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Research Thesis on

Identifying Factors Affecting the Diffusion of Bank Fusion Universal Bank CORE Banking System: The Case of Awash International Bank S.Co.

By

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Abstract

This thesis investigates the factors influencing the slow diffusion progress of Bank Fusion Universal Banking CORE Banking solution in Awash International Bank. While several studies exist investigating factors influencing information system adoption by organizations, this thesis is different in it tries to identify factors affecting the diffusion of an information system innovation.

Thus, the present thesis considered the factors influencing the diffusion of BFUB CORE banking system by employees of AIB. To evaluate the factors affecting the diffusion of the innovation in AIB, Roger's (1995) DOI model, Tornatzky and Fleischer 's (1990) TOE model, andRoger's (2003) perceived attributes of technological innovation were adopted.

The research started with the identification of the research problem and questions, and a review of related literature. The data collection included a process of data collection via questionnaire designed based on variables extracted from constructs and conducted to 145 employees, covering different salaries, ages educational background and job categories stages.

The outcome of the study implies that there is complexity of the innovation and not enough time given for training to internalize the innovation. These two factors falls in the social and technological context of the conceptual framework of the study.

The study recommended ways to get rid of these factors for a smooth and rapid innovation diffusion process in AIB.

The study also directs future similar studies to include measuring the rate of diffusion of other new financial technologies like ATM, POS and IB.

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List of Acronyms

AIB – Awash International Bank
ATM – Automatic Teller Machine
BFUB – Bank Fusion Universal Banking
CORE – Centralized Online Real-time Electronic
DOI – Diffusion of Innovation
I.B – Internet Banking
I.S – Information Systems
I.T – Information Technology
ICT – Information Communication Technology
IOS - Analyzed Interorganizational Systems
KMO - Kaiser Meyer Olkin
PEOU – Perceived Ease of Use
POS – Point of Sale
PU – Perceived Usefulness
TAM – Technology Acceptance Model
TOE – Technology Organization Environment

Chapter One

Introduction

1.1 Background of the study

In recent years, the financial services industry like banks has been branded by increased global and countrywide competition, the transition from paper-based to electronic products, and a number of controlling changes. The non-stop advancement of technology has allowed banks to extend the scope of their operational activities and increase their business efficiency and competency, automate critical functions such as credit checking, loan approvals and day-to-day financial transactions.

At the same time, the rapid growth of electronic payments has exposed the weaknesses of complex manual batch-processing systems and provoked innovation and adoption of new technologies that store and transfer critical information in real time. This technological revolution is also providing new challenges in terms of ensuring data security and protecting customers from theft threat in every level of service checkpoints.

This advent of Information and Communications Technology has led to the proliferation of electronic-based banking products as an alternative channel for routing banking services to customers (Narteh, 2012). Towards the environment of rapid technological advancement, the evolving behaviors of customers and literate staffs have become a high attention for banks.

As we all know these days, the cost of computer and other ubiquitous devices continue to fall, customers are increasingly interacting with banks in a virtual world, as well as through more traditional channels such as branch/office visits.

Collaborating with hardware, software, telecommunications, and other companies, banks are introducing new ways for consumers to access their account balances, transfer funds, pay bills, and buy goods and services without using cash, mailing a check, or leaving home (Frei et al., 1998)

In this case, banks that are not able to innovate and compete effectively and

efficiently in all over the banking market may risk losing market share to a new upcoming tech-savvy opponents. In this kind of business environment, technological innovation is recognized as a key differentiator among banks today.

In these contexts, companies with the capacity to innovate will be able to respond to these challenges faster and to exploit new products and market opportunities better than non-innovative companies (Brown and Eisenhard, 1995; Miles and Snow, 1978).

Banks in a developing country like Ethiopia needs a serious attention while applying IS innovation diffusion framework or model. This is because technological innovation affects not just banking and financial services, but also the direction of an economy and its capacity for continuous growth.

In this case, identifying the factors that influences the IS innovation diffusion process is a vital key to fully absorb the adopted innovation among the organization. Thus, the aim of this study is to analyze and identify factors affecting the diffusion of outsourced innovation known as BFUB CORE Banking Solution adopted by Awash International Bank S.Co (AIB) in January 2014.

According to Rogers (1995), innovation takes time to spread through the social system and innovation diffusion process is a new idea's becoming widespread from its source of invention or creation to its ultimate users or adopters. This statement may indicate that the bank didn't put a time frame for the diffusion of newly adopted innovation and this study will come up with answers using innovation characteristics of Rogers (1995).

This may help the bank to rearrange the diffusion process of this new innovation and strengthen its business advantage in the banking industry through investigating the factors by combining three innovation diffusion models that may be helpful to identify issues affecting the diffusion process.

1.2 Statement of the Problem

Most organizations follow traditional ways of Information Systems implementation and diffusion process, while Information Systems innovation challenges the employees to acquire more knowledge, and understanding of the products and services they deploy and organization readiness to implement Information System becomes a challenge during the innovation diffusion process in the banking industry in Ethiopia.

However, there are local studies (Nebiyu, 2010; Meseret, 2010; Abebe, 2016; Girmanesh, 2016) conducted towards Information Systems and Information Communication Technology innovation adoption and there was limited attention given to diffusion of innovation.

Awash International Bank S.Co (AIB) is the selected bank for this research. AIB is the first private bank in Ethiopia, which is established in November 1994. The bank can also be hailed as the first introducer of banking application among other private banks in Ethiopia.

AIB has been using corporate banking application since 1997. Now a days the bank has 240 branch offices and more than 3,500 employees assigned in different working positions.

Due to technology advancement and increasing of market competition, the bank was obligated to change its previous corporate banking application to adopt a new and advanced corporate banking application called BFUB CORE Banking system.

After the adoption of this new outsourced innovation, there observed slowness of diffusion of the innovation because of unidentified factors.

Thus the influencing factors of the diffusion process of the newly adopted BFUB CORE Banking System in AIB has led the researcher to identify these issues that hinder diffusion of the innovation across the bank and its society.

Since the system is new, the bank's society couldn't cope up with it in a timely manner and has made the business process flow slowly, that could push the business operation unsatisfactory and bring the bank to lose its market share due to weak competitive advantage.

The sociological system theory, according to Darmanpour et al (2009), challenged the technological imperative and argued that changes in technical (operating) system of organization should be coupled with changes in the social (administrative) system in order to optimize organizational outcomes since society is dynamic and industry must respond timely to societal demands.

Since banking industry operations are very sensitive and critical to the over all country wide financial structure, overcoming the above innovation diffusion challenges by using new and integrated I.S innovation model is believed to improve the banking business process operations and smooth I.S innovation diffusion processes.

1.3 Research Questions

- What are the practices of IS/IT innovation diffusion at AIB?
- What is/are the influencing factors that affect the diffusion of BFUB CORE banking system.
- What I.S innovation diffusion models/theories are widely used in financial institutions in Ethiopia?
- How are other banks in other developing countries implement IS innovation diffusion as compared to AIB?

1.4 General Objective

The aim of the study is to analyze and investigate factors affecting the diffusion of outsourced innovation known as BFUB CORE Banking Solution adopted by Awash International Bank S.Co (AIB) in January 2014 and come up with a solutions and recommendation to over come the problem for successful and smooth business process.

1.5 Specific Objectives

- Identify the challenges of IS innovation diffusion problems in AIB.
- Examining I.S innovation diffusion model used in banks in other developing countries.
- Provide a solution to avoid or minimize the factors affecting the diffusion process of BFUB in AIB.
- Evaluating the out come of the research and suggest a preferred action against the problem.

1.6 Significance of the Study

This research will contribute in practice for more effective IS innovation diffusion process in AIB. And it is believed to provide robust business process among employees in the bank by testing social communication, technology acceptance and employee's educational level and know-how.

- The result of this study will fully enhance the business operation of AIB.
- The outcome of this study would be taken or used as a solution for IS innovation diffusion problems for other banking industries in Ethiopia.
- Since most banks uses highly similar business process, they can use the outcome this study as an input for their innovation diffusion process.
- The result of the study gives banks an opportunity to shift and practice a new IS innovation diffusion technique.

1.7 Limitation of the Study

The study focused on one sample private bank in Ethiopia, Awash International Bank (AIB) due to time and financial constraints. And the study only observes one IS

innovation product (BFUB) and neglects other innovations like payment systems ATM, POS and Internet Banking.

Chapter Two

Literature Review

2.1 Overview

Technological advancement in recent years in Information and Communication Technologies (ICT) has brought many innovation opportunities to the field of Information Systems (IS). According to (Rogers 2003), Innovation is an idea, practice, or project that is perceived as new by an individual or other unit of adoption. The main goal of such innovation is for the improvement of organizations' performance and the achievement of competitive business advantage.

Since it is difficult to imagine business without the help of ICT, organizations are supposed to manage and re-arrange the way they operate their business accordingly. Many organizations nowadays rely their businesses on IS innovated environments.

In today's information age, besides getting the information, it is important to use the information effectively and create value. This context increases the value of the innovation that means renewal of science and technology that provide economical and social benefits. The goal of innovation is positive change, to make someone or something better. Innovation leading to increased productivity is the fundamental source of increasing wealth in an economy. Thus, innovation adoption and its diffusion is the most important factor for organizations that guarantees employment growth, sustainable growth, social welfare and the quality of life.

Financial institutions like banks are hailed to be more beneficiary from IS these days, for keeping their business run effectively, efficiently, and reliably. Operational performance is a vital key to seize competitive advantage among their market share.

(Naret, 2012) stated that the advent of information and communication technology has led to the proliferation of electronic based banking products as an alternative channel for routing banking services to customers. This will positively transform the banking operations from paper-based to ICT oriented operation.

2.2 Information System Innovation

According to (Swanson 1994), IS innovation may be broadly defined as innovation in the organizational application of digital computer and communications technologies, it is fundamentally organizational innovation. In this case organizations need to analyze their business process in relation with the innovation they are going to apply.

Since IS can be considered as a kind of technological innovation, in the former IS adoption and diffusion research, researchers have been drawing functional parallels between IS adoption and technological innovation adoption and emphasizing the need for viewing IS adoption from the perspective of organizational introduction of technological innovation (McFarlan and McKenney 1982; Zmud 1984).

There is an increasing digital dependence to stay competitive, given the evolution that Information and Communications Technologies have experienced in their application for businesses, migrating from a focus on efficiency to one on effectiveness, and then moving on to innovation. Information Systems (IS) innovation can be broadly defined as innovation in the organizational application of digital computer and communications technologies (Swanson 1994).

There are elements of IS innovations that include technical issue, human concerns, managerial actions and knowledge, interaction among line employees and information technology experts, strategic, tactical and operational elements and vision to be considered before the implementation of the innovation. A holistic approach to IS development and use is needed to counteract the dangers of reductionism, that is, paying too much attention to a subset of these elements while glossing over these. (Larsen, 1998)

2.3 Information System Innovation Framework

According to (Davenport, 1993) IS innovation framework consists five phases: identifying process for innovation, identifying change levers, developing process vision, understanding existing processes, and designing and prototyping the new process. These five phases can help to create methods and understand the use of IS and the innovation process. And it is also believed that human beliefs, attitudes, interests and behaviors determine how the process unfolds and influence process content (Van de Ven, 1986, 1992; Van de Ven and Poole, 1995). The authors also suggested five key structural issues to explore IS innovation. These are:

Time Horizon Structure

This view helps to identify among strategic, tactical and operational issues. Since some innovations have long-term horizon and strategic nature and some innovations have intermediate-term horizon (tactical planning) and some systems have short–term focus, IS innovation can not be easily identified with one of these but it can be placed within each of the three levels of strategic, tactical and operational.

Knowledge Structure

Keen (1991) and Swanson (1994) stated that, IS knowledge among line managers and business knowledge among IS professionals play a vital role in IS Innovation success. Cooperation among these stakeholders can determine the success or failure of the IS innovation.

Organizational Structure

It is clear that organizational structure can create opportunity and limitation for IS innovation. This is because the organizational groups and individuals are included in a traditional arrangement of networked units (divisions, departments, offices and

etc). Thus, the groups should be divided into two; formal and informal. Where formal groups deployed on a formal meeting for a better decision-making and the informal groups emerge through individual action to introduce change and employ newly introduced IS before the organization has developed active strategies for its use (Brancheau and Wetherbe, 1990).

