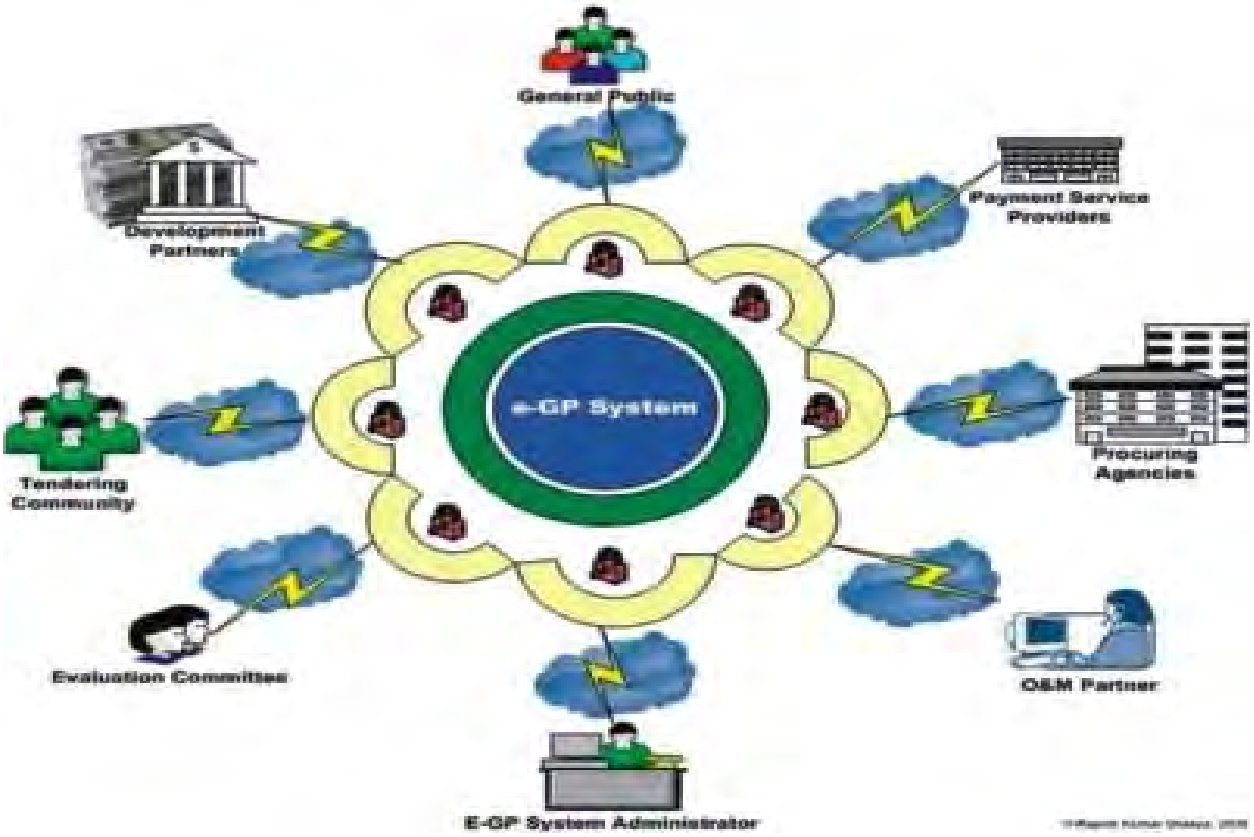
Application of electronic technology and Information and Communication Technology (ICT) in all-round functions of governance in Bangladesh is considered as a vital instrument to establish 'Digital Bangladesh Vision 2021'. "Digital Bangladesh" a vision that is set up by government of Bangladesh, to enable stronger contracts between the government and its citizens consequently make the country prosperous. It is believed that e-Governance would help government to

formulate a new vision which would express how government views it citizens, employees and businesses. The government also assumed that e-Governance would build a citizen-centered, service-oriented, public-participative government with efficient, accountable, transparent and high performance government system (Al-Hossienie and Barua, 2013). As ICT together with the diffusion of the technological advances occurred, the digital revolution has emerged. The emergence of the information age has created an enormous impact on social, political, and cultural livelihood of the people-taking the whole world into a different era (Alam, Ahmed and Islam 2008).

The Electronic Government Procurement (e-GP) was introduced in Bangladesh on 02 June, 2011 in pursuant to Section 65 of the PPA 2006. It is a breakthrough in Bangladesh public procurement system. Ittransformsthe paper-based tendering system to electronic form. The strategy for e-Government states that a sound e-government policy should include a focus on end-users and demand driven services. Government services will be made available through e-government and the government should prioritize the services that they will initially offer online (GED, Bangladesh Planning Commission 2012).

The e-GP guideline targeted (under the PPRP-II) initially four governmental organizations including Bangladesh Water Development Board (BWDB), Local Government Engineering Department (LGED), Roads and Highways Department (RHD) and Rural Electrification Board (REB) for implementation it with the aim to spread over other organization (CPTU 2011).LGED pioneered the e-GP system implementation and entered into e-Procurement system in January 2012(LGED 2014). All the four agencies currently practicing e-GP and the use ofe-GP is expanding; CPTU is monitoring the progress.

Figure 7: CPTU Tender Portal



Source: CPTU website

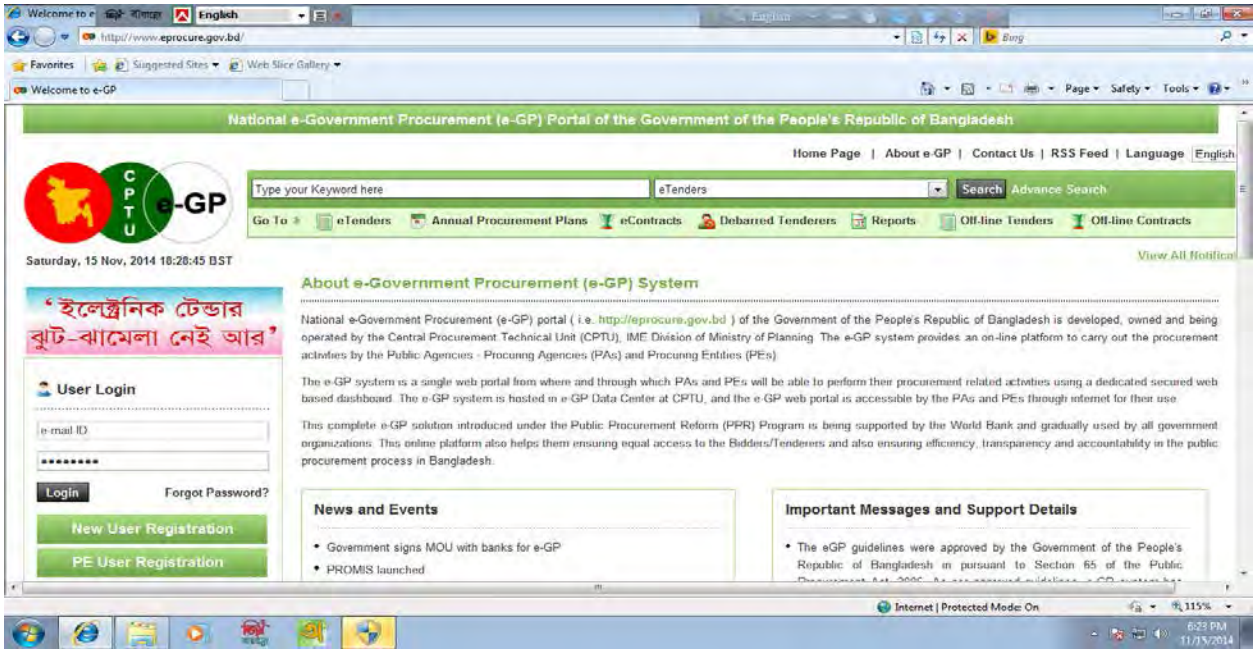
PROMIS

The Government has entrusted the Implementation Monitoring and Evaluation Division (IMED) with the task of spearheading the Reform Program. The Government is receiving assistance from the World Bank in the initiative and completed the Public Procurement Reform Project (PPRP-I) and the based on the success of the project PPRP-II was launched.The objectives of the government pertain to improved governance, efficiency, transparency and accountability in the use of public resources in procurement of Goods, Works and Services. Both the process and participation in public procurement has to be ensured to secure public confidence and contribute to reduction of corruption.