Artifact Structure

Usually, the introduction of an IS/IT component/tool is regarded as the IS innovation. Most diffusion of innovation studies use a clearly defined IS/IT component as their study object, for example, spreadsheets (Brancheau and Wetherbe, 1990). The basic assumption of the artifact structure depends on the implemented IS or IT components a concrete and visible component of a wider phenomenon.

Innovation Process Structure

According to (Van de Ven, 1992), It is quite common to advocate that an innovation develops over time in phases, but a development process may contain many elements not included in a phase model. The process may reiterate phases more often than thought and each reiteration may contain different elements and include actors not previously involved in the process.

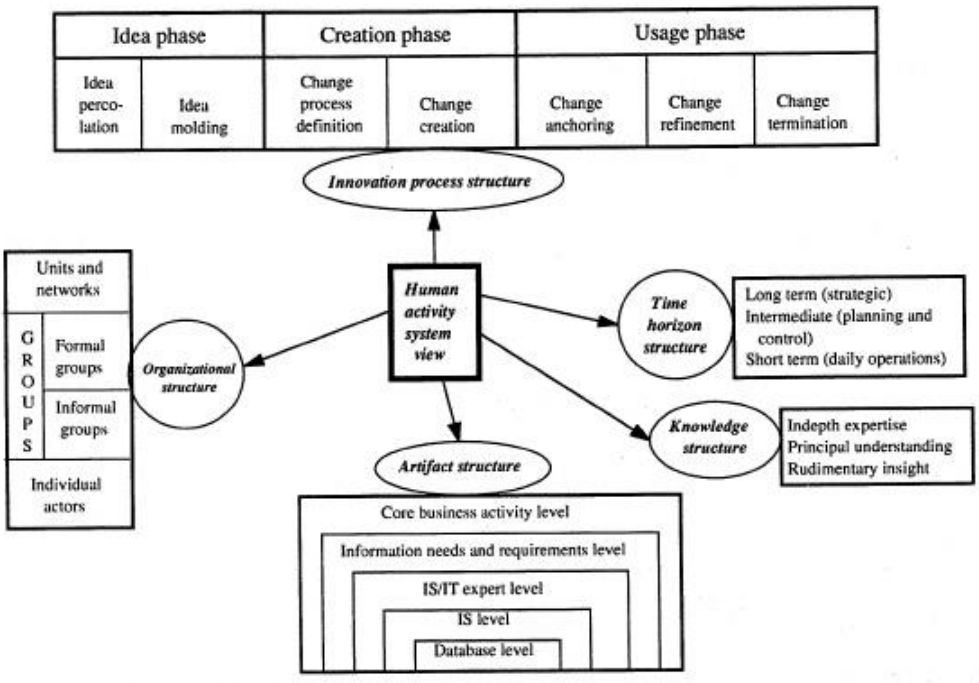

Fig. 2.1: The IS Framework Structure: Key Issues and Key Issues structure

Image Adopted from: (Larsen 1998)

2.4 Information Systems Innovation Adoption

In this study, IS innovation adoption is defined as using computer hardware and software applications to support operations, management, and decision making in the banking business in AIB.

These days, information systems are widely adopted by banks and have penetrated to almost all areas of the enterprise. By means of technology innovation, new information systems are effectively meshed with organization design, process, strategy and external relationships throughout the enterprise (Swanson 1994).

Rogers (1995), considers innovation adoption as the process of technology diffusion and the factors influencing technology adoption decisions has been occurred either explicitly or implicitly. He also defined classic diffusion model, he highlighted five innovation characteristics from the summary of previous researches as the

determinants of adoption rate of innovations, consisting of relative advantage, compatibility, complexity, trialability, and observability. He suggested that those innovations perceived by adopters as having greater relative advantage, compatibility, trialability, observability will be adopted rapidly than other innovations. And innovations perceived as less complex will be adopted more rapidly than those perceived as more complex.

2.4.1 Factors affecting IS adoption

According to Tatum (1989) there are important barriers while adopting of new technology such as technological risk, financial risk, and risk of rejection by workers. Paulson and Fondahl (1980) have also identified three major barriers that hinder development and implementation of new technologies. These are:

1. Research filters that may prevent further development of an idea if it is not expected to be cost effective.
2. Technical risk that prevents contractor from using ideas that are not fully developed; and
3. Technology transfer barriers that prevent the adoption of mature, cost effective technologies and include lack of awareness about new ideas, problems communicating how these ideas could be effective, risk and liability involved in trying something new, difficulty in gaining approval from third parties (owners, designers, and regulatory authorities), and resistance to change.

2.5 Information Systems Innovation Diffusion

The diffusion of an innovation has been defined as the process through which innovation "is communicated through certain channels over time among the members of a social system" (Rogers, 1983). The innovation could be any idea, practice, or object that is new to the members of the social system or population (Mahajan & Peterson, 1985), such as a medicine, an information technology (IT) product, or a software development approach. An adopter could be any entity such

as an individual, a family, a firm, an industry, or a country.

However, in any diffusion process, all members are assumed to be of the same broad type (e.g., all individuals or all firms). The social system, or population, for the diffusion includes all potential adopters of the innovation. According to (Rogers 1995), diffusion of innovations refers to the spread of abstract ideas and concepts, technical information, and actual practices within a social system, where the spread denotes flow or movement from a source to an adopter, typically via communication and influence. Such communication and influence alter an adopter's (an actor's) probability of adopting an innovation, where an actor may be any societal entity, including individuals, groups, organizations, or national polities. In the broadest sense, studies of diffusion have provided an empirical and quantitative basis for developing more rigorous approaches to theories of social change (e.g., new conceptual and mathematical explanations of social change) (DeFleur 1966), and principles of diffusion are often used in assessments of world economic and political developments. Thus, diffusion has become a widely investigated research area in sociology, economics, political science, and communication.

The study of innovation diffusion (e.g. Roger 1995; Tornatzky and Fleicher 1990; Zaltman 1973) has a long history as a multidisciplinary field with contributions from sociologists, communication researchers, economists, organizational researchers, IT researchers, and many others. While there is much diversity across these traditions, they are unified by their concern with three basic questions (Fichman 2000): What determines the rate, pattern, and extent of diffusion of an innovation across a population of potential adopters? What determines the general propensity of an organization to adopt and assimilate innovations over time? And what determines the propensity of an organization to adopt and assimilate a particular innovation? Studies on organizational innovation adoption have been an important subset of this broad stream of research (Damanpour 1991).

Rogers (2003) defines diffusion as "the process in which an innovation is communicated thorough certain channels over time among the members of a social system". As expressed in this definition, innovation, communication channels, time, and social system are the four key components of the diffusion of innovations.

Innovation

Rogers offered the following description of an innovation: "An innovation is an idea, practice, or project that is perceived as new by an individual or other unit of adoption" (Rogers, 2003). An innovation may have been invented a long time ago, but if individuals perceive it as new, then it may still be an innovation for them. Uncertainty is an important obstacle to the adoption of innovations. An innovation's consequences may create uncertainty: "Consequences are the changes that occur in an individual or a social system as a result of the adoption or rejection of an innovation" (Rogers, 2003). To reduce the uncertainty of adopting the innovation, individuals should be informed about its advantages and disadvantages to make them aware of all its consequences.

Communication Channels

The second element of the diffusion of innovations process is communication channels. For Rogers (2003), communication is "a process in which participants create and share information with one another in order to reach a mutual understanding". This communication occurs through channels between sources. Rogers states, "a source is an individual or an institution that originates a message. A channel is the means by which a message gets from the source to the receiver". And he also states diffusion is a specific kind of communication and includes these communication elements: an innovation, two individuals or other units of adoption, and a communication channel. Mass media and interpersonal communication are two communication channels. While mass media channels include a mass medium such as TV, radio, or newspaper, interpersonal channels consist of a two-way communication between two or more individuals. On the other hand, "diffusion is a very social process that involves interpersonal communication relationships" (Rogers, 2003). Thus, interpersonal channels are more powerful to create or change strong attitudes held by an individual. In interpersonal channels, the communication may have a characteristic of similarity, that is, "the degree to which two or more individuals who interact are similar in certain attributes, such as beliefs, education, socioeconomic status, and the like," but the diffusion of innovations requires at least some degree of dissimilarity, which is "the degree to which two or more individuals

who interact are different in certain attributes." In fact, "one of the most distinctive problems in the diffusion of innovations is that the participants are usually quite dissimilar" (Rogers, 2003).

Time

According to Rogers (2003), the time aspect is ignored in most behavioral research. He argues that including the time dimension in diffusion research illustrates one of its strengths. The innovation-diffusion process, adopter categorization, and rate of adoptions all include a time dimension.

Social System

The social system is the last element in the diffusion process. Rogers (2003) defined the social system as "a set of interrelated units engaged in joint problem solving to accomplish a common goal". Since diffusion of innovations takes place in the social system, it is influenced by the social structure of the social system. For Rogers (2003), structure is "the patterned arrangements of the units in a system". He further claimed that the nature of the social system affects individuals' innovativeness, which is the main criterion for categorizing adopters.

2.5.1 Information Systems Innovation Diffusion Models

2.5.1.1. Innovation-Decision Process

According to Rogers (2003), innovation-decision process is an information-seeking and information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation and it involves five steps: knowledge, persuasion, decision, implementation, and confirmation. These stages typically follow each other in a time-ordered manner.

The Knowledge Stage:

This is the first stage of the process on which an individual learns about the existence of innovation and seeks information about the innovation how and why it works. Rogers (2003) stated three knowledge questions: Awareness-knowledge which can motivate the individual more about the innovation and then to adopt it by

representing the knowledge of the innovation's existence, How-to-knowledge which contains information about how to use an innovation correctly. Thus, technology is not used at an expected level, since they need help in how to use the technology effectively in teaching (spots, 1990), and Principle-knowledge, which includes the functioning principles describing how and why an innovation works. An innovation can be adopted without this knowledge, but the misuse of the innovation may cause its discontinuance.

The Persuasion Stage:

According to Rogers (2003), "the formation of a favorable or unfavorable attitude toward an innovation does not always lead directly or indirectly to an adoption or rejection". The individual may have a negative or positive attitude toward the innovation. Usually, the persuasion stage follows the knowledge stage in the innovation-decision process because the individual would shape his or her attitude after he or she knows about the innovation. It is on this stage that the individual is involved more sensitively with the innovation because the degree of uncertainty about the innovation's functioning and the social reinforcement from others affect the individual's opinions and beliefs about the innovation. While the knowledge stage is more cognitive- (or knowing-) centered, the persuasion stage is more affective- (or feeling-) centered (Rogers, 2003).

The Decision Stage

At this stage the individual chooses to adopt or reject the innovation. If an innovation has a partial trial basis, it is usually adopted more quickly, since most individuals first want to try the innovation in their own situation and then come to an adoption decision. The vicarious trial can speed up the innovation-decision process. However, rejection (either active rejection in which the individual tries an innovation and thinks about adopting it but later the individual decides not to adopt it, or passive rejection which the individual does not think about adopting the innovation at all (Rogers, 2003)) is possible in every stage of the innovation-decision process.

The Implementation Stage

At this stage an innovation is put into practice. Newness of the innovation may bring

some degree of uncertainty. Thus, the implementer may need technical assistance from change agents and others to reduce the degree of uncertainty about the consequences. Rogers (2003) explained that reinvention usually happens at the implementation stage, so it is an important part of this stage. Reinvention is "the degree to which an innovation is changed or modified by a user in the process of its adoption and diffusion while the adoption of an innovation is the process of using an existing idea."

The confirmation Stage

At this stage of innovation-decision process, the individual looks for support for her or his decision. Thus, attitudes become more crucial at this stage. Because according to Rogers (2003), the decision can be reserved if the individual is exposed to conflicting messages about the innovation. This stage can also entertain adoption or discontinuance depending on the support for adoption of the innovation.

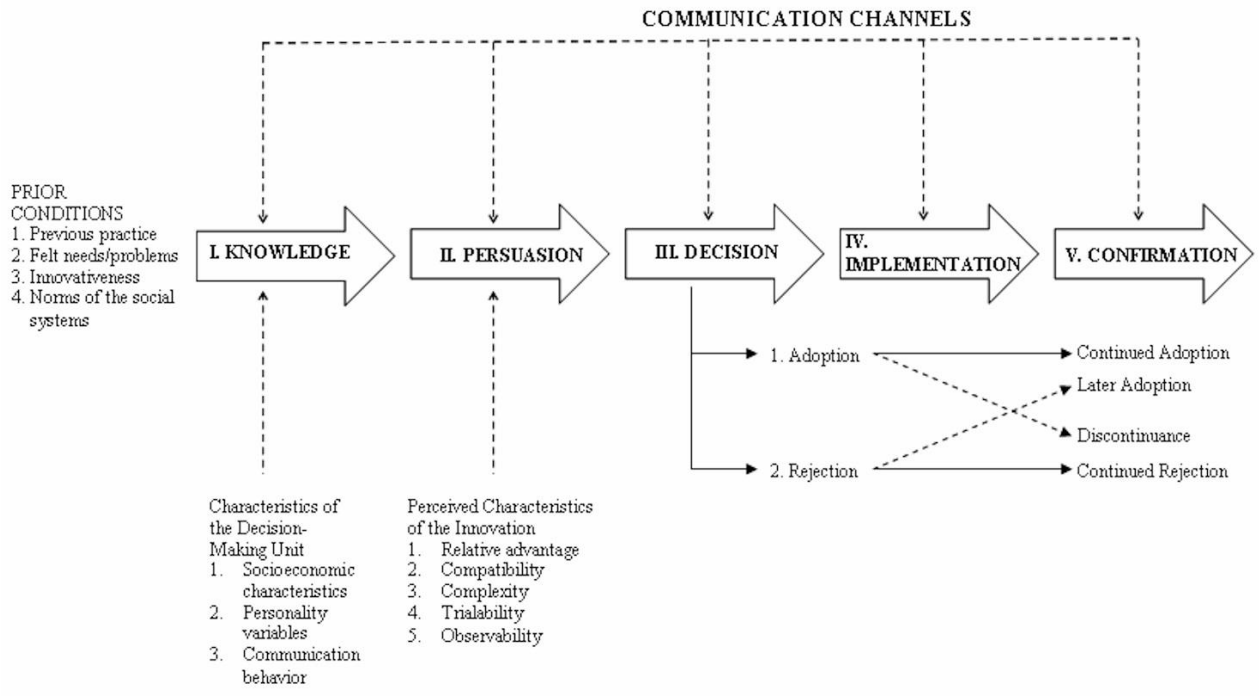

Fig.2.2 A Model of Five Stages in the Innovation-Decision Process (Source: Diffusion of Innovations, Fifth Edition by Everett M. Rogers. Copyright (c) 2003

2.5.1.2. Diffusion of Innovation (DOI) Model

DOI is a theory of how, why, and at what rate new ideas and technology spread through cultures, operating at the individual and firm level. DOI theory sees innovations as being communicated through certain channels over time and within a particular social system (Rogers 1995). Individuals are seen as possessing different degrees of willingness to adopt innovations, and thus it is generally observed that the portion of the population adopting an innovation is approximately normally distributed over time (Rogers 1995). Breaking this normal distribution into segments leads to the segregation of individuals into the following five categories of individual innovativeness (from earliest to latest adopters): innovators, early adopters, early majority, late majority, laggards (Rogers 1995). The innovation process in organizations is much more complex, It generally involves a number of individuals, perhaps including both supporters and opponents of the new idea, each of whom plays a role in the innovation diffusion.

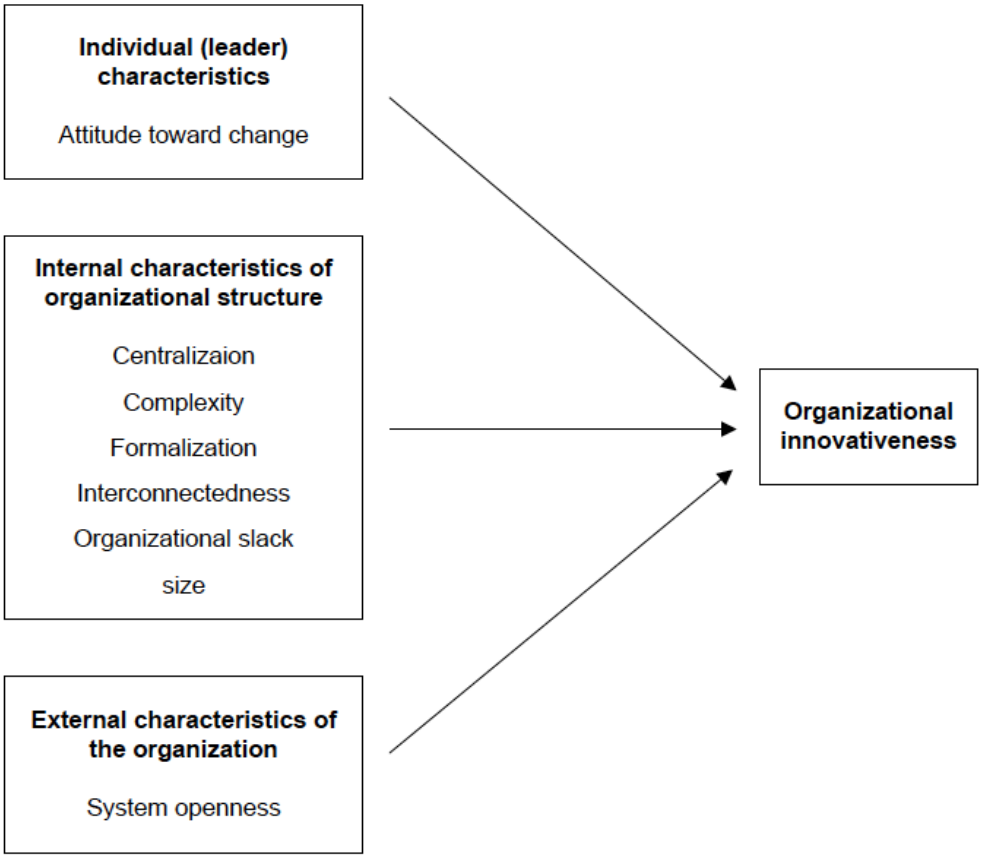

Fig.2.3 Diffusion of Innovation Model. Adopted from (Rogers 1995)

2.5.1.3. Technology, organization, and environment context (TOE) model

The TOE is I.S adoption framework that was developed in 1990 (Tornatzky and Fleischer 1990). It identifies three aspects of an enterprise's context that influence the process by which it adopts and implements a technological innovation: technological context, organizational context, and environmental context:

i. Organizational context:- which is typically defined in terms of several descriptive measures including organization size; the centralization, formalization, and complexity of its managerial structure; the quality of its human resources; and the amount of slack resources available internally.

ii. Technological context:- which describes both the internal and external technologies relevant to the organization, including current practices and equipment internal to the organization, as well as the pool of available technologies external to the firm.

iii. Environmental context:- an area in which an organization conducts its business, such as its industry, competitors, access to resources supplied by others, and dealings with government.

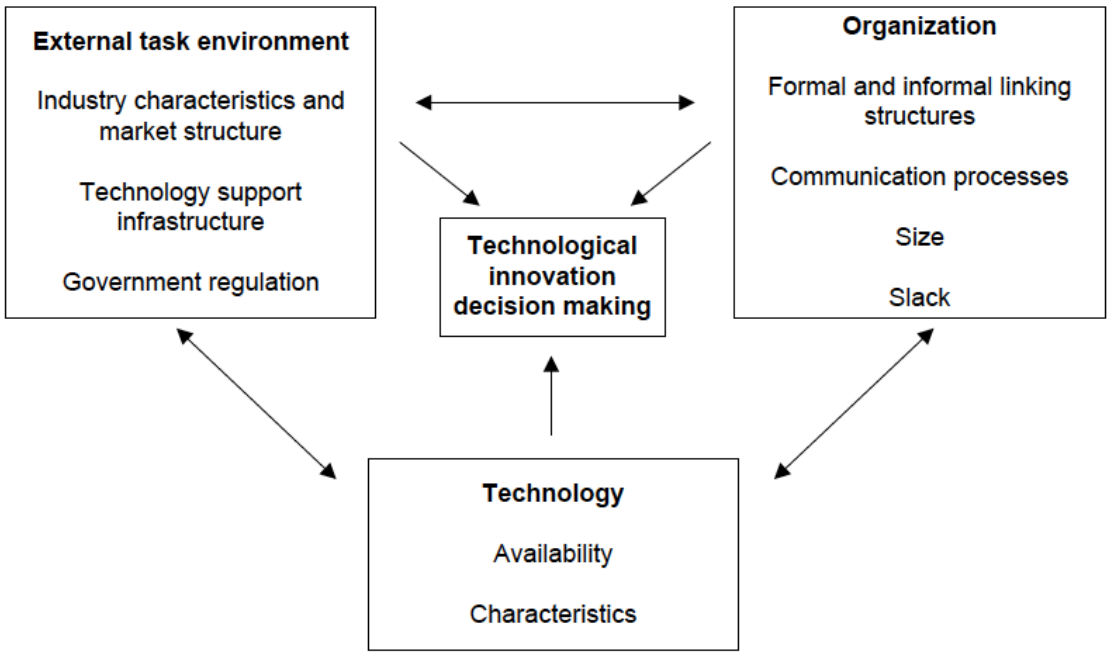

Fig. 2.4. Technology, organization, and environment framework (Tornatzky and Fleischer 1990)

2.5.1.4. Iacovou et al. (1995) model

Iacovou et al. (1995) analysed interorganizational systems (IOSs) characteristics that influence firms to adopt IT innovations in the context of EDI adoption. Their framework is well suited to explain the adoption of an IOS. It is based on three factors: perceived benefits, organizational readiness, and external pressure. Perceived benefits are a different factor from the TOE framework, whereas organizational readiness is a combination of the technology and organization context of the TOE framework. Hence, IT resources are similar to technology context and financial resources are similar to organizational context. The external pressure in the Iacovou et al. (1995) model adds the trading partners to the external task environmental context of the TOE framework as a critical role of IOSs adoptions.

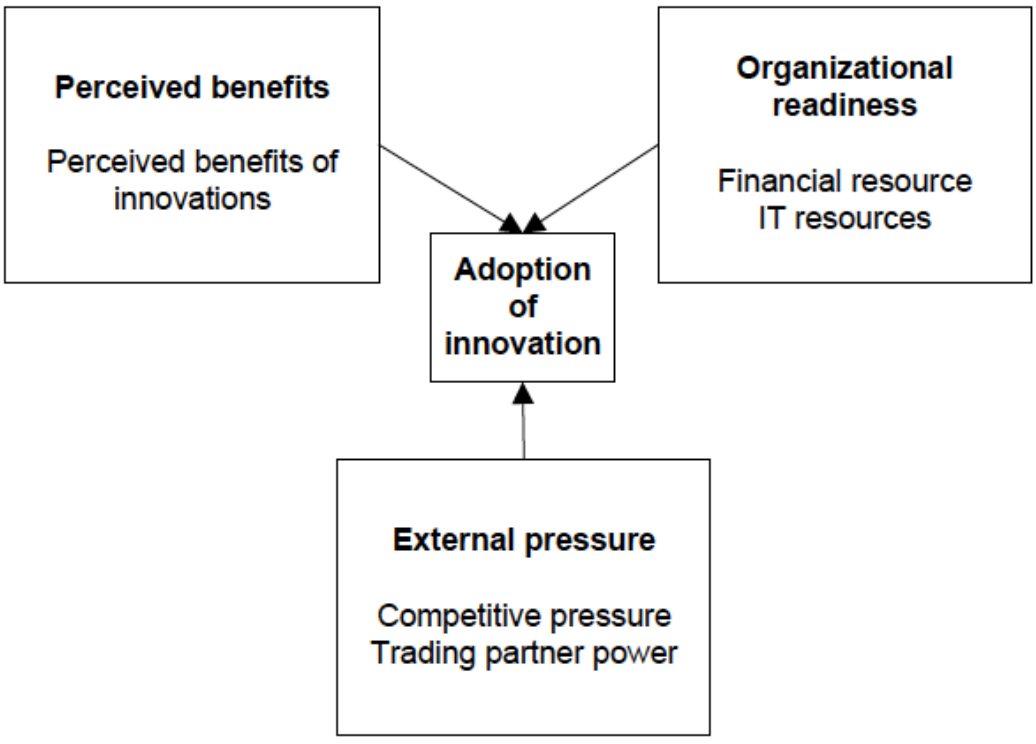

Fig. 2.5 Iacovou et al. (1995) model

2.8 Related Works

Tiago Oliveira and Maria Fraga Martins have made a review of literature of IT adoption models at the firm level. They observed that most empirical studies are derived from the DOI theory and the TOE framework. They found out TOE framework includes the environment context (not included in the DOI theory), it becomes better able to explain intra-firm innovation adoption; therefore, they consider this model to be more complete. The TOE framework also has a solid theoretical basis, consistent empirical support, and the potential of application to IS adoption. For this reason an extensive analysis of the TOE framework was undertaken, analyzing empirical studies that use only the TOE model, and empirical studies that combine this model with the DOI theory, the institutional theory, and the Iacovou et al. (1995) model, and concluded that the same context in a specific theoretical model can have different factors. In terms of further research, they pointed that for more complex new technology adoption it is important to combine more than one theoretical model to achieve a better understanding of the IT adoption phenomenon.