CPTU developed an integrated and comprehensive dynamic procurement website to ensure the widest possible exposure to Procurement Plans, actual Procurement Notices of over Tk.1

croreand Contract Awards with ease of use on one hand and convenient for the administrators on the other. This also contributed to be the starting point for data acquisition for monitoring.Under the project an MIS was developed based on criteria set by the Development Partners that came to be known as the OECD Indicators. The Government adopted the criteria and Dohatec New Media implemented the same and it came to known as "PROMIS". In developing this system input was provided by experts from the government, the international legal profession and the procurement specialists of the World Bank. The CPTU-IMED was first in envisioning and successfully implementing this system in the world and the same was recognized internationally. The Secretary IMED and CPTU were invited to make several presentations to a worldwide audience at the World Bank HQ, Washington DC, in December 2005. The PROMIS was recognized as a powerful and robust tool which was of interest to different government across the globe (CPTU, Bangladesh)

Figure 8: Procurement Management Information System (PROMIS)



Source: CPTU website

3.3.2 Bangladesh Infrastructures and adoption of e-procurement

In recent years, Bangladeshhas made a significant progress in ICT. The Technological infrastructures which enabled the Government ofBangladesh to adopt e-procurement are:

3.3.2.1 National fiber optic cable Network

In June 1996 the first VSAT base data circuit in the country was commissioned and the Bangladesh Telegraph and Telephone Board (BTTB) granted licenses to two Internet Service Providers (ISPs). In subsequent years more liberal government policies led to a rapid expansion of the industry, resulting in over 180 registered ISP's by 2005. ISPs are currently regulated by the Bangladesh Telecommunication Regulatory Commission (BTRC) through the Bangladesh Telecommunications Act.

In May 2006 Bangladesh inaugurated new submarine optic fiber connectivity as part of the 16 country consortium SEA-ME-WE 4 project. The landing station is in Cox's Bazar, the southern city near the Bay of Bengal. In July 2008 the Submarine Cable Project was transformed into the company Bangladesh Submarine Cable Company Limited (BSCCL), which is now responsible for all services related to the submarine cable.

In 2014 the new SEA-ME-WE 5 cable is expected to provide an alternative operating at 100 Gbit/s, roughly 10 times faster than the current connection.

Recently Bangladesh has seen phenomenal growth in Internet usage. Due to various initiatives taken by governmental known as a2i project (open Hotspot zone, government offices with internet facility, Reduce bandwidth price etc.) have impacted the growth of users. As of December, 2014 internet subscribers have reached 43.64 million(BTRC, Bangladesh)

3.3.2.2 Mobile networks

Because fixed line penetration rates are slow and are expected to remain low, most Bangladeshis first gather Internet experience via mobile services. An estimated 90% of Bangladesh's Internet users got their access using mobile services in 2010.[7] Out of the six mobile operators, only one left to offer 3G services. Tele Talk offers 3G services to all areas of BD. Other offers 3G Internet service on some specific areas and EDGE or GPRSGSM Internet service on rest of the areas. Operators are working on expanding their 3G services on all areas.

3.3.3 Current e-procurement challenges

Base on literature read, the researcher had categorized the challenges Bangladeshfacingin adopting e-procurement are as:

3.3.3.1 Difficulties of Internal and External Integration

Integration of e-Procurement system and back-office systems such as accounting, inventory management, public investments and etc. need to be done for both the public institutions and vendors before starting the process. Without such integration, the potential benefits of e-Procurement and also targeted efficiency and effectiveness cannot be achieved. In other words, it would not make sense to use the e-Procurement system while performing internal processes manually. Investments on back-office systems development would be needed for public sector modernization in the wake of the networking revolution. Therefore, e-Procurement can serve as a driver of public information systems modernization. If the government does not take strong initiatives on investments, the whole process would be delayed.

3.3.3.2 Lack of Common Standards

E-Procurement remains a relatively new concept and standards for e-Procurement have yet to be developed. Lack of common open standards is seen as a significant barrier to supplier adoption because of the cost of maintaining electronic data in many different standards. Open standards facilitate the implementation of e-Procurement system by providing common and interoperable platform for both executing institutions and vendors.

3.3.3.3 Regulatory Framework Challenge

The main challenge in the regulatory body is to build and maintaina proactive legal framework that could keep pace with the rapidly changing telecommunication technology and e-procurement environment. Specific attention must be given on data access rights, privacy protection, computer frauds &crimes, security and privacy of e-transactions, establishment of rules governing e-transactions, and delivery of e-opportunities to the wider population.

3.3.3.4 Cyber Security Challenge

Cyber security means taking measures against threats to data, equipment, networks and related people. Cyber security becomes even more important as ICT inventions and innovations are increasing and advancing in Bangladesh. The legal environment in Bangladesh is still inadequate for cyber security. The laws were made to facilitate the traditional paper based business environment. This situation posed a serious challenge to Bangladesh to accommodate e-procurement system. Cybercrimes such as fraud, theft ofdata, laundering, transmission of harmful codes, unauthorized access to information,impersonation is a major issue for all kinds of e-business applications. Advancement of the availability of fiber optic connection in the country providednew cyber security challenges.

3.3.3.5 Procurement Legal Framework Challenge

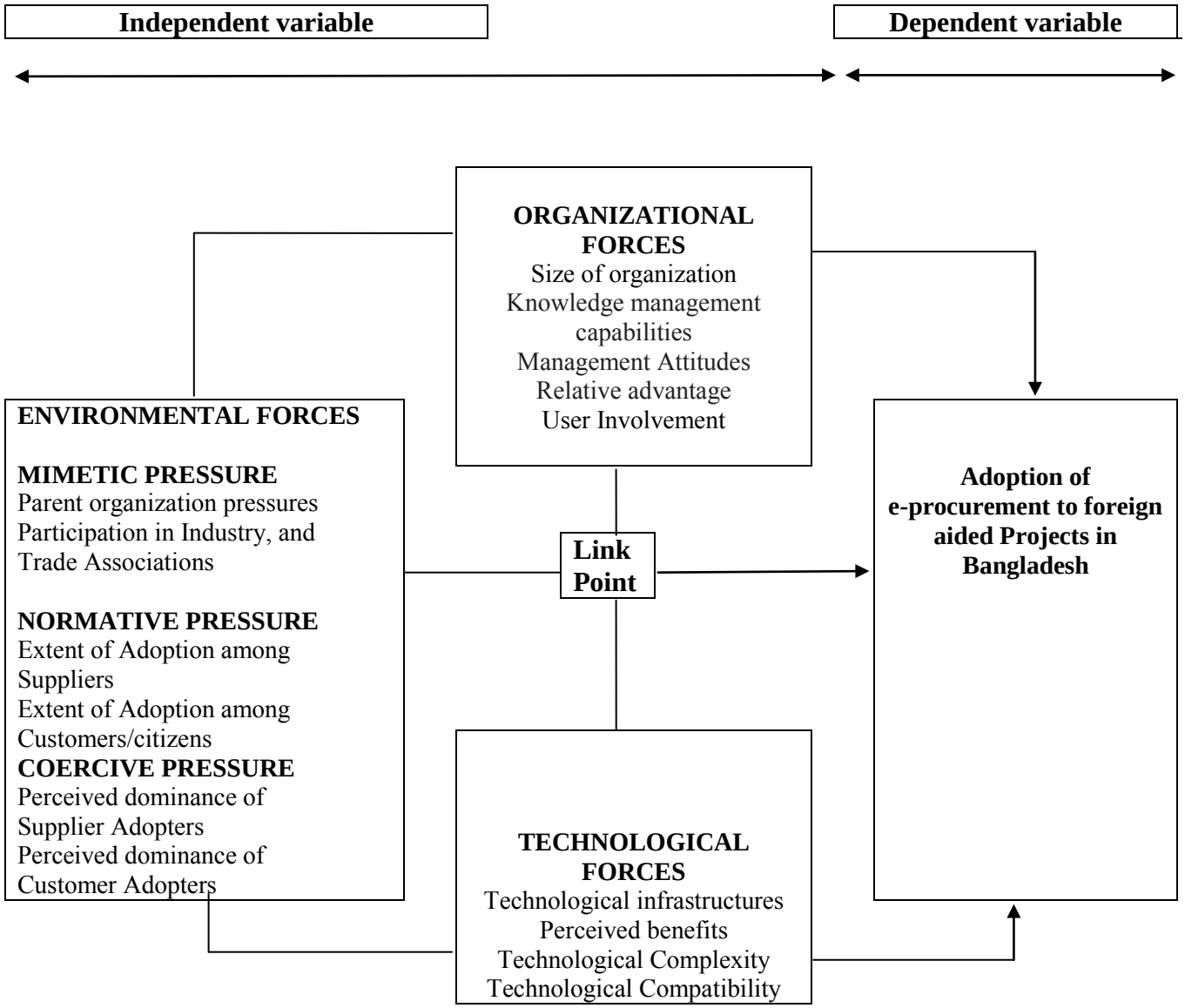
Regulatorysteps to secure electronic transactions such as digital signatures, dispute settlement and others have not yet been promulgated.

3.4 Research Framework

After reviewing different literature concerning the intensity of adoption of e-procurement from different context of developing and developed countries likesBangladesh.TOE framework had proved to be suitable and useful when using organizations as the unit of analysis since it enabled to focus on certain contextrelatedfactors and to further explore those factors (Karnali&Kurnia, 2011). Theresearcher came with the idea of using TOE framework in the study by combining three perspectives as the main drivers for the adoption of e-procurement in an organization. The TOE framework identified three aspects of a firm's context that influence the process by which it adopted and implements a technological innovation such as technological characteristics, environmental characteristics andorganizational characteristics. In this study the researcher has used environmental characteristics, technological characteristics, and organizational characteristics as independent variables. The dependent variable is the adoption of e-procurement in the foreign aided project in Bangladesh.

3.4.1 Conceptual Framework of the Research

Figure 9: Conceptual Framework of the Research



Research Model: (Adopted from Pani&Agrahari, 2007, Zuhaiza et al, 2009 and Teo et al, 2003)

3.4.1.1 Technological Forces

Many studies have shown information technology related constructs such as technology infrastructure, countryleveltechnology innovation, and technology readiness have played important role for e-procurement development. Combiningvariables related to technology, we propose technology dimension as one of theconstructs that affect the national e-business

development (Kim et al, 2011).Adopting any new technology across the country or single organization thetechnological aspect could not be kept aside. This study have focused more on Perceived benefits, Technologicalinfrastructures, TechnologicalCompatibility,and Technological Complexity, as the independent variables to influence e-procurementadoption

Perceived Benefits

Technological driver's involved "Perceived benefits" could be provided to organizations, included reduction in transaction errors and transaction costs, improved data accuracy andinformation quality, and faster application process. On the other hand, indirect benefits are associated with the impact of adopting e- procurement for managementof business process and relationships. Indirect benefits included better customerservices and improved relationship with business partners. There are also costconsiderations by organizations in adopting e-procurement. "Perceived cost" Thesecosts include the potential administrative and implementation costs which would beincurred as companies utilize e-procurement, (Karnali&Kurnia, 2011)

Technological Infrastructures

ICT infrastructure has influence on the volume of a nation's Internet Transactions or onthe number of e-business websites in a country. A better ICT Infrastructure enhancede-business development (Kim et al, 2011).

Technological Compatibility

Technological compatibility means technological innovation isconsistent with the existing values, needs, and past experiences of the potential adopter (Sarkar, 2009). It is clear that the higher compatibility, the less changes oradjustment would be needed. It also means that lower level of resistance would arise to adoptthenew technology. Since e-procurement has its roots in the modern ICT,the existing IT infrastructure (technological compatibility) of the organization, thenature of organization's work practices, culture andlegal framework (organizational compatibility), all can impact the decision to adopte-commerce (Jian, 2010).

Technological Complexity

In general, if the process and infrastructures of e-procurement becomes more complex it would negatively influence over the adoption of e-procurement. However, the rapidadvancement of the

ICT, the availability of fast broadband and easier access to newtechnology, complexity of e-commerce is reducing (Jian, 2010). The adoptionof an innovation, as in e-commerce technology, depends on the time the firms taketo understand the particulars of e-commerce technology mechanism, its application and benefits that could be harvested through its proper utilization in their individual businesses. Basically, the easier to understand the technology andits application, the faster and more immediately the adoption process and vice versa (Almoawi, 2011)

3.4.1.2 Organizational Forces

The organization context in adopting new technology differ from country tocountry and varies from organization to organization, for the purpose of this study theresearcher focused more on size of organization, knowledge build up capabilities of that organization, management attitudes and support to new technology , relative advantage and user involvement.

- **Size of the organization**

Large firms are always ahead of small one to adopt innovation. There are three major arguments in favor of this point: they take benefits of the new IT, they have more funds and they can capture of economies in large scale. However, larger firms has multiple levels of bureaucracy and that could delay decision-making processes about new ideas and projects (Uliveira&Martin, 2010)

- **Knowledge management capabilities**

If the owner is well-oriented with the technological developments and if any benefits comes from technological advancements, then he or she wouldbe more likely to adopt technology in the form of e-commerce. Lack of technologicalknowledge on the owner's part would inhibit the adoption (Almoawi, 2011). Not only the owner but also individual characteristics of top boss, such as education, age, experience, andpsychological trait have strong influence over innovation adoption (Sarkar, 2009)

- **Management Attitudes and support**

Previous studies hadshownthatmanagement's attitude and support had a positive relationship with thee-commerce adoption. When the owners or top management shows commitment

andsupport during the process of assessment of the innovation or technology it ensures that there isan obligation within the resources. This would in turn create conducive environmentwithin the firm for the adoption process of the technology (Almoawi, 2011). The support from top management isthe precondition for a successful implementation of systems. The top management support facilitated the adoption and implementation of information systems (Sarkar, 2009).

User Involvement

User involvement reduces resistance to accept new system. More user involvement in innovation implementation positivelyinfluence the adoption process (Sarkar, 2009). More user involvement might also delay change in different context, when asymmetry of informationarise concerning the perceived usefulness of new technology. It might occur due touncertainty of expected technology but also it may occur due to opportunism of user.

3.4.1.3 Environmental Forces

The changing environment creates pressure on organizations to change and innovate new ways of value creation. Supplier pressure; customer power,competitive pressure, government pressure andindustry pressure have been named by several authors as the main environmental factors for organization to adopt e-procurement (Pani&Agrahari,2007).

Normative pressure

In the context of e-procurement, normative pressures are particularly importantbecause the early growth stage of e-procurement is characterized by the popular hype of cost efficiency and process effectiveness. Normative pressures could potentiallyspeed up e-procurement adaptation across the transactional and strategic procurement processes, depended on the specific kinds of pressures exercised by entities within the business environment (Pani&Agrahari, 2007)

Mimetic pressure

From a mimetic isomorphic point of view, small government organizations usually follow their parent organizations or similar organizations. They try to imitate parent's organizations, which have already implemented e-procurement process successfully; they enhanced their legitimacy by demonstrating that at least the organization is trying to improve the procurement performance.

In the developing countries, mimetic pressures occurred by imitating the e-government initiatives inthe developed countries (Pani&Agrahari, 2007)

Coercive pressure

Few papers suggested that coercive pressures on organizations might comefrom a variety of sources. For example,resource-dominant organizations, regulatory bodies, and from parent corporations of joint venture business(Teo et al, 2003)

3.4.2 Factors/ drivers for adoption e-procurement

Adoption of e-procurement in an organization depends of different factors. These factors differ from one organization to another, from one country to another. Williams, (2006) argues that thedriving factors for adoption of e-procurement depend on management of the organization, customers of the organization, suppliers of the organization, competitors of the organization and government requirement.

In general a number of factors might influence positively or negatively the adoption of e-procurementin an organization. These are: inadequate technological infrastructure of both parties,lack of skilled personnel, lack ofintegration with business, company culture,implementation costs, regulatory and legal controls, security,co-operation of business partners capacity, inadequate e-procurement solutions,upper management support (Chipiro, 2009).

Shakir et al, (2007) identified severaldriver/barriers for adoption of e-procurement;

Economic: It mostly relates to vendors. If vendors get little benefit from the process, vendors' concerns about costs, vendors also fear of competitive bidding might adversely affect on price, insufficient internal resources to support e-procurement

Operational: vendors may think about required changes may need a lot of work, particularly when the vendor is required to update, monitor electronic product catalogues

Environmental: ineffective public infrastructure, restrictive or lack ofregulations from domestic governments, differences in language, culture, and legal systems

- **Technological:** low or different levels of IT maturity among vendors, lack of technical and data exchange standards, lack of supporting IT infrastructure, Vendors' concerns about the security of e-procurement transactions

- **Relational:** lack of trust between buyer and vendor, vendors' skepticismof motives behind supply-chain management practices, lack of buyer influence on vendors

Chapter-4:

Presentation of Findings and Analysis

Chapter-04: Presentation of Findings and Analysis

4.0 Introduction

In this chapter, data were presented by using MS Excel based on research objectives of the study which included;

i. To examine the organizational drivers in adoption of e-procurement in foreign aided projects in Bangladesh in public, and Non-government organization.

ii. To determine the technological drivers in adoption of e-procurement in foreign aided projects in Bangladesh in public, and Non-government organization.

iii. To identify environmental drivers in adoption of e-procurement in foreign aided projects in Bangladesh in public, and Non-government organization.