Fichman, in his a review of empirical research on IT diffusion, he found that

diffusion theory provides a useful perspective on one of the most persistent and challenging topics in the IT field, namely, how to improve technology assessment and implementation. Studies of IT research have produced the strongest results when researchers have examined: (1) individual adoption, and/or (2) independent use of technologies that impose a comparatively small knowledge burden on adopters. The result of his research was less conclusive in studies of organizational adoption of complex multi-user technologies. But it was unfortunate, because many of the most valuable potential applications of diffusion theory fall within this context. He identified managers these days need guidance in assessing new technologies, and if appropriate, formulating an effective adoption strategy. And finally he concluded that diffusion research has potential to answer the following three questions: How can organizations be designed to be more innovative? Which of the current slate of advanced technologies like CASE tools, imaging, object-orientation, groupware that will be winners or losers? What can be done to improve the "adoptability" of a technology, or at least, to get advanced warning of impending implementation difficulties?

A research on challenges between developing and developed countries on implementation of ICT innovations has been done by Al-Debei and Al-Lozi. Their analysis implies implementation of ICT innovation is gaining competitive advantages; primarily through enhancing the performance, effectiveness, and efficiency of organizations. Nonetheless, the implementation of ICT innovations is complex undertaking and usually requires a powerful alignment amongst technology, business, and human-related factors. Their study reveals that both developed and developing countries undergo several challenges in regards to the implementation of ICT innovations. Lack of concern about the human resources, lack of top-management support, ineffective management of consultants, resistance to change, and the dynamics of power within an organization are just few examples of those challenges. Interestingly, the analysis also reveals that developing countries face extra unique challenges in this context and in both macro and micro levels such as infrastructure inadequacy, economics and politics instability, culture

unsuitability, time/location dispersion, and management style inappropriateness. Moreover, the analysis shows that the relevancy and successful implementation methods of ICT innovations significantly vary across nations and organizations.
All together, the researchers advocate that 'one size fits all' is not an applicable approach in the arena of ICT innovations and that there is no one universal recipe for success that can be applied everywhere, but they recommended rationale scientific approach to be followed by managers when confronting decisions regarding the implementation of ICT innovations given their significant influences on the on-going value of organizations. Generally, the analysis also found that there is no direct proportional relationship between the implementation of ICT innovations and organizational outcomes. This is because such a relationship is mediated by the social context factor, which is mainly derived from the cultural settings. Thus, they concluded that successful implementations of ICT innovations are those creating a balance between conflicting requirements and are performed in an adaptive and customized manner with various micro-organizational and macro-national variables.

A research with the objective of investigating the general nature of Hawassa University IS innovation adoption and diffusion has been done by Nebiyu (2010). He considered its academic staff ICT usage and utilization for two core activities in higher learning institutions as indicator of the adoption and diffusion of IS innovation in the university. Roger's DOI model was used and the five innovation characteristics and an external variable in which ICT policy measured using a questionnaire and the survey was administered to a simple of 161 Hawassa University workers. As a result the analysis of the collected data confirmed that the Roger's five innovation characteristics and the existence of ICT policy to have a positive impact on the use of the technology in Hawassa University.

An Msc thesis research titled "Developing ICT adoption models for Ethiopian bank industry" was studied by Meseret Yohannes (2010). The aim of the research was developing an ICT adoption framework for enterprise level ICT policy. The research

used both qualitative and quantitative approaches designed in a form of a case study mixed with descriptive research questions. The research findings state the major driving factors that influence the banks to implement ICT as corporate strategies technical dynamics and organizational factors consecutively motivate banks to implement ICT in high level. At a medium level, environmental factors followed by management capacity and organizational factors are the drives of ICT adoption. In addition, economic factors, task level factors, and environmental factors constitute the group that has a low level influence in ICT adoption. However the research only focus on one type of industry which is the banking industry which limits the research result to be applicable on other type of industries with different operational activities and challenges.

Another study titled "Diffusion of Innovations of Videoconference Technology: An Instrumental Case Study Concerning Undergraduate Degree-Seeking Nontraditional Learners" was conducted by Bruce G. Campbell (2015). The study was instrumental case study that is based on diffusion of innovations theory designed to gather student opinions regarding videoconference (VC) technology use in facilitating courses to undergraduate degree-seeking nursing students.

The study used mixed approach and site observation. The study tried to determine whether students would accept VC technology unchanged, accept with modifications, or reject VC technology based on first time exposure to the innovation during the 16-week semester. The finding states that Students who rejected the innovation were exclusively from the regional campus, which was the receiving site the majority of the semester. As a recommendation Modification of equipment, teaching methodology, instructor technology training, and student orientation will improve interaction of students with VC.

Abebe Zeleke's, Opportunities and challenges in the adoption of e-banking services: The case of Dashen Bank SC., 2016 is another study conducted on Dashen Bank that tried to examine opportunities and challenges within the context of Dashen Bank's E-banking services using a combination of Technology Acceptance Model (TAM) and Technology-Organization-Environmental (TOE) with some modification. The

researcher used mixed study approach. He found that perceived usefulness was found to have significant effect on adoption of E-banking services in Dashen Bank and recommended some areas of improvement with possible solutions that mitigate the identified major challenges, which includes continuous reviewing and up grading of the existing security system, emphasis for appropriate promotion, and collaboration with other banks to have government support especially to the environmental factors of ICT infrastructure.

Table 2.1: Summary of related works

Author, Title and Year	**Objective/Purpose**	**Approaches / Methodologies**	**Key findings**	**Recommendation and Future work**	**Remark**
Tiago Oliveira and Maria Fraga, *Literature Review of Information Technology Adoption Models at Firm Level,*	Analysis of DOI and TOE framework based on three contexts: perceived benefits, organizational readiness, and external pressure.	Literature Review	TOE framework is better to explain intra-firm innovation adoption with its solid theoretical basis, consistent empirical support, and the potential of application to IS adoption.	For more complex new technology adoption, it is important to combine more than one theoretical model to achieve a better understanding of the IT adoption phenomenon.	The review better explained more other integrated theoretical models in addition to DOI and TOE.
Robert G. Fichman, *Information Technology Diffusion: A Review of Empirical Research,* 1992	Identify how classical diffusion was developed by reviewing empirical studies of IT adoption and diffusion between 1981 - 1991	Research review	Identified two instances where the assumptions of classical diffusion research are most likely to hold that are; individual adoption, and independent-use of technologies that impose a comparatively small knowledge burden on would-be adopters.	It would be better to engage studies of organizational adoption of complex multi-user technologies.	

Al-Debei and Al-Lozi, *Implementations of ICT Innovations: A Comparative Analysis in terms of Challenges between Developed and Developing Countries*, 2012	Understanding of the various similarities and differences in terms of challenges between developed and developing countries and in regards to the implementation of ICT innovations.	Qualitative methodology	- Lack of clear boundaries among different ICTs. - The rationality of ICT (s) implementation decision and other related decisions. - Lack of top-management commitment and support. - Ineffective management of consultants. - Lack of concern of the human-resource element (needed skills, involvement and retention).	- A rationale scientific approach is recommended to be followed by managers when confronting decisions regarding the implementation of ICT innovations. - Creating a balance between conflicting requirements and are performed in an adaptive and customized manner with various micro-organizational and macro-national variables by integrating social context factors.	The study did not consider the digital divide and cultural differences between developed and developing countries while analyzing the challenges of ICT innovation implementations.
Nebiyu Getahun, *Information system innovation adoption and diffusion in Ethiopian higher learning institutions: the case of Hawassa University*, 2010	Investigating the general nature of Hawassa University IS innovation adoption.	A questionnaire and a survey were applied on a sample of 161 Hawasa University employees to measure Roger's characteristics of innovation and	As a result there was a positive relationship between the use of ICT in the university and their ICT policy and Roger's perceived characteristics of innovation.	It would be better if there is a similar study on other governmental offices to measure the rate of ICT innovation adoption.	The study only adopted DOI to measure the rate of I.S innovation adoption.

		university's ICT policy			
Meseret Yohannes, *Developing ICT adoption models for Ethiopian bank industry*, 2010	To develop an I.S adoption framework that could be used in Ethiopian banks.	Mixed approach was used.	- Corporate strategies, technical dynamics and organizational factors consecutively motivate banks to implement ICT in high level. - The findings showed the major reasons that are hindering ICT adoption are a group of factors that are related with the environmental issues of the banks: lack of infrastructure, the inadequacy of the ICT policy and lack of legal ground.	There is a great opportunity created for researchers to explore the existing ICT environment to produce the much needed strategy of how best to use ICT for social and economic development, modernization of different sectors like banking.	The study was well organized and cited. It is a one step forward for investigating ICT adoption in banking industries in Ethiopia.
Bruce G. Campbell, *Diffusion of Innovations of Videoconference Technology: An Instrumental Case Study Concerning Undergraduate Degree-Seeking*	Measuring student opinions regarding videoconference (VC) technology use in facilitating courses to undergraduate degree-seeking nursing students.	Mixed approach on 32 students. And site observation.	- 37.5 % of the students rejected VC technology. -	Modification of equipment, teaching methodology, instructor technology training, and student orientation will	The study did not include instructors to measure their opinion on VC.

Nontraditional Learners, 2015				improve interaction with VC which is considered as key for academic success for students.	
Abebe Zeleke, *Opportunities and challenges in the adoption of e-banking services: The case of Dashen Bank SC., 2016*	Examining opportunities and challenges within the context of Dashen Bank's E-banking services.	Mixed approach	- Existing man power combinations and their positive perception is opportunity at the hands of DB.	Future studies needs to include more staffs and departments outside Addis Ababa and other commercial banks in Ethiopia.	The study conducted in Addis Ababa where there is relatively smooth infrastructure. Excluded regional branches attitude.
Rayed Abdullah, *Diffusion of the Adoption of Online Retailing in Saudi Arabia,* 2012.	Exploring the factors influencing the slow progress of online retailing in Saudi Arabia.	Mixed Approach and survey	-It was found that there were significant differences in how retailers responded, given the stage of maturity of their company. - Retailers in e-commerce had negative perceptions about consumers shopping online in Saudi Arabia	- the study showed that companies in lower stages of e-commerce maturity were pessimistic about adopting e-commerce in Saudi Arabia, a more detailed study focusing on the retailers in the higher stages could be very useful.	Since e-commerce is a business that involves other parties, e.g. regulators and consumers, this study is limited by investigating e-commerce only from the retailer side.

Chapter Three

3.1. Research Methodology

This Chapter describes the very significant part of the research because it shows the researcher the way to achieve the research objective, defines what kind of data to collect, the tools used to collect the data and justifies why the research methods chosen for the achievement of the research.

The general objective of this research is to identify the factors affecting the diffusion of BFUB CORE Banking and how, what and at what rate an IS innovation spread via organizational culture and test the weakness and strength of the way as per the banks' IS innovation diffusion strategy. Overall, the researcher adopted a sequential mixed method research design, combining the quantitative and qualitative research approaches. The use of such a hybrid approach has been strongly encouraged in the area of social and IS innovation researches (Love et al., 2002). As a predominant method in the measurement of innovation diffusion, a quantitative-based questionnaire survey was first conducted to assess and refine the structure and relationship in the conceptual framework. This study also employs a qualitative analysis of the survey data to determine how well the conceptual framework represented here described innovation diffusion culture in AIB. Following this stage, qualitative case studies were sequentially conducted to further ascertain the validity of the determined conceptual model. The findings of this study were then discussed and concluded then future research strategies were guided to further enhance and extend the finding of this study.