The chapter also included data editing, data cleaning, data coding, anddescriptive analysis

4.1 Preliminary Data Analysis

4. 1.1 Data editing

Editing of data was a process of examining the collected raw data (especially insurveys) to detect errors and omissions and to correct these when possible. Editing involved a careful scrutiny of the completed questionnaires. Editing was done to assure that the data were accurate, consistent with other facts gathered, uniformly entered, as completed as possible and had been well arranged to facilitate coding and tabulation (Kothari, 2004). The process of data editing was done to collected data bymaking correction to the mistake that had been done, some of the respondents had missed to answer the questions by mistake, so "unwise" techniques were used to as proposed by Howel,(2007). Under this approach each element of the inter correlation matrix had estimated by using all available data

4.1.2 Data Coding

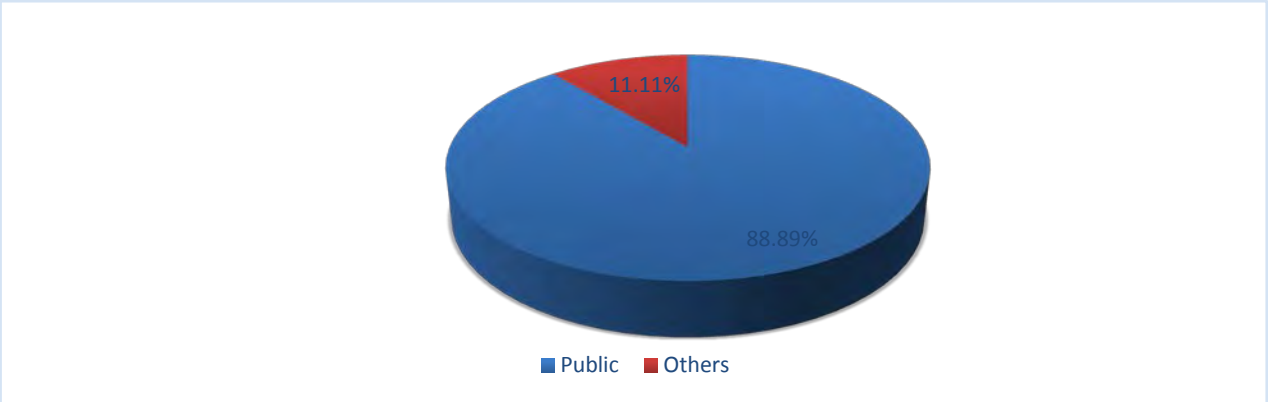
Coding referred to the process of assigning numerals or other symbols to answers sothat responses could be put into a limited number of categories or classes. Codingwas necessary for efficient analysis and through it the several replies might bereduced to a small number of classes which contain the critical information requiredfor analysis (Kothari, 2004). The questionnaires were coded in a numeral form andfilled in MS Excel program. MS Excel was used to make coding by assigning variables namessuch as Q1a, Q1b and Q1c to represent variable and data set was filled in numeral form

4.2 Sample characteristics

4.2.1 Nature of the organization

The research showed that 88.89 % of the respondents who had responded were from public entities and 11.11% were from others as shown in the fig. 10below. As it was expected the research was focused more on public institutions and the response rate was good in public institutions compare to other sector

Figure 10: Nature of the organization

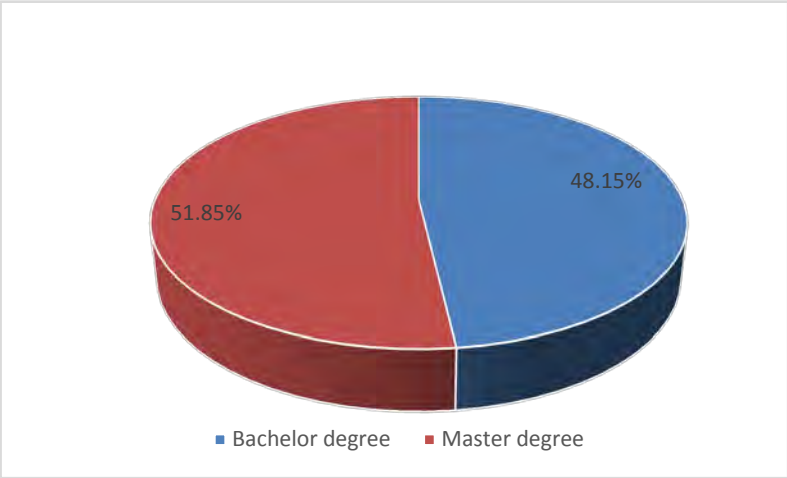


Source: Survey data (2015)

4.2.2 Education Level

Figure: 11 showed that the respondents were highly educated in which 48.15 % holdbachelor degree, 51.85% of the respondents hold master degree.

Figure 11: Educational Level



Source: Survey data (2015)

4.2.3 Mode of procurement practice for Goods, Works and Services

The survey showed that 62.96% respondents were practicing e-tendering and 37.04% traditional/paper-based process for works procurement,butthe paper-based/traditional process were being practiced for goods and services procurementby all of them still now (table-2).

Table 2: Mode of procurement practice

Indication	Goods			Works			Service		
	Frequency	%	Cumulative %	Frequency	%	Cumulative %	Frequency	%	Cumulative %
e-GP/ e-procurement	0	0.00	0.00	17	62.96	62.96	0	0.00	0.00
Traditional/ paper-based	27	100.00	100.00	10	37.04	100.00	27	100.00	100.00
Total	27	100		27	100		27	100	

Source: Survey data (2015)

4.2.4 Knowledge level on e-Procurement

Table-3 shows, 44.44% of respondent had clear understanding about e-procurement whereas only 14.81% did not have any idea about the process.The same number of respondents did have

very little knowledge about the process. 25.93% said that they need more training about the e-procurement process.

Table 3: Knowledge level on e-GP/e-procurement

Indication	Frequency	Percent	Cumulative Percent
I have clear understanding	12	44.44	44.44
I have idea, but need training to know more	7	25.93	70.37
I know about, but don't know details	4	14.81	5.19
I have no idea	4	14.81	100.00
Total	**27**	100.00	

Source: Survey data (2015)

4.3 Organizational Characteristics and e-procurement adoption

4.3.1 Organization size characteristics

4.3.1.1 In-house IT infrastructure, expertise and skills

Majority of respondents (48.15%) had said that their organization had already in-house IT infrastructure, expertise and skills to support adoption e-procurement, but 25.93% had neither agreed nor disagreed at the same time 22.22% of the participant had responded negatively (table-4).

Table 4: Organization's Size characteristics

Indication	In-house IT infrastructure, expertise and skills			IT experience			Financial resources Availability		
	Frequency	**%**	**Cumulative %**	**Frequency**	**%**	**Cumulative %**	**Frequency**	**%**	**Cumulative %**
Strongly agree	**5**	**18.52**	**18.52**	**4**	**14.81**	**14.81**	**11**	**40.74**	**40.74**
Agree	**8**	**29.63**	**48.15**	**10**	**37.04**	**51.85**	**8**	**29.63**	**70.37**
Neither agree or disagree	**7**	**25.93**	**74.07**	**6**	**22.22**	**74.07**	**5**	**18.52**	**88.89**
Disagree	**6**	**22.22**	**96.30**	**5**	**18.52**	**92.59**	**3**	**11.11**	**100.00**
Strongly disagree	**1**	**3.70**	**100.00**	**2**	**7**	**100.00**	**0**	**0**	**100.00**
Total	**27**	**100**		**27**	**100**		**27**	**100**	

Source: Survey data (2015)

4.3.1.2 IT Experience

In the table-4 shows, 51.85% ofthe respondents had agreed that their organization had previous IT experience tosupport e-procurement application, 22.22 % had neither agreed or disagreed, 25.92% had disagree.

4.3.1.3 Financial Resources Availability

The analysis shows, 70.37% of the respondents had said that the firm hadenough financial resources to supportadoption of e-procurement technologies. On the other hand only 11.11% of them had disagreed on the view. However 18.52% did not comment on this (table-4)

4.3.2 Top management Attitudes Characteristics

4.3.2.1 Resources allocation for e-procurement

Top managements attitude towards allocation of resources for e-procurement adoption in their organization were viewed positively by 51.85% the participants but 37.04% had neither agreed nor disagreed, and 11.11% had clearly disagreed that the topmanagement of their organization allocated resources for adoption of e-procurement (table-5).

Table 5: Top Management Attitudes characteristics

Indication	Resources allocation for e-procurement			Top management awareness			Employee encourages		
	Frequency	**%**	**Cumulative %**	**Frequency**	**%**	**Cumulative %**	**Frequency**	**%**	**Cumulative %**
Strongly agree	**6**	**22.22**	**22.22**	**7**	**25.93**	**25.93**	**7**	**25.93**	**25.93**
Agree	**8**	**29.63**	**51.85**	**14**	**51.85**	**77.78**	**12**	**44.44**	**70.37**
Neither agree or disagree	**10**	**37.04**	**88.89**	**3**	**11.11**	**88.89**	**8**	**29.63**	**100.00**
Disagree	**2**	**7.41**	**96.30**	**2**	**7.41**	**96.30**	**0**	**0.00**	**100.00**
Strongly disagree	**1**	**3.70**	**100.00**	**1**	**3.70**	**100.00**	**0**	**0**	**100.00**
Total	**27**	**100**		**27**	**100**		**27**	**100**	

Source: Survey data (2015)

4.3.2.2 Top management Awareness

Majority of the respondents(77.78%) hadagreed that the top management was aware of the benefits derived from e-procurementtechnologies in their organization, in contrast only few (11.11 %) of them disagreed. The same percentage(11.11%) had neither agreed nor disagreed (table-5).

4.3.2.3 Employees Encouragement

In this study, 70.37% had agreed that top management actively encourages employees to use e-procurement, but 29.63% of the respondents kept silent.

4.3.3Relative Advantage Characteristics

4.3.3.1 Enhances Relationships

Application of e-procurementenhances strong relationships with business partnersaccording to 55.56% of the respondents whereas33.33% of the respondents had neither agreed nor disagreed on this issue and only 11.11% percent had disagreed, have been shown in table-6.

Table 6: Relative Advantage Characteristics

Indication	Enhance relationship			Firm effectiveness and efficiency			Value for money		
	Frequency	**%**	**Cumulative %**	**Frequency**	**%**	**Cumulative %**	**Frequency**	**%**	**Cumulative %**
Strongly agree	**3**	**11.11**	**11.11**	**6**	**22.22**	**22.22**	**13**	**48.15**	**48.15**
Agree	**12**	**44.44**	**55.56**	**12**	**44.44**	**66.67**	**11**	**40.74**	**88.89**
Neither agree or disagree	**9**	**33.33**	**88.89**	**8**	**29.63**	**96.30**	**3**	**11.11**	**100.00**
Disagree	**2**	**7.41**	**96.30**	**1**	**3.70**	**100.00**	**0**	**0.00**	**100.00**
Strongly disagree	**1**	**3.70**	**100.00**	**0**	**0**	**100.00**	**0**	**0**	**100.00**
Total	**27**	**100**		**27**	**100**		**27**	**100**	

Source: Survey data (2015)

4.3.3.2 Firm Effectiveness and Efficiency

The analysis showed that about 66.67% had agreed that using e-procurement improves thefirm effectiveness, and efficiency, 29.63% of the respondents stay neutral and about 3.70% had clearly disagreed that e-procurement improves the firm effectiveness, and efficiency (table-6).

4.3.3.3 Value for Money

The analysis also showed that 88.89% of the respondents agreed that when the organization use e-procurement, enable firm to achieve value for money in its procurement of good, works and service, 11.11% of the respondents stayed neutral position that e-procurement had resulted to achieve value for money in the organization.

4.4Technological /InnovationCharacteristics Adoption of e-Procurement

4.4.1 Compatibility Characteristics

4.4.1.1 Fitness with business operations

In Table 7 below, the analysis showed that 66.67 % of the participant had agreed that their organization channel was compatible with the adoption e-procurement, 22.22 % was stayed neutral and 11.11% had shown negative attitude that their organization business operations was compatible with the adoption e-procurement.

Table 7: Compatibility characteristics

Indication	Fitness with business operations			Fitness with business partners operations			Fitness with existing information system		
	Frequency	**%**	**Cumulative %**	**Frequency**	**%**	**Cumulative %**	**Frequency**	**%**	**Cumulative %**
Strongly agree	**6**	**22.22**	**22.22**	**2**	**7.41**	**7.41**	**5**	**18.52**	**18.52**
Agree	**12**	**44.44**	**66.67**	**8**	**29.63**	**37.04**	**11**	**40.74**	**59.26**
Neither agree or disagree	**6**	**22.22**	**88.89**	**8**	**29.63**	**66.67**	**8**	**29.63**	**88.89**
Disagree	**2**	**7.41**	**96.30**	**9**	**33.33**	**100.00**	**3**	**11.11**	**100.00**
Strongly disagree	**1**	**3.70**	**100.00**	**0**	**0**	**100.00**	**0**	**0**	**100.00**
Total	**27**	**100**		**27**	**100**		**27**	**100**	

Source: Survey data (2015)

4.4.1.2 Fitness with business partners operations

The analysis also indicates, a large portion of the respondents (33.33%) had disagreed that their business operationswascompatible with business partners operation in adoption of e-procurement,29.63% did not say anything and 37.04% had agreed that their business operations wascompatible with business partners operation in adoption of e-procurement data were gathered in table 7

4.4.1.3 Fitness with existing information system

More than 59.26% the respondent had agreed that adoption of e-procurementin procuring entities fit well with the existing information system, 29.63%of the respondents stay neutral and 11.11% of the respondents had disagreed with the view (table-7).

4.4.2 Complexity characteristics

4.4.2.1 Easy for employees

From the table 8 below, 51.85% of the respondents said that e-procurement is easy for the employees, 29.63% said neither complex nor simple issuing it and 18.52 % had disagreed that using e-procurement is easy for the employees.

Table 8: Complexity Characteristics

Indication	Easy for employees			Clear and understandable to business partners			Using additional e-procurement easy for employees		
	Frequency	%	Cumulative %	Frequency	%	Cumulative %	Frequency	%	Cumulative %
Strongly agree	5	18.52	18.52	3	11.11	11.11	4	14.81	14.81
Agree	9	33.33	51.85	6	22.22	33.33	4	14.81	29.63
Neither agree or disagree	8	29.63	81.48	9	33.33	66.67	8	29.63	59.26
Disagree	5	18.52	100.00	5	18.52	85.19	9	33.33	92.59
Strongly disagree	0	0.00	100.00	4	14.81	100.00	2	7.41	100.00
Total	27	100		27	100		27	100	

Source: Survey data (2015)

4.4.2.2 Clear and understandable to business partners

The results showed that allparticipants were equally divided in three groups (33.3%) when they had been asked for whether using e-procurement technologies was clear and understandable by the business partners (table-8).

4.4.2.3 Using additional e-procurement easy for employees

The analysis showed that negative viewer were majority (40.74%) among all the respondents when they were given a task to learn how touse additional e-procurement technologies services however29.63% of therespondents had agreed that use additional e-procurement technologies service was easy for them, and 29.63% stayed neutral (table-8).

4.4.3 Technological Infrastructures Characteristic

4.4.3.1 Enough computers

The finding revealed that 88.89% of the respondents had agreed that the organization had already enough computers to enhance the adoption of e-procurement, 11.11% had neither agreednor disagreed as shown in the table-9.

4.4.3.2 Connected to National fiber optic

Whether their organizationswere alreadyconnected to national fiber optic for easy adoption of e-procurementactivities,88.89 % responded positively (table-9). But 11.11% were neutral (neither agree nor disagree).

Table 9: Technological infrastructures

Indication	Enough computers			Connected to National fibre optic			Firm existing infrastructures		
	Frequency	**%**	**Cumulative %**	**Frequency**	**%**	**Cumulative %**	**Frequency**	**%**	**Cumulative %**
Strongly agree	**15**	**55.56**	**55.56**	**10**	**37.04**	**37.04**	**9**	**33.33**	**33.33**
Agree	**9**	**33.33**	**88.89**	**14**	**51.85**	**88.89**	**9**	**33.33**	**66.67**
Neither agree or disagree	**3**	**11.11**	**100.00**	**3**	**11.11**	**100.00**	**4**	**14.81**	**81.48**
Disagree	**0**	**0.00**	**100.00**	**0**	**0.00**	**100.00**	**3**	**11.11**	**92.59**
Strongly disagree	**0**	**0.00**	**100.00**	**0**	**0**	**0.00**	**2**	**7.41**	**100.00**
Total	**27**	**100**		**27**	**100**		**27**	**100**	

4.4.3.3 Firm existing infrastructures

In respect of existing infrastructures,66.67% of the respondent had agreed that existing infrastructures was sufficient to enhance the use of e-procurement in tendering process in their organization, 14.81% of the respondents became neutral, 18.52% disagree that their organization infrastructures were sufficient to execute e-tendering activities as shown in Table-9

4.4.4 Perceived Benefits Characteristics

4.4.4.1 Reduction of transaction costs

51.85% of the respondents had agreed that adoption ofe-procurement would reduce the transaction cost compare totraditional/paper based system of procurement, 25.93%stayed neutral (neither agree nor disagree), and 22.22 % of the respondents had disagreed as show in Table 10 below

4.4.4.2 Improved the data accuracy

In the below table-10 showed,62.96 % of respondents had agreed that adoption of e-procurementin their organization would improve the data accuracy inprocurement process compare to traditional/paper based system for greater percentage andreduction of errors, 18.52% had stayed neutral, and 18.51% of the respondents haddisagreed that adoption of e-procurement in their organization would improve thedata accuracy

4.4.4.3 Increase installation costs and administrative cost

The result shows in the table-10below show that 48.15% of the respondents said that adoption of e-procurement increased the installation cost and other administrativecost, whereas majority of the respondents were neutral (29.63%) and 22.22% theydisagreethat the e-procurement would increase the installation and other administrativecost.