3.2 Research Design

A research design is a plan structure and strategy of investigation considered to obtain answers to research question or problem. Kumar (2005)

To answer the research question, questionnaires have been collected, literatures and similar studies have been revised and key information was interviewed with the management, IT personnel and business operation staffs in AIB.

Research Objective	Research Questions	Data Source	
		Primary	Secondary
Investigate the factors that affecting the diffusion of BFUB CORE Banking system at AIB and provide a possible solution to minimize the influencing issues of the adopted innovation.	How is the social system in AIB arranged? How is information flowing through the social system? And the level of technology innovation acceptance of the adopted innovation?	- Questionnaire	- Literature Review
	How wide is the organization? How is the structure of the management and its centralization, formalization and complexity? How high is staffs' literacy?	- Questionnaire	- Literature Review
	How are the characteristics of the innovation itself? Its complexity, compatibility, relative advantage, trialability and observability.	- Questionnaire	- Literature Review

Table 3.1: Mapping research objective, research question and data source

3.3 Conceptual Framework

This research that addressing innovation diffusion factors within AIB in three main contexts that have been critically reviewed to develop the underpinning background knowledge and to establish a conceptual framework which led the formulation of the research questions. To answer these questions, a conceptual model is developed based on knowledge acquired from the literature review. A set of hypothesis, which logically linked the model constructs are also proposed based on the review of existing research findings.

As a result the formulated conceptual model consisted three constructs, linked by three casual hypothesized relationships. All model constructs have been adopted from four different models and theories to provide better measures, which then be utilized in the hypothesis testing process.

According to some studies, for example (Chong, Lin and Rama, 2009) added innovation attributes (relative advantage, compatibility and complexity) from DOI and an additional new factor in the adoption study called information sharing culture characteristics to the TOE framework, (Thong, 1999) joined characteristics from DOI to the TOE framework, (Zhu, Dong, Xu and Kraemer, 2006) combined relative advantage, compatibility from DOI with the TOE framework. (Wang and Yang, 2010) have added relative advantage, complexity and compatibility from DOI to the TOE framework.

After reviewing some local studies the researcher examined that there are limited researches done on innovation adoption models. In this regard there have been other international literatures reviewed, and combined three different theories DOI, TOE and the four innovation characteristics of Rogers by studying each and every theory in relation with the problem on hand. The researcher believes that the combination of these theories could bring a good pivot point to look around every aspects among the social system, organizational structure and the adopted innovation itself and identify what brought the problem that affects the diffusion of BFUB in AIB.

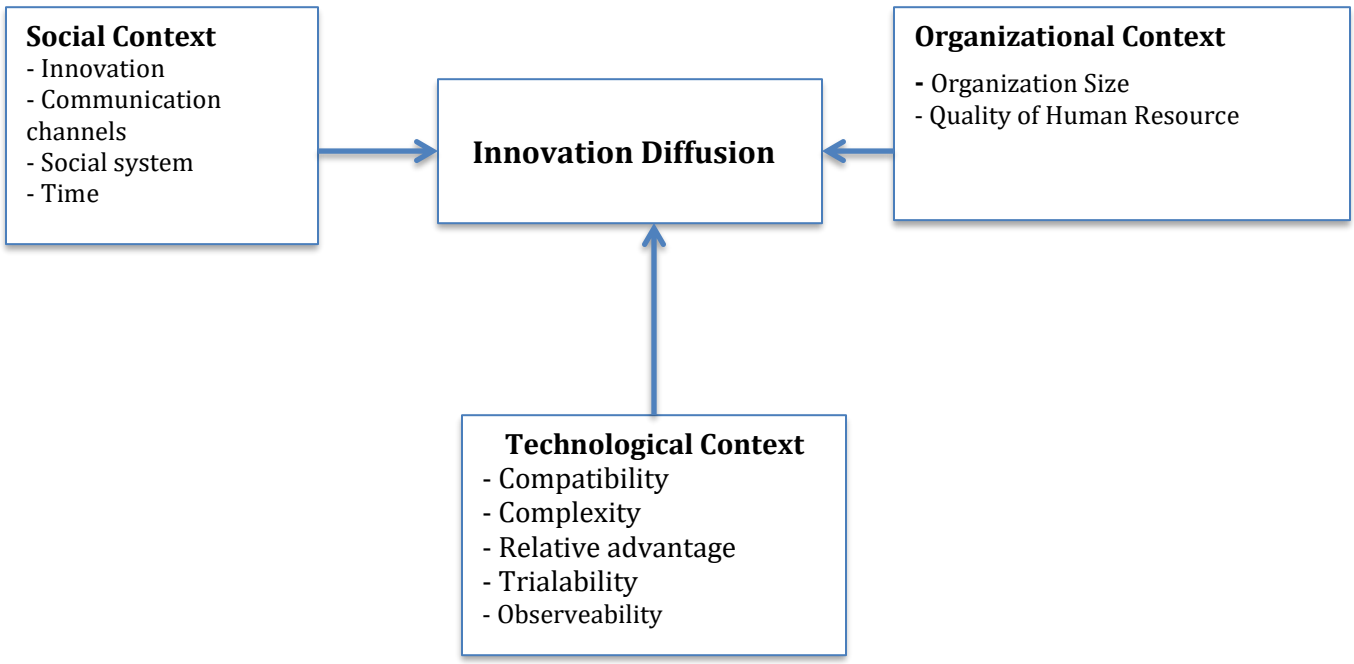

Fig. 3.1. Conceptual framework adopted and integrated from Roger's four characteristics of innovation, DOI, and TOE.

3.3.1 Technological Context

This construct is taken from characteristics of technological innovation by Rogers (2003) and has a great deal to identify the different dimensions of attitudinal beliefs towards an innovation diffusion and can be measured by using the five perceived attributes of technological innovation: relative advantage, compatibility, complexity, trialability and observability.

Relative Advantage

According to (Rogers, 1995), the innovation's properties being perceived by the potential adopter as better or more advantageous than the current mode of

operation. Examples include economic advantage, obtaining social prestige, convenience, timesaving, and better satisfaction or results. Each of these could have multiple subsets of related advantages. Note that what is an advantage to one person may not be perceived as an advantage to another, so the emphasis is on the perception of advantageous attributes. Research has shown that of the five categories identified here, relative advantage is the most reliable predictor of the rate of adoption (Rogers, 1995). It is the degree to which an innovation is perceived as better than the idea it supersedes by a particular group of users, measured in terms that matter to those users. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption is likely to be. There are no absolute rules for what constitutes "relative advantage". It depends on the particular perceptions and needs of the user group.

For a person to choose to use a technology for a specified task, it should provide some form of benefit for the task concerned. To be more specific, the innovation should demonstrate a relative advantage over other options, ideally including the technology currently used for the task. Better technologies will be adopted, plain and simple. However, what defines "better" is rarely a single, simple statistic.

Compatibility

Compatibility is the "degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of the potential adopters" (Rogers, 1995). Examples include cultural beliefs and customs, personal experiences that support or undermine some aspect of the innovation, and recognition of need for change. The more compatible an innovation is to these elements, the more likely the innovation will be to have a high rate of adoption.

An idea that is incompatible with their values, norms or practices will not be adopted as rapidly as an innovation that is compatible.

An adopted technology will be integrated into one's life and therefore must mesh well. This compatibility may be of a technical basis, such as software or hardware compatibility issues with a computer. Any interruption to one's workflow should

also be minimal. Additionally, the technology should not cross one's value or belief system.

Complexity

This is the degree to which an innovation is perceived as difficult to understand and use. New ideas that are simpler to understand are adopted more rapidly than innovations that require the adopter to develop new skills and understandings.

Innovations requiring a new skill in order to adopt, or that are confusing or complicated, will have a slower rate of adoption than an innovation that is easy to understand and implement by most members of the social system (Rogers, 1995).

When deciding to adopt an innovation, the inherent difficulty of using the technology is a major concern. Complexity refers to the sense of difficulty that the user has in using and understanding an innovation. A potential user must also understand why the innovation is appropriate or beneficial and the level of such an understanding need not be to an extreme depth but should at least convince the user of the innovation's value.

Trialability

This is the degree to which an innovation can be experimented with on a limited basis. An innovation that is trial-able represents less risk to the individual who is considering it. And it is also a factor in promoting the adoptability of an innovation is the opportunity for a potential user to experience using the innovation itself. Such trialability covers opportunities such as test drives, demonstration units, and simulations. It is a characteristic of an innovation that allows the potential adopters to try it out for themselves prior to committing to adopt (Rogers, 1995). The user gets the chance to try the technology without having to fully commit to purchasing or adopting it. Trials can be great sources of information searched for and needed during the persuasion and implementation stages. In particular, trials directly limit or prevent forming inaccurate assumptions about the technology.

Observability

The easier it is for individuals to see the results of an innovation, the more likely they are to adopt it and the outcomes after adoption is a powerful object lesson for other potential adopters, and the more public it is the more interest it will generate (Rogers, 1995). Visible results lower uncertainty and also stimulate peer discussion of a new idea, as friends and neighbours of an adopter often request information about it. It refers to how visible the use of the technology is to those around. For a person to adopt a technology, seeing, hearing about, or otherwise knowing that other individuals are using that technology dramatically encourages adoption and observing a technology stimulates awareness of the innovation and conversations among peers.

3.3.2 Social Context

This construct is adopted from Roger's (2003) Diffusion of Innovation model and Technology Acceptance Model (TAM). The researcher assumed that the combination of these two theories is the most appropriate for investigating the relationship of the adopted innovation and find out the influences that the social system of the bank contributes towards the diffusion of BFUB CORE Banking solution among the entire organization.

Innovation

According to Rogers (1983), An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. It matters little, so far as human behavior is concerned, whether or not an idea is "objectively" new as measured by the lapse of time since its first use or discovery. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation. Newness in an innovation need not just involve new knowledge. In diffusion of innovations theory, an innovation is described as a technological idea, practice, or object that is considered "new by an individual or unit of adoption" (Rogers, 2003). Some personnel in the bank may have known about the adopted innovation for some time but not yet developed a

favorable or unfavorable attitude toward it, nor have accept or rejected it. The "newness" aspect of an innovation may be expressed in terms of knowledge, persuasion, or a decision to accept.

Communication channels

The exchange of information between two or more individuals or groups with the message concerning a new innovation is the basis of the communication channel in diffusion of innovations theory. The receiver of the information about the innovation has no prior knowledge of the innovation. This is in reference to any new innovation in technology passed through the communication channel to the receiving individual or group (Rogers, 2003).

Diffusion is a particular type of communication in which the information that is exchanged is concerned with new ideas. The essence of the diffusion process is the information exchange by which one individual communicates a new idea to one or several others. At its most elementary form, the process involves: (1) an innovation, (2) an individual or other unit of adoption that has knowledge of, or experience with using the innovation, (3) another individual or other unit that does not yet have knowledge of the innovation, and (4) a communication channel connecting the two units.