Table 10: Perceived benefits characteristics

Indication	Reduction transaction costs			Improve data accuracy			Increase installation and administrative cost		
	Frequency	%	Cumulative %	Frequency	%	Cumulative %	Frequency	%	Cumulative %
Strongly agree	5	18.52	18.52	5	18.52	18.52	5	18.52	18.52
Agree	9	33.33	51.85	12	44.44	62.96	8	29.63	48.15
Neither agree or disagree	7	25.93	77.78	5	18.52	81.48	8	29.63	77.78
Disagree	4	14.81	92.59	4	14.81	96.30	6	22.22	100.00
Strongly disagree	2	7.41	100.00	1	3.70	100.00	0	0	100.00
Total	27	100		27	100		27	100	

Source: Survey data (2015)

4.5 Environmental Characteristics and e-procurement Adoption

4.5.1 Normative Pressure

4.5.1.1Normatic Supplier Pressure

The data in table below revealed that 44.44 % of the respondents had disagreed that the extent of adoption among the suppliers had enforced their firms to adopt e-procurement,33.33 %of the respondents had neither agreed or disagreed and 25.92% of the respondents had agreed that the extent of adoption among the suppliers has enforce our firm toadopt e-procurement

Table 11: Normative pressure

Indication	Normatic supplier pressure			Core value			Adoption among customer/citizens		
	Frequency	**%**	**Cumulative %**	**Frequency**	**%**	**Cumulative %**	**Frequency**	**%**	**Cumulative %**
Strongly agree	**1**	**3.70**	**3.70**	**3**	**11.11**	**11.11**	**1**	**3.70**	**3.70**
Agree	**5**	**18.52**	**22.22**	**10**	**37.04**	**48.15**	**4**	**14.81**	**18.52**
Neither agree or disagree	**9**	**33.33**	**55.56**	**11**	**40.74**	**88.89**	**7**	**25.93**	**44.44**
Disagree	**12**	**44.44**	**100.00**	**2**	**7.41**	**96.30**	**5**	**18.52**	**62.96**
Strongly disagree	**0**	**0.00**	**100.00**	**1**	**3.70**	**100.00**	**10**	**37.04**	**100.00**
Total	**27**	**100**		**27**	**100**		**27**	**100**	

Source: Survey data (2015)

4.5.1.2 Core Value

The results of the finding indicated that 48.15% of the respondents had agreed thatthe normative pressure of firm core value of cost efficiency and process effectiveness had enforced their firms to adopt e-procurement, 40.74% of the respondents had neither agreed or disagreed concerning to the above, 11.11% of the respondents had disagreed

4.5.1.3 Adoption among customer/citizens

The analysis showed that 55.56% of the respondent had disagreed that normative pressure from customer /citizens side has enforced their firm want to adopt e-procurement,25.93% had stayed neutral by neither agreed or disagree and18.52 % hadagreed that customer/citizens were the sources for firm want to adopt e-procurement (table-11).

4.5.2 Mimetic Pressure Characteristics

4.5.2.1 Suppliers demand/pressure

Data gathered in Table-12below showed that 48.15% of the respondent had neither agreed nor disagreed that mimetic pressure from the supplier was the driver forforeign aided projects

organizations to adopt e-procurement, 18.51% of the respondents had disagreed that suppliers demand e-procurement technologies services offered tothem, and 33.33% respondents have agreed that suppliers demand e-procurementtechnologies services offered to them

Table 12: Mimetic pressure

Indication	Supplier demand/pressure			Alert of e-procurement opportunities			Opportunities to global market		
	Frequency	**%**	**Cumulative %**	**Frequency**	**%**	**Cumulative %**	**Frequency**	**%**	**Cumulative %**
Strongly agree	**4**	**14.81**	**14.81**	**12**	**44.44**	**44.44**	**3**	**11.11**	**11.11**
Agree	**5**	**18.52**	**33.33**	**7**	**25.93**	**70.37**	**7**	**25.93**	**37.04**
Neither agree or disagree	**13**	**48.15**	**81.48**	**7**	**25.93**	**96.30**	**13**	**48.15**	**85.19**
Disagree	**4**	**14.81**	**96.30**	**1**	**3.70**	**100.00**	**4**	**14.81**	**100.00**
Strongly disagree	**1**	**3.70**	**100.00**	**0**	**0**	**100.00**	**0**	**0**	**100.00**
Total	**27**	**100**		**27**	**100**		**27**	**100**	

Source: Survey data (2015)

4.5.2.2 Alert of e-procurement opportunities

The analysis showed that70.37% of the respondent had agreed that their firm was very alert to e-procurement technologies opportunities to cope with the slogan of e-government in contrast to 3.70% negative viewers.25.93% of the respondents had neither agreed nor disagreed (table-12).

4.5.3 Coercive Pressure Characteristics

4.5.3.1 Regulatory body

The finding indicated (table-13) that 33.33% of the respondents agreed that coercive pressurefromprocurementregulatory body had enforced the publicprocurement institutions to be mandatory to adopt e-procurement due tointroduction of PPA 2006, 48.15% had stayed neutral by neither agreed ordisagreed, and 18.52% had disagreed that coercive pressure from regulatory bodyhad enforced the public procurement institutions to adopt e-procurement.

Table 13: Coercive Pressure

Indication	Regulatory body			Foreign financing Agency			Country ICT law		
	Frequency	**%**	**Cumulative %**	**Frequency**	**%**	**Cumulative %**	**Frequency**	**%**	**Cumulative %**
Strongly agree	**4**	**14.81**	**14.81**	**5**	**18.52**	**18.52**	**2**	**7.41**	**7.41**
Agree	**5**	**18.52**	**33.33**	**10**	**37.04**	**55.56**	**1**	**3.70**	**11.11**
Neither agree or disagree	**13**	**48.15**	**81.48**	**10**	**37.04**	**92.59**	**23**	**85.19**	**96.30**
Disagree	**3**	**11.11**	**92.59**	**2**	**7.41**	**100.00**	**1**	**3.70**	**100.00**
Strongly disagree	**2**	**7.41**	**100.00**	**0**	**0**	**100.00**	**0**	**0**	**100.00**
Total	**27**	**100**		**27**	**100**		**27**	**100**	

Source: Survey data (2015)

4.5.3.2 Financing Agency (Donor agency)

From the data gathered, revealed that 55.56% of the respondents had agreed that coercive pressure from financing agency (donor agency) had enforced their firm/organizations to adopt e-procurement, 37.04% of the respondents had stayed neutral by neither agreed or disagreed to adopt e -procurement.

4.5.3.3 Country ICT law

The analysis showed that 85.19 % of the respondents had neither agreed or disagree, only3.70 % of the respondents had disagreed that the country ICT law had enforced their firms to adopt e-procurement, and 11.11% of the respondents had agreed that the country ICT laws had enforced their firm to adopt e- procurement.

4.6 Value Addition of e-Procurement

4.6.1Paper work reduction

The analysis showed (table-14) that 88.89% had agreed that the firm will enjoy reduction ofpaper work through adoption of e-procurement, 11.11 % of the respondents had neither agreed nor disagreed on the issue.

4.6.2 Achieve competitive Bids

The analysis showed that majority of the respondents(62.96%) had agreed that their firm achieve more competitive bids by using e-procurement compare to manual system, 25.93%had neither agreed or disagree. But only11.11% of the respondents had disagreed that their firm achieve more competitive bids by using e-procurement compare to manual system

4.6.3 Reduced cycle time

The analysis showed that 66.67% of the respondent had agreed that adopting e-procurement in their organizations would reduce cycle time, 25.93% of the respondents stayed neutral and 7.41% of the respondents had disagreed.

4.6.4 Increase fairness & transparency

The finding showed that 88.89% of the respondents had agreed that the fairness &transparency across the entire organization increased through adopting e-procurement, 11.11% of the respondents had neither agreed nor disagreed.

4.6.5 Standardize procurement procedures

The analysis indicated that 62.96% of the respondents had agreed that theirorganization by adopting e-procurement would standardize procurement procedures, 22.22% respondents had neither agreed nor disagreed and 14.81% of the respondents haddisagreed.