A communication channel is the means by which messages get from one individual to another. The nature of the information-exchange relationship between the pair of individuals determines the conditions under which a source will or will not transmit the innovation to the receiver, and the effect of the transfer. Rogers (1983)

Social system

A social system is defined as a set of interrelated units that are engaged in joint problem solving to accomplish a common goal. The members or units of a social system are individuals, informal groups, organizations, and/or subsystems. Each unit in a social system can be distinguished from other units. All members cooperate at least to the extent of seeking to solve a common problem in order to reach a mutual goal. This sharing of a common objective binds the system together. It is important to remember that diffusion occurs within a social system, because the

social structure of the system affects the innovation's diffusion in several ways.
The social system constitutes a boundary within which an innovation diffuses. Here we shall deal with the following topics: how the social structure affects diffusion, the effect of norms on diffusion, the roles of opinion leaders and change agents, types of innovation decisions, and the consequences of innovation. All these issues involve relationships between the social system and the diffusion process that occurs within it. Rogers (1983)

Time

Time is an important element in the diffusion process. Theoretically speaking, diffusion is the process by which innovation is disseminated through communication channels among members of social system over time. The diffusion of BFUB within the bank has thus been viewed as hinging upon a complex sociopsychological process among the bank's personnel.
Time is one of the variables in the process of innovation adoption diffusion. This can involve "the relative speed with which an innovation is adopted by members of a social system" (Rogers, 2003).
Time does not exist independently of events, but it is an aspect of every activity. The inclusion of time as a variable in diffusion research is one of its strengths, and the measurement of the time dimension can be evaluated. Rogers also defines diffusion as "the process in which an innovation is communicated thorough certain channels over time among the members of a social system"

3.3.3 Organizational Context

The last construct in the hypothesis is the context of the organization that is selected and adopted from Technology, Organization and Environment (TOE) model. Since the other two theories of the construct doesn't include organizational perspectives of innovation adoption and diffusion, the researcher decided to include variables like organization size and quality of human resource from organizational context in

the TOE model to this study's conceptual framework to widen the insight towards the problem in the diffusion of BFUB in AIB.

Organizational size, which is always considered as an important positive effect factor on the firm's adoption decision in prior IS adoption research because large firms possess more available resources for innovation (Grover 1993; Kuan and Chau 2001). So that, large organizations have a greater ability to mobilize the resources required for adopting innovations.

According to (Zhu et al. 2003), the effect of size on a firm's innovation adoption should be considered from beating perspective between resource-innovation match and performance-needs match. For some innovations which may require large investments such as BFUB, size may have a positive effect on firm's innovation adoption because the resource-innovation match effect may beat the performance-needs match effect.

3.4 Research Population

Generally, a research population is a large number of individual or objects that a scientific research needs it to assess vital information from. The he population of this research is 3500 personnel in AIB that have direct relationship with BFUB, the researcher has reviewed a lot of related international and local journals and other works to pick sample that are going to be a part of quantitative and qualitative analysis of this study.

3.5 Sampling Design

The researcher doesn't want to investigate the entire population because of time and cost constraints. Instead samples have been designed from the population in order to achieve the expected out come from the research.

Sampling design is a definite plan for obtaining a sample from a given population. It refers to the technique or the procedure the researcher would adopt in selecting items for the sample. Sample design may as well lay down the number of items to be

included in the sample i.e., the size of the sample. Sample design is determined before data were collected. There are many sample designs from which a researcher can choose. Some designs are relatively more precise and easier to apply than others. Researcher must select/prepare a sample design that should be reliable and appropriate for his research study. (Kothari, 2004)

3.6 Sampling Method

Since this study considers three different types of staffs in AIB to gather data from, it uses stratified sampling and simple random sampling methods to collect data.

If the population from which a sample is to be drawn does not constitute a homogeneous group, then stratified sampling technique is applied so as to obtain a representative sample. In this technique, the population is stratified into a number of non-overlapping subpopulations or strata and sample items are selected from each stratum. If the item selected from each stratum is based on simple random sampling the entire procedure, first stratification and then simple random sampling, is known as stratified random sampling. (Kothari, 2004). The advantage of stratified sampling in this case is to ensure that the resulting sample would be distributed in the same way as the population in terms of the stratifying criteria.

3.7 Sample Size

In order to reach on a valuable conclusion about the entire population for the sake of the research, there need to be a sample size determination from the population which the data for the study to be collected from.

This refers to the number of items to be selected from the universe to constitute a sample The size of sample should neither be excessively large, nor too small. It should be optimum. An optimum sample is one that fulfills the requirements of efficiency, representativeness, reliability and flexibility. While deciding the size of sample, researcher must determine the desired precision as also an acceptable

confidence level for the estimate. The size of population variance needs to be considered as in case of larger variance usually a bigger sample is needed. The size of population must be kept in view for this also limits the sample size. (Kothari, 2004).

The population from which a sample is to be drawn does not constitute a homogeneous group that are the IT group, the management and the business operation group. So that stratified sampling technique is generally applied by using common characteristics in order to obtain a representative sample from the strata. In this study stratified sampling the population into three sub-populations that are individually more homogeneous than the total population. Then the researcher selected items from each stratum to constitute a sample. Since each stratum is more homogeneous than the total population, the researcher was able to get more precise estimates for each stratum and found better estimate of the whole population by estimating more accurately each of the component parts.

This study uses systematic sampling by applying proportionate allocation sampling design because the researcher wants to compare the differences among the strata, and then pick up equal sample selection from each stratum, which he considers it would be more efficient even if the strata differ in sizes. And in the context of proportionate sampling, the study used optimum allocation technique that results determining the sample sizes from each stratum.

The sample size determination for each stratum illustrated as follows it, we wanted a sample of size n = 150 to be drawn from a population of size N = 3500 which is divided into three strata of size N1 = 3100, N2 = 300 and N3 = 100. Adopting proportional allocation, we shall get the sample sizes as under for the different strata:

For strata with N1 = 3100, we have P1 = 3100/3500

and hence n1 = n . P1 = 150 (3100/3500) $\cong$ **133**

Similarly, for strata with N2 = 300, we have

n2 = n . P2 = 150 (300/3500) $\cong$ **12**, and

for strata with N3 = 100, we have

n3 = n . P3 = 150 (100/3500) ≅ **5**

Sample Target	**Stratum Size**	**Sample Size**
Business Operation	3100	133
Management	300	12
IT Personnel	100	5
	Total	**150**

Table 3.2 : Proportional Sample Size Determination

3.8 Data Collection Method

According to (Stake, 1995) and (Yin, 2009), interview, direct observation, participant-observation, physical artifacts, documents and archival records are the six source of evidence that is advised for the case study.

While deciding about the method of data collection to be used for the study, the researcher kept in mind two types of data: primary and secondary.

The primary data are those, which are collected afresh and for the first time, and thus happen to be original in character. The secondary data, on the other hand, are those which have already been collected by someone else and which have already been passed through the statistical process. (Kothari, 2004)

The researcher decided which sort of data would be using and collecting for the study accordingly. The methods of collecting primary and secondary data differ since primary data are to be originally collected.

3.8.2 Questionnaires

A questionnaire consists of a number of questions printed or typed in a definite order on a form or set of forms. The questionnaire is mailed to respondents who are expected to read and understand the questions and write down the reply in the space meant for the purpose in the questionnaire itself. Questionnaire is an appropriate method of data collection in case of large sample size, which can be prepared in closed and open-ended format. (Greenfield & Tony, 2002)

Close-ended questionnaire limit the responders answer by forcing them to choose from pre-existing set of answers, such as yes/no, true/false, multiple choice and ranking scale. The other format of questionnaire is open-ended in which responders encouraged expressing their thoughts through writings.

This research used close-ended questionnaire format that focuses on the research problems and questions raised in the problem statement part of the study. The questions were shaped to provide an answer that could be good input for the analysis part of the study.

Chapter Four

4.1 Data Analysis, Presentation and Findings

After all the data have been collected, the researcher turns to the task of analyzing them. This chapter deals with the analysis and presentation of data that requires a number of closely related operations such as establishment of categories, the application of these categories to raw data through coding, tabulation and then drawing statistical inferences.

Unmanageable data have been condensed into a few manageable groups and tables for further analysis and classified the raw data into some purposeful and usable categories. Coding operation is done through which the categories of data are transformed into symbols to be tabulated and counted to proceed with the analysis and hypothesis testing through quantitative and qualitative data analysis.

4.1.1 Quantitative Data Analysis

The main purpose of quantitative data analysis was to evaluate and refine the developed conceptual model, using various statistical analyses of the survey data. The assessment process used factor analysis approach to determine the hypothesized relationships between the model constructs.

The construct variables were assessed using multivariate analysis of the data from the collected questionnaire. To ensure the accurate analysis and viable interpretation, rigorous research procedures were conducted through the research process. The study also adopted cross-sectional research design method, thus replicating most other empirical studies has investigated similar issues when constrained by limited time and resources, this type of research is considered sufficient and is preferred.

Multivariate statistics were employed to quantitatively analyze the data collected from the questionnaire survey. The techniques were considered suitable for this study since they provided an analysis of the complicated data set, and that had many independent and dependent variables (Tabachnick and Fidell, 2007). In particular, the analysis were carried out to fulfill two main objectives:

1. Getting a feel for the data through descriptive statistical analysis;
2. Testing the goodness of the measurement scale by measuring reliability and validity, as well as uncovering factors underlying model constructs; and

The descriptive data analysis was conducted, primarily, using the SPSS (version 24.0) software application to obtain a texture for the data and to determine if the data met the basic assumption required prior to conducting multivariate data analysis.

The analysis included an examination of the respondent profiles, and data screening (through assessing normality, means, standard deviations and standard error of the mean). It also included a preliminary analysis of the mean values to gain a broad picture of the respondent's perceptions regarding each construct, based on the entire survey population.

The table 4.1 below shows the number of respondents and their characteristics. There were a total of 150 respondents that are selected from three different strata business operation, management and IT.

4.1.1.1 Questionnaire Development

A questionnaire contains a pre-formulated written set of questions, designed to provoke the information of research interest, to which the respondents record their answers by following the given protocols (Schwab, 1999; Sekaran, 2003).

As a questionnaire should be well designed to provide accurate and useable data, certain procedures, suggested by Dillman (2000), were followed to maximize the response rates, whilst minimizing biases within the research. These procedures were:

- Using appropriate and understandable language;
- Making the questionnaire appears short and easy;
- Making the questionnaire interesting and easy to complete by carefully designing the layout, structuring the order of the questions;
- Using an introductory letter to establish the significance of the study, to

show positive regard, and to thank the respondents in advance;

- Establishing trust by providing pre-incentives as a token of appreciation, and using post-incentives as a way of giving tangible rewards.

In addition to these procedures, specific protocols were also adopted to help ascertain the reliability and validity of the questionnaire. And also conceptually odd and overlapping items were excluded. This trimming process could help to minimize the confounding effects from common method variance, which is one of the major threats to the validity of survey research (Podsakoff and Organ, 1986).

The disseminated questionnaire (see Appendix A) contained three distinct parts. The first part of the questionnaire (Part I) was solicited background information from the respondents like; gender, level of education, age, job position, job experience, salary; (Part II) was pertinent to the model's enablers addressing diffusion for innovation. It consisted of three logical sections: (1) social context; (2) technological context; and (3) organizational context. The section contained 22 items, measured with a five points scale, ranging from 1 (strongly disagree) to 5 (strongly agree). These sections represented the construct of social, technological and organizational context for innovation diffusion, team climate for innovation and organisational culture for innovation, respectively. The third part of the questionnaire (Part III) focused on the managerial questions containing 4 items. These sections contained 21 items measuring the innovation diffusion outcomes construct.

	Character	Frequency	Percentage (%)
	Male	121	80.67
	Female	29	19.33
Gender	**Total**	**150**	**100**
	20 - 30	98	65.33
	31 - 40	49	32.67
	41 - 50	3	2
	> 50	0	0
Age	**Total**	**150**	**100**
	Masters	7	4.67
	Degree	134	89.33
	Diploma	9	6
Level of Education	**Total**	**150**	**100**
	Management	12	8
	IT	5	3.33
	Business Operation	133	88.67
Job Category	**Total**	**150**	**100**
	< 2	33	22
	3 - 5	91	60.67
	6 - 10	23	15.33
	11 - 16	3	2
	> 16	0	0
Job Experience	**Total**	**150**	**100**
	< 3,500	11	7.33
	3,500 - 5,500	61	40.67
	5,501 - 7,500	52	34.67
	> 7,501	26	17.33
Salary	**Total**	**150**	**100**

Table 4.1. Background information of respondents

According to the data collected and the above table shows, 80.67% of the respondents are male and 19.33% are female respondents that shows the majority number of respondents are male. And 65.33% of respondents are between 20 - 30 years old as compared to 32.67% that are between 31 – 40 and 2 % between 41 – 50 years old. 4.67 % of the respondents are masters degree and 89.33 % are first degree holder the rest 6% are diploma holders. This shows most of the respondents

of the bank are first-degree holders.

Questionnaires have been distributed to all 150 selected respondents. Among those distributed questionnaires, 5 questionnaires were not returned and included in the analysis. Business operation respondents returned 96.99% of 133 questionnaires, Management respondents returned 91.67% of 12 questionnaires and IT returned 100% of 5 distributed questionnaires.

Job Position	**Distributed**	**Collected**	**Percentage (%)**
Business Operation	133	129	96.99
Management	12	11	91.67
IT	5	5	100
Total	**150**	**145**	**96.67**

Table 4.2 Number of returned questionnaires among distributed

4.1.1.2. Social Context

The diffusion of BFUB has been examined based on a construct, which is a combination of DOI, and TAM models that helped the researcher prepare a part of the questionnaire having questions extracted from features that are included in the models.

The conceptual model of the research has three constructs that are, Social context, Technological context and Organizational context.

Among those attributes, the questionnaire has included 9 questions that can measure the nature of the social system towards the diffusion of BFUB. Table 4.3 shows the percentage distribution summary of responses from all employees. The majority of the respondents that counted 79.31 % have agreed about their attitude towards the usage of the Innovation, 13.1 % were strongly agreed and 7.59 % were a normal response. This shows that majority of the respondents have an attitude to use the BFUB. According to the respondents there were 58.62 % who agreed that there was a smooth information and knowledge exchange between peers. 69.65% of the respondents have agreed their willingness to share knowledge and wanted to

proceed working with BFUB and 19.54% of the total respondents strongly agreed on this issue where 10.8 % respondents had a normal response.

46.21 % of the respondents replied that it didn't took them too long to understand BFUB 0.69% of them agreed that it was hard to cope up with the system on time. This shows that majority of the respondents have cope up with the system without consuming a lot of time.

88.7% of the respondents agreed that their day-to-day job processes have been improved and 6.21 % respondents replied normal responses. 65.53 % of replied agree on using BFUB would be free of effort, which shows a great perception towards the new system. The table below shows percentage distribution of responses regarding social context towards the diffusion of BFUB.

	Strongly Disagree	Disagree	Normal	Agree	Strongly Agree	Mean	St.Deviation
Innovation (S1)	0	0	7.59	79.31	13.1	4.0690	.46630
Communication Channels (S2)	0	0	26.89	58.62	14.48	3.8828	.64013
Nature of social system (S3)	0	0	10.8	69.65	19.54	4.0828	.55906
Time (S4)	46.21	22.07	31.03	0.69	0	1.8552	.88960

Table 4.3: Social context means and percentage distribution.

4.1.1.3. Technological Context

The diffusion of BFUB has also been examined based a construct adopted from Roger's characteristics of technological innovation. This helped to prepare a part of the questionnaire having questions extracted from technological characteristics that are included in the theory.

The Technological context of the conceptual model of the research has five variables Among those attributes, the questionnaire has included ten questions that can measure the technological context of the conceptual model towards the diffusion of BFUB. Table 4.4 shows the percentage distribution summary of responses from all employees.

Regarding relative advantage of the new BFUB system 89.42% of the respondents

agreed and strongly agreed that they believe the system will provide a better competitive advantage to the bank and enhance the business operation and 10.69% responded normal. 97.9% of respondents agreed and strongly agreed that BFUB is compatible with the existing business operation and 2.1% a normal reply. This indicates about all of the respondents believes that BFUB satisfies compatibility with the existing banking operations.

32.65% of the respondents agrees and strongly agrees that BFUB is a complex system where 49.2% disagree and strongly disagree regarding its complexity and 18.16% responded a normal situation. This shows majority of respondents believes BFUB as an easy to use system.

Regarding trialability of the system, 92.75% of the respondents agreed and strongly agreed that they had a chance to try the system before the bank fully adopt it and 7.25% responded a normal situation that indicates majority of the respondents have tried BFUB.

87.58% of the respondents agreed and strongly agreed that they examined a tangible change among the way they work after the adoption of BFUB while 12.41% responded a normal condition regarding observable change in their daily business process which indicates that most of the respondents satisfied by observable business changes brought by BFUB.

The table below shows percentage distribution of responses regarding technological context towards the diffusion of BFUB.

	Strongly Disagree	Disagree	Normal	Agree	Strongly Agree	Mean	St.Deviation
Relative Advantage (T1)	0	0	10.69	62.42	27	4.0897	.58828
Compatibility (T2)	0	0	2.1	83.43	14.47	4.1310	.39538
Complexity (T3)	27.36	21.84	18.16	23.22	9.43	2.6759	1.35853
Trialability (T4)	0	0	7.24	78.96	13.79	4.0690	.46630
Observability (T5)	0	0	12.41	48.27	39.31	4.2690	.66932

Table 4.4: Technological Context Mean and percentage distribution

4.1.1.4. Organizational Context

The last construct of the conceptual model is organizational context that is adopted from TOE framework where, the researcher selected two variables from the framework and included in the questionnaire.

Among those variables, the questionnaire has included three questions that can examine the nature of organization towards the diffusion of BFUB. Table 4.5 shows the percentage distribution summary of responses from all employees.

55.86% of the respondents agreed and strongly agreed that there is quality of human resource that can help themselves and newbies on how to use BFUB for the first time. 25.51% of the respondents disagree the fact that there is quality of human resource in the bank and 18.62 responded a normal situation. This shows most of the respondents satisfied by quality of human resource in the bank.

Regarding organization size, 51.03% agreed and strongly agreed the bank has capable technical resources and 48.97 respondents replied a normal situation which indicates that majority of the respondents are satisfied by the technical capability of the bank to use BFUB without any technical problem.

The table below shows percentage distribution of responses regarding social context towards the diffusion of BFUB.

	Strongly Disagree	Disagree	Normal	Agree	Strongly Agree	Mean	St.Deviation
Quality of human resource (O1)	0	25.51	18.62	40.34	15.52	3.4483	3.6138
Organization size (O2)	0	0	48.97	42.07	8.97	1.04703	.65814

Table 4.5: Organizational context mean and percentage distribution

4.1.1.5. Factor Analysis

The researcher used factor analysis to extract and analyze results from the questionnaire distributed to 145 respondents

Factor analysis is by far the most often used multivariate technique of research

studies, specially pertaining to social and behavioral sciences. It is a technique applicable when there is a systematic interdependence among a set of observed or manifest variables and the researcher is interested in finding out something more fundamental or latent which creates this commonality. Factor analysis is a statistical technique that is used to determine the extent to which a group of measures share common variance. It is extensively used in psychological research concerned with the construction of scales intended to measure attitudes, perceptions, motivations, and so forth. Business-related applications are numerous and examples include the development of scales used to measure customer satisfaction with products and employee work attitudes. (Kotarhi 2004)

For instance, we might have data, say, about an individual's income, education and occupation area and want to infer from these some factor (such as social class), which summarizes the commonality of all the said three variables.

The first extraction is descriptive statistics that showed the mean and the standard deviation

4.1.1.5.1. Descriptive Statistics

The first output from the analysis is a table of descriptive statistics for all the variables under investigation. Typically, the mean, standard deviation and number of respondents (N) who participated in the survey are given. Looking at the mean, one can conclude that decency of product is the most important variable that influences employees to use the adopted innovation.

Since the is to identify factors influencing innovation diffusion, the variables' mean that are lower as compared to the rest might indicate there are a lot of variations in the respondents choices that need further test as done below. Those low mean variables could be S4, T3, O1 and O2.

Descriptive Statistics

	Mean	Std. Deviation	Analysis N

S1	4.0690	.46630	145
S2	3.8828	.64013	145
S3	4.0828	.55906	145
S4	1.8552	.88960	145
T1	4.0897	.58828	145
T2	4.1310	.39538	145
T3	2.6759	1.35853	145
T4	4.0690	.46630	145
T5	4.2690	.66932	145
O1	3.4483	1.04703	145
O2	3.6138	.65814	145

Table 4.6. Descriptive Statistics

4.1.1.5.2. KMO and Bartlett's Test

Kaiser Meyer Olkin (KMO) and Bartlett's Test (measures the strength of relationship among the variables)

The KMO measures the sampling adequacy and determines if the responses given with the sample are adequate or not. It should be close than 0.5 for a satisfactory factor analysis to proceed. Kaiser (1974) recommend 0.5 (value for KMO) as minimum (barely accepted), values between 0.7-0.8 acceptable, and values above 0.9 are superb. Looking at the table below, the KMO measure is 0.587 for 145-sample size, which is close of 0.6 and therefore can be barely accepted.

Bartlett's test is another indication of the strength of the relationship among variables. This tests the null hypothesis that the correlation matrix is an identity matrix. From the same table, we can see that the Bartlett's Test Of Sphericity is significant (.000). That is, significance is less than 0.05. In fact, it is actually 0.000, i.e. the significance level is small enough to reject the null hypothesis. This means that correlation matrix is not an identity matrix.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.587
Bartlett's Test of Sphericity	Approx. Chi-Square	126.279
	df	78

Sig.	.000

Table 4.7: KMO and Bartlett's Test

4.1.1.5.3. Communalities

Initial communalities are estimates of the variance in each variable accounted for by all components or factors. Extraction communalities are estimates of the variance in each variable accounted for by the factors (or components) in the factor solution. Small values (shaded) indicate variables that are high in their variances doesn't do well with the factor solution, and should possibly be dropped from the analysis but in the case of this study, the researcher used it for further analysis because these factors may indicate the affecting factors of the diffusion of the innovation.

Communalities

	Initial	Extraction
S1	1.000	.182
S2	1.000	.425
S3	1.000	.380
S4	1.000	.306
T1	1.000	.364
T2	1.000	.176
T3	1.000	.109
T4	1.000	.592
T5	1.000	.356
O1	1.000	.308
O2	1.000	.381

Table 4.8: Communalities

4.1.1.5.4. Total Variance

Eigenvalue actually reflects the number of extracted factors whose sum should be equal to number of items that are subjected to factor analysis. The table in appendix-E shows all the factors extracted from the analysis along with their eigenvalues.

In the first rotation the eigenvalue was set to extract potential components that are greater than 1.0 and extracted 6 components which three of them are not that much relevant for this research. Thus, the extraction ran for the second time by setting the number of components to be 3 as shown in Appendix B

The Eigenvalue table has also been divided into three sub-sections, i.e. Initial Eigen Values, Extracted Sums of Squared Loadings and Rotation of Sums of Squared Loadings.

For this analysis and interpretation purpose the researcher only concerned with Initial Eigen Values Loadings that shows 16.16% cumulative variance for the first component, 26.17% cumulative variance for the second factor and 35.76% for the third factor. All the remaining factors are not significant for this research as shown in Appendix E.

4.1.1.5.5. Component Matrix

The table below shows the loadings (extracted values of each item under 3 factors) of the eleven variables. The higher the absolute value of the loading, the more the factor contributes to the variable (there are seven variables extracted in the first component factor, four variables have been extracted in the second component factor and one variable extracted in the third). The gap (empty spaces) on the table for variable T3 represents loadings that are less than 0.3 because all values are suppressed those loadings are less than 0.3 this makes reading the table easier. This result indicates that all variables that relied on component 1 are good to measure the respondents' positive attitude and have less cumulative variance as compared to the rest that are relied on component 2 and 3.

Variables in component 3 are the most variant component than the rest of the variables

Component Matrix[a]

	Component		
	1	2	3
T4	.737		
O2	.614		
T1	.588		
S2	.505		-.412
S4	.403		.377
T2	.391		
S1	.387		
T5		.576	
S3		.545	
O1			.518
T3			

Table 4.9: Component matrix

4.1.1.5.6. Rotated Component Matrix

The rotation of the component matrix is to reduce the number of factors on which the variables under investigation have high loadings. Rotation does not actually change anything but makes the interpretation of the analysis easier by normalizing the results in the component matrix. Looking at the result below, we can see that S1 and T2 are loaded on factor 1 while S4 and T3 loaded on Factor 2 thus all these factors can be used as variables for further analysis.

Rotated Component Matrix[a]

	Component		
	1	2	3
T4	.768		
S2	.604		
O2	.590		
T1	.522	.301	
S1	.411		
T2	.351		
O1		.550	
S4		.478	
T3		.310	
T5			.582
S3			.550

Table 4.10: Rotated Component Matrix

Chapter Five

5.1. Conclusion and Discussion

The study aims at investigating the factors affecting the diffusion of BFUB CORE Banking system after it's adoption. Mostly the CORE banking system services in AIB based on the perception of its business operation, I.T and managers as users of the service that have better attachment and believed to have direct interaction with the system.