Table 14: Benefits Characteristic of e-procurement

Indication	Paper work reduction			Achieve competitive Bids			Reduced cycle time			Increase fairness & transparency			Standardize procurement procedure		
	Frequency	%	Cumulative %	Frequency	%	Cumulative %	Frequency	%	Cumulative %	Frequency	%	Cumulative %	Frequency	%	Cumulative %
Strongly agree	20	74.07	74.07	7	25.93	25.93	7	25.93	25.93	16	59.26	59.26	6	22.22	22.22
Agree	4	14.81	88.89	10	37.04	62.96	11	40.74	66.67	8	29.63	88.89	11	40.74	62.96
Neither agree or disagree	3	11.11	100.00	7	25.93	88.89	7	25.93	92.59	3	11.11	100.00	6	22.22	85.19
Disagree	0	0	100.00	3	11.11	100.00	2	7.41	100.00	0	0	100.00	4	14.81	100.00
Strongly disagree	0	0	100.00	0	0	100.00	0	0	100.00	0	0	100.00	0	0	100.00
Total	27	100		27	100		27	100		27	100		27	100	

Source: Survey data (2015)

Chapter-5: Discussion of the findings

Chapter-05: Discussion of the Findings

5.0 Introduction

In this chapter findings from the study were discussed. The main objective of thisstudy was to assess the adoption of e-procurement to foreign aided projects in Bangladesh and specific objectives of the study were;

i. To examine the organizational drivers in adoption of e-procurement in foreign aided projects in Bangladesh

ii. To determine the technological drivers in adoption of e-procurement in foreign aided projects in Bangladesh

iii. To identify environmental drivers in adoption of e-procurement in foreign aided projects in Bangladesh

From the study findings, organizational drivers, technological drivers, environmentaldrivers and also perceived value were discussed.

5.1 Organizational characteristics and e-procurement Adoption

The organizational characteristics influencing adoption of e-procurement differ fromone country to another and from one organization to another. In this study the researcher discussed four organizational characteristics included; size of organization, top management attitudes and support, relative advantage characteristics, and user involvement characteristics to address the question like what are the organizational drivers for the adoption of e-procurement for those projects.

5.1.1 Organization's size characteristics

Previous analysis showed that large firms were more likely to undertake innovation. Three major arguments supported the positive role of firm size in determining IT adoption: the benefits of the new IT, the greater availability of funds and the quicker capture of economies of scale

(Uliveira&Martin, 2010). In the study we found that in-house IT infrastructure expertise, skills & experience was sufficient to adopt the e-procurement process. In this study the organization had also enough funding to support the adoption of e-procurement. Here, a good percentage of respondents did not say about their IT infrastructure about their expertise. So, if it means they don't have ITsupport, it would not be a barrier to adopt the e-procurement process since they have enough money. Thus the finding of this study show that the majority of the organization was ready to embark on e-procurement interms of existing in-house IT infrastructure, expertise and skills they had in theirorganizations.

5.1.2 Top management attitudes characteristics

Previous research showed that top management was one among the critical factorswhich may influence positively or negatively the adoption of e-procurement in anorganization, support from top management was the precondition for successimplementation of systems; the top management support facilitates the adoption andimplementation of information systems (Sarkar, 2009).

The finding of the study was consistent with the literature read, the adoption of e-procurement in any organization need support from the top management, furthermore the analysis showed that top management was enoughaware of the e-procurement opportunities, thus they allocated enough resource to enhance adoption of e-procurement process simultaneously top management had encourage their employees to practice e-procurementprocess.

5.1.3 Relative advantage characteristics

Russell and Hoag, (2004) proposed that relative advantage was positively related to innovation adoption.Previous literatures also stated that perceive relative advantage was a core factor thatinfluence most organization to adopt e-procurement. In this study the results was correlated well to theliterature read that relative advantages was one among the core driver towardadoption of e- procurement. The study result showed that the e-procurement process enhanced the relationship with the business partner at the same time it increased the partner's firm efficiencies. It also helps to achieve value for money for the tax payer money.

5.2 Technological/Innovation Characteristics and e-Procurement Adoption

5.2.1 Compatibility characteristics

In Tomatzky and kleinsmeta-analysis of innovation adoption, they found that an innovation was more likely to be adopted when it was compatible with individual's job responsibilities and valuesystem. The findings of this study concluded that e-procurementwas compatible with most organizations business operations andexisting information of those organizations but on the other hand compatible with thesupplier business operation could not be fully evaluated. It might be due to the respondent did not have enough knowledge about their business partner's operation. However this data were consistence with the literature read. Adoption of e-procurement becomes difficult ineither upward or downward linkage of the organization if the partners business fitness does not compatible with the organization.

5.2.2 Complexity characteristics

Previous research showed that innovation with substantial complexity requires moretechnical skills. Complexity also needs greater implementation and operational effects to increase its rate of adoption. Complexity characteristics negatively influence the usage ofe-procurement in an organization.

The findings of the results showed that thecomplexity was much experienced on business partner operation site. It might be due to low level of technological skills. The more complex the e-procurement process the employees are slower to learn the process. Almoawi, (2011) argued that the easier to understand the technology and its application, the faster and more immediately theadoption process and vice versa

5.2.3 Technological infrastructures characteristics

Technological infrastructure had the structure adjustment inside the organization inorder to enable the internet accessibility both inside and outside the organization. Abetter ICT infrastructure enhances e-business development (Kim et al, 2011). Theanalysis showed that technological infrastructures for the adoption of electronicprocurement in most organization were sufficient. Inmostforeign aided projects, organizations was sufficient enough to start

practice e-procurement because the majority organization had enough computers, were already connected to national fibre optic and also they had good firm infrastructures.

5.2.4 Perceived benefits characteristic

Previous researches showed that "Perceived benefits" were divided into two parts 'direct benefits' include reduction in transaction errors and transaction costs,improved data accuracy and information quality, and faster application process. Onthe other hand, 'indirect benefits' included better customer services and improved relationship with business partners. The perceived benefits of e-procurement as seenby companies had tremendous implications whether one goes for the technology ornot (Gunasekaran and Ngai, 2008). The finding of this study showed,organization had realized that they were benefited from reduction of transaction cost, and from increaseaccuracy of data. But adoption of e-procurement increases installation cost in this study. It may possible that the respondent werenot directly related to the installation of software. Moreover the initial investment for installation of different software and others required higher cost in a country where technology is in primitive stage.

5.3 Environmental Characteristics and e-Procurement Adoption

In the study findings of previous chapter, the analysis showed those environmental characteristics might influence the adoption of e-procurement. In this part, theresearcher discussed environmental characteristics namely: mimetic pressure characteristics, normative pressure characteristics and coercive pressure characteristics

5.3.1 Mimetic pressure characteristics

The increase in market competition had a remarkable effect on the competitive behavior of organizations. In this study results showed that mimetic pressure for the adoption of e-procurement caused by fierce competition among organizations but not from supplier demand. It means supplier pressure did not influence the adoption of e-procurement for foreign aided projects in Bangladesh. But "Digital Bangladesh-vision 2021" had an indirect effect for the adoption of e-procurement.

5.3.2 Normative Pressure

Previous research showed that normative pressures could potentially influence e-procurement assimilation across the transactional and strategic procurement processes, depending on the specific kinds of pressures exercised by entities within the business environment (Pani&Agrahari, 2007). Normative pressures were the main driver of e-procurement (Luisa, 2010). But e-procurement adopted supplier is spare in Bangladesh. Data showed pressure from supplier were less dominant in Bangladesh.The reason behind this, lack of integration within supplier due tolack of capital of installing those new technologies, lack ofskilled personnel's and others causes. The analysis revealed that the only normative pressurethat drives the organization to adopt e-procurement is core value of effectiveness andefficiency and not the pressure from customer side.

5.3.3 Coercive Pressure

Empirical evidence suggested that coercive pressures on organizations might emerge from a variety of sources including resource-dominant organizations, regulatory bodies, and parent corporations, and are built into exchange relationships (Teoetal,2003).

The analysis showed that the coercive pressure in Bangladesh is exerted not only by procurement regulatory body but also by foreign financing agencies to influence the adoption of e-procurementwhile the trading partner (i.e. suppliers) and country ICT law did not influence theadoption of e-procurement. A large number of respondents did neither agree nor disagree that those regulatory body had an influence over them. In Bangladesh e-procurement is on infant stage. So without providing all resources the governmental bodies cannot exert pressure on the agencies.This might make the government agencies flexible on the issues. Moreover, country ICT amendment just has passed by the government, which could be another reason for their soft response to the organization. Also the government institution CPTU are taking necessary steps for adopting e-procurement (e-GP) in phase by phase projects with the help of foreign financing agency (donor agency) which is very much positive to adopting e-procurement.

5.4 Value Addition in of e-Procurement

The analysis showed that through adoption of e-procurement the organizations had reduce paper works, achieve better compliance ofprocurement procedures and reduction of errors, achievemore competitive bids, reduction of cycle time in procurement process, standardize procurement procedures and increase the efficiency and transparency in procurement activities.

Chapter-6:
Conclusion and Recommendation

Chapter-06: Conclusion and Recommendations

6.0 Introduction

This chapter explained the conclusion of the research problem, research objectives and research questions. Furthermore, the chapter showed how the study contributed to the policy makers and practitioners. Also gave recommendations for foreign aided projects in Bangladesh institutions and governments toward the adoption of electronic procurement inorder to cope with the government slogan of **"Digital Bangladesh-Vision 2021"**.

6.1 Conclusion

Despite many obstacles and limitations the study serves the role of an important pilot survey in the assessment for adoption of e-procurement and value additions to public institutions especially in this e-world. The major contribution of this study was identified. Technological factors which were drivers for adoption of electronic procurement mainly compatibility, complexity, technological infrastructures, and perceived benefits in relation to Bangladesh context. Organizational drivers mainly organization's size, top management attitude, relative advantage and user involvement influence the mostEnvironmental factorsincludemimetic pressure, normative pressure and coercive pressure are main driver for adoption of electronic procurement for foreign aided projects in Bangladesh. Generally the study revealed that adoption of e-procurement in organizationswould benefits more than cost, e-procurement would lead to value addition then cost addition.

6.2 Implications to policy makers

The findings generated from this study hold important practical implication for government, public institutions, private institutions, and suppliers. Furthermore the government could use the findings of this study as a stepping stone to enhance effectively use of e- procurement in the country.

6.3 Limitation of the study:

Research period was very short. Within this limited time it was difficult to collect more data on this study. The research area was very big. Dhaka is the capital of Bangladesh. Many organizations are based here. The researcher could not knock all of them. The researcher faced trouble to get the sufficient email address to access the respondent. The response rate was very low. The reason behind low response rate are that all the respondents are more professional, it was not easy to get information from them. Or they were not interest to pay sufficient time for this and also they have not so much awareness of e-procurement. Within short time it was not possible to go door to door for data collection. Furthermore the researcher had intent to use factor analysis forthe study but due to low response rate which is below 80 cases he focused more ondescriptive analysis.

6.4 Recommendations

Recommendations were made, based on research findings in the previous sections and on literature read. The researcher recommends the following;

☐ Government should improve the legal infrastructure such as privacy law, signature and other cybercrimes law in order to reduce the crime through e-transaction.

☐ Furthermore e-procurement was complex. Its applications requirecautious consideration. E-procurement gives speed, accuracy and transparency in working area; butit has also risks onthe adoption. So, there is at risk as well as its benefits. Otherwise, the application might notperform as expected.

6.5 Future Studies

This study was conducted to explore the factors influencing adoption of electronic procurement in foreign aided projects in Bangladesh based on technology, infrastructure of anauthority. Theresearcher would suggest for further research. One should focus only on single factor either Technological factors, Organizational factors or Environmental factors instead of conducting using all three variables. This would be very interesting as current area of research especially whilethe government's initiatives of ensuring every Upazila in Bangladesh of being connected to nationalfibre optic to enhance effective application of e-governance. The researcher also

recommended that another research should be conducted quantitatively to fully probe and bring out the hidden facts that this study could not touch because this research was merely qualitative research rather than quantitative.

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Appendices: PROPOSED RESEARCH QUESTIONNAIRE

Research Question for "Adoption ofe-Procurementin Foreign AidedProjectsinBangladesh"

PART I: GENERAL ORGANIZATION INFORMATION The information gathered will not be used in any other way and will be kept strictly confidential. Please Tick [√] the most appropriate alternative/s	
(a)Which Organization do you work for? ……	(b)What Position do you hold in the organization? ……
(c) In what category does your organization fall? ( ) Public; ( ) Private; ( ) NGO ……..... ( ) Other level (specify)……	(d) What is your highest level of education? ( ) Certificate/Diploma ( ) Bachelor degree/Advanced Diploma ( ) Master's degree ( ) Other level (specify)…….
(e) For how long have you been employed in that position? ……	(f) Name of Project (Foreign aided), ……
(g) Project duration. ……	(h) Project is financed by (Name of foreign agency)- ……
(i) Amount of foreign aided for this project. ……	(j)What Position do you hold in the project? ……
(k) Your total experience in procurement: _<1 years _1-5 years _>5 years	(l) What do you procure mainly? ( )Goods, ( )Works, ( )Service
(m) In which method, you are doing procurement? #Goods-( ) e GP; ( ) Traditional method. #Works-( ) e GP; ( ) Traditional method. #Service-( ) e GP; ( ) Traditional method.	(n) Your knowledge level about Electronic Government Procurement (e-GP) ( )I have clear understanding ( )I have idea, but need training to know more ( )I know about, but don't know details ( )I have no idea

PART II: Innovation Characteristics influencing the adoption of e-procurement

For each statement below please put tick [√] mark that best describes your view on your firm

(01) Compatibility characteristics	**Strongly agree**	**Agree**	**Neither agree or disagree**	**Disagree**	**Strongly disagree**
(01 a) Using e-procurement fits well with the way our office do business					
(01b) Using e-procurement fits well with our office business partners operates i.e. suppliers					
(01c) Using e-procurement fits well with the existing information system					
(02) Complexity characteristics					
(02 a) Using e-procurement is easy for our employees					
(02b) Using e-procurement technologies is clear and understandable to our business partners					
(02c) Learning how to use additional e-procurement technologies services is easy for our employees					

(03) Technological infrastructures characteristics					
(03 a) Our firm has already enough computers to enhance the adoption of e-procurement					
(03 b) Our office has already connected to National fibre optic to easy adoption of e-procurement					
(03 c) Our office existing infrastructures is sufficient to enhance the use of e-procurement in tendering process.					
(04) Perceived benefits characteristics					
(04 a) Adoption of e-procurement in our office has reduce the transaction costs					
(04 b) Adoption of e-procurement in our office has improved the data accuracy in our procurement process					
(04 c) Adoption of e-procurement in our office has increase the installation costs and other administrative cost					
(05) Organization's Size characteristics					
(05a) Our office had already existing in-house IT infrastructure, expertise and skills to support e-procurement					
(05b) The firm had previous IT experience to support e-procurement application					
(05c) Our office had enough financial resources to support adoption of e-procurement technologies					
(06) Top Management Attitudes characteristics					
(06a) Top management allocated resources for e-procurement technologies adoption					
(06b) Top management is aware of the benefits of procurement technologies					
(06c) Top management actively encourages employees to use e-procurement					
(**07) Relative advantage characteristics**					
(07 a) Using e-procurement enhances strong relationships with stakeholders (supplier/contractor)					
(07b) Using e-procurement improves our office effectiveness, and efficiency					
(07 c) Using e-procurement enable our office to achieve Value for money					
(08) Mimetic Pressure					
(08a) Our suppliers demand e-procurement technologies services offered to them					
(08b) The office is very alert to e-procurement technologies opportunities to cope with the slogan of e-government (Digital Bangladesh Vision 2021)					
(08c) Using e-procurement technologies is important to Keep up with competition in global market.					
(09) Normative Pressure					
(09a) The extend of adoption among the suppliers has enforce our office to adopt e-procurement					
(09b) The office core value of cost efficiency and process effectiveness has enforce the office to adopt e-procurement					
(09c) The extent of adoption among stakeholder (contractor/citizens) has enforced our office to adopt e-procurement					

(10) Coercive Pressure					
(10a) The Regulatory body enforce our office to adopt e-procurement					
(10 b) Financing Agency (Donor) enforce our office to adopt e -procurement					
(10 c) The country ICT law has enforce our office to adopt e-procurement					
PART III: Value addition of e-procurement					
(11) Benefits Characteristic of e-procurement	**Strongly agree**	**Agree**	**Neither agree or disagree**	**Disagree**	**Strongly disagree**
(12a) The office enjoy reduction of Paper Work through adoption of e-procurement					
(12b) Our office achieve more competitive Bids by using e-procurement					
(12c) By adopting e-procurement the institution Reduced Cycle Time					
(12 d) The fairness & transparency across the entire organization in tendering increase through adopting e-procurement					
(12 e) Our organization by adopting e-procurement has Standardize procurement procedures.					
(12) What are the other specific reasons for adopting e-procurement in your organization? **)** **If you feel there are other specific barriers or challenges pertinent to adopting e-procurement practice in Foreign Aided Projects in Bangladesh case, Please list down** **…….** **…….** **…….** **…….**					

Thank you for your assistance.

***Declaration**: This Questionnaire has been prepared for the purpose of dissertation project as partial requirement of Master in Procurement and Supply Management program run by the **BRAC Institute of Governance and Development (BIGD)** of BRAC University, and will be used only for academic purpose.*

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