The main objectives of the research include identifying factors in the diffusion of an adoption as well as identifying root causes of challenges in the diffusion and to set out ornamental banking service the way forward.

To address the objective, a quantitative research approach was employed and primary data was collected through survey questionnaires from a sample of 145 AIB staffs that include business operation, I.T and manages of AIB.

To achieve the proposed objectives, a combination of DOI, modified TOE framework and Roger's characteristics of technological innovation with some modification were used. Mean and standard deviation were used to analyze the responses of AIB clerical staff towards the use of BFUB CORE banking system. Moreover, factor analysis was used to test the variance level of variables, correlations of variables were tested, KMO and Bartlett's test were used to test sample size sufficiency of sample size, testing total variance were also used to test the variance and cumulative variance of variables and rotated component matrix test used to identify variables that have more cumulative variance of variables in the tree constructs such as Technological context, Social context and Organizational context factors to see their effects on the diffusion of the adopted system.

Even though AIB has adopted BFUB CORE Banking system on 2014, the rate at which the innovation is being diffused seems to be slow. As per the research, there are four factors that influence the diffusion of BFUB that are compatibility, complexity, time and innovation.

The demographic profile of the respondents shows that the combination of manpower that the bank has is young, holder of first degree, and experienced. The results of the study showed that the perception of the majority of sampled staff

towards organizational context become positive and we can say that there is no problem towards the diffusion of BFUB. Among the social and technological context their come four variables that got high cumulative variances which can be said as there is high ambiguity among the respondents.

The result of the descriptive statistics showed that providing there is high cumulative variance at complexity and compatibility variables that are belongs to technological context this indicates that there need to be further investigation.

The study also identified two uncertainties in time and innovation that belongs to social context construct in the conceptual framework of the study.

In general, the findings of this study help to understand major affecting factors against the diffusion of BFUB Core banking system across the bank. It also helps AIB to mitigate the root causes of the affecting factors that hinder the diffusion of BFUB CORE banking system.

5.2. Study Limitations and Future Research Directions

It has been a decade since AIB has implemented a CORE banking system before changing it with a state of the art CORE banking application BFUB in 2014.

However, the rate at which the innovation is being diffused seems to be slow and unsatisfactory.

According to the mixed study conducted in this research, there were four factors affecting the diffusion of the innovation.

Accordingly, the above conclusion implies that giving awareness and continuous training to the employees may improve their assumption about the complexity of the innovation.

The conclusion of the study also implied giving enough time to the employees for the training and practice of the new system may improve the diffusion of BFUB around AIB.

Despite following an exhaustive research method and rigorous analysis procedures, the findings reported herein should be interpreted in light of several limitations identified during the course of the study.

The current study looked at the diffusion of BFUB CORE Banking system in AIB from the perspective of it's employees. Since BFUB CORE Banking system is a business application that involves other stakeholders, like; external parties and customers, this study is limited by investigating the diffusion of the innovation only from the employee side.

In addition, since this study showed that only AIB employees' ability to understand and diffuse an innovation within a specific period of time in other banks where a CORE banking innovation already adopted, a more detailed study focusing on the employees understanding and the rate of innovation diffusion could be more useful. Also, in this regard, it may be useful to consider another study including customers to provide satisfactory service delivery with detailed, objective, information.

It would be advisable to conduct a study on the rate of diffusion of new financial technology innovations like ATM, POS and IB.

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Appendix A. Questionnaire

PART I

Gender - ☐ Male ☐ Female

Level of Education - ☐ Masters ☐ Degree ☐ Diploma

Age - ☐ 20 – 30 ☐ 31– 40 ☐ 41 – 50 ☐ >50

Job Position - ☐ Management ☐ IT Personnel ☐ Business Operation

Job Experience (in year)- ☐ < 2 ☐ 3 – 5 ☐ 6 – 10 ☐ 10 - 15 ☐ >16

Salary - ☐ < 3,500.00 ☐ 3,500 - 5,500 ☐ 5,501 – 7,500 ☐ > 7,501

	PART II -	Strongly Disagree	Disagree	Normal	Agree	Strongly Agree
1	The BFUB CORE banking system put my company in a better competition position.					
2	The BFUB CORE banking system is more important for the day to day business operation.					
3	I believe The BFUB CORE banking system is compatible with my company's business activities.					
4	I do find it difficult/confronting to use t he BFUB CORE banking system.					
5	I have concern about the security of BFUB.					
6	The new BFUB CORE banking system is easy to use and user friendly.					
7	I have tested BFUB prior to do actual financial transactions.					
8	There is a test BFUB CORE banking environment for demonstrations.					
9	I observed changes in my daily business process after deployment of BFUB.					
10	The bank's profit has increased after BFUB.					
11	I feel happy to see BFUB as it is my new working application.					
12	I believe the training you I taken about the new system was very important.					
13	There is always knowledge share between peers.					
14	I discuss with friends or colleagues how interesting the new system is.					

15	I believe the users of the new system are happy and willing to proceed working with the BFUB.					
16	I am willing to show colleagues how the system works.					
17	It took me too long to understand and work on the new BFUB CORE banking system.					
18	My job performance has been enhanced because of BFUB CORE banking solution.					
19	I believe using the BFUB CORE banking system would be free of effort.					
20	There are I.T professionals who can help me to more understand BFUB CORE banking system.					
21	I can easily understand technical terminologies.					
22	I believe the bank has enough that I can work on BFUB with out any problem.					

PART II	Were you a training coordinator at the time of diffusing the BFUB CORE banking solution? Y/N Did you have responsibility for how the staffs understand the new system? Y/N Did the organization give attention to the diffusion of the BFUB CORE banking solution? Y/N Do you believe the time frame that were used to train the staffs was enough? Y/N

Appendix – B. Correlations between social and technological context

			S1	S2	S3	S4	T1	T2	T3	T4	T5
Kendall's tau_b	S1	Correlation Coefficient	1.000	.112	-.022	.114	.060	-.049	.024	.225**	-.033
		Sig. (2-tailed)	.	.151	.777	.139	.441	.539	.745	.005	.671
		N	145	145	145	145	145	145	145	145	145
	S2	Correlation Coefficient	.112	1.000	-.093	.077	.221**	.104	-.027	.236**	.051
		Sig. (2-tailed)	.151	.	.226	.311	.004	.190	.706	.002	.505
		N	145	145	145	145	145	145	145	145	145
	S3	Correlation Coefficient	-.022	-.093	1.000	.084	.014	.012	-.050	.059	.022
		Sig. (2-tailed)	.777	.226	.	.268	.859	.878	.493	.451	.777
		N	145	145	145	145	145	145	145	145	145
	S4	Correlation Coefficient	.114	.077	.084	1.000	.150*	.161*	.060	.138	.035
		Sig. (2-tailed)	.139	.311	.268	.	.049	.039	.398	.074	.645
		N	145	145	145	145	145	145	145	145	145
	T1	Correlation Coefficient	.060	.221**	.014	.150*	1.000	.075	-.010	.345**	.060
		Sig. (2-tailed)	.441	.004	.859	.049	.	.346	.886	.000	.438
		N	145	145	145	145	145	145	145	145	145
	T2	Correlation Coefficient	-.049	.104	.012	.161*	.075	1.000	.079	.182*	.123
		Sig. (2-tailed)	.539	.190	.878	.039	.346	.	.288	.024	.122
		N	145	145	145	145	145	145	145	145	145
	T3	Correlation Coefficient	.024	-.027	-.050	.060	-.010	.079	1.000	.051	.067
		Sig. (2-tailed)	.745	.706	.493	.398	.886	.288	.	.485	.352
		N	145	145	145	145	145	145	145	145	145
	T4	Correlation Coefficient	.225**	.236**	.059	.138	.345**	.182*	.051	1.000	.078
		Sig. (2-tailed)	.005	.002	.451	.074	.000	.024	.485	.	.317
		N	145	145	145	145	145	145	145	145	145
	T5	Correlation Coefficient	-.033	.051	.022	.035	.060	.123	.067	.078	1.000

		Sig. (2-tailed)	.671	.505	.777	.645	.438	.122	.352	.317	.
		N	145	145	145	145	145	145	145	145	145
Spearman's rho	S1	Correlation Coefficient	1.000	.122	-.025	.124	.066	-.051	.029	.233**	-.035
		Sig. (2-tailed)	.	.145	.770	.136	.433	.543	.729	.005	.673
		N	145	145	145	145	145	145	145	145	145
	S2	Correlation Coefficient	.122	1.000	-.101	.085	.237**	.110	-.034	.252**	.056
		Sig. (2-tailed)	.145	.	.228	.311	.004	.187	.683	.002	.502
		N	145	145	145	145	145	145	145	145	145
	S3	Correlation Coefficient	-.025	-.101	1.000	.092	.015	.013	-.056	.063	.023
		Sig. (2-tailed)	.770	.228	.	.270	.860	.880	.500	.448	.783
		N	145	145	145	145	145	145	145	145	145
	S4	Correlation Coefficient	.124	.085	.092	1.000	.165*	.171*	.073	.149	.037
		Sig. (2-tailed)	.136	.311	.270	.	.047	.039	.382	.073	.656
		N	145	145	145	145	145	145	145	145	145
	T1	Correlation Coefficient	.066	.237**	.015	.165*	1.000	.079	-.013	.368**	.064
		Sig. (2-tailed)	.433	.004	.860	.047	.	.348	.877	.000	.445
		N	145	145	145	145	145	145	145	145	145
	T2	Correlation Coefficient	-.051	.110	.013	.171*	.079	1.000	.089	.189*	.130
		Sig. (2-tailed)	.543	.187	.880	.039	.348	.	.289	.023	.120
		N	145	145	145	145	145	145	145	145	145
	T3	Correlation Coefficient	.029	-.034	-.056	.073	-.013	.089	1.000	.059	.077
		Sig. (2-tailed)	.729	.683	.500	.382	.877	.289	.	.484	.355
		N	145	145	145	145	145	145	145	145	145
	T4	Correlation Coefficient	.233**	.252**	.063	.149	.368**	.189*	.059	1.000	.083
		Sig. (2-tailed)	.005	.002	.448	.073	.000	.023	.484	.	.321
		N	145	145	145	145	145	145	145	145	145
	T5	Correlation Coefficient	-.035	.056	.023	.037	.064	.130	.077	.083	1.000
		Sig. (2-tailed)	.673	.502	.783	.656	.445	.120	.355	.321	.
		N	145	145	145	145	145	145	145	145	145

Appendix – C. Correlations between Social and Organizational context

			S1	S2	S3	S4	O1	O2
Kendall's tau_b	S1	Correlation Coefficient	1.000	.112	-.022	.114	.049	.200*
		Sig. (2-tailed)	.	.151	.777	.139	.516	.011
		N	145	145	145	145	145	145
	S2	Correlation Coefficient	.112	1.000	-.093	.077	.042	.138
		Sig. (2-tailed)	.151	.	.226	.311	.565	.073
		N	145	145	145	145	145	145
	S3	Correlation Coefficient	-.022	-.093	1.000	.084	.090	.049
		Sig. (2-tailed)	.777	.226	.	.268	.225	.532
		N	145	145	145	145	145	145
	S4	Correlation Coefficient	.114	.077	.084	1.000	.072	.084
		Sig. (2-tailed)	.139	.311	.268	.	.324	.268
		N	145	145	145	145	145	145
	O1	Correlation Coefficient	.049	.042	.090	.072	1.000	.025
		Sig. (2-tailed)	.516	.565	.225	.324	.	.738
		N	145	145	145	145	145	145
	O2	Correlation Coefficient	.200*	.138	.049	.084	.025	1.000
		Sig. (2-tailed)	.011	.073	.532	.268	.738	.
		N	145	145	145	145	145	145
Spearman's rho	S1	Correlation Coefficient	1.000	.122	-.025	.124	.055	.210*
		Sig. (2-tailed)	.	.145	.770	.136	.510	.011
		N	145	145	145	145	145	145
	S2	Correlation Coefficient	.122	1.000	-.101	.085	.048	.150
		Sig. (2-tailed)	.145	.	.228	.311	.566	.073
		N	145	145	145	145	145	145
	S3	Correlation Coefficient	-.025	-.101	1.000	.092	.101	.053

		Sig. (2-tailed)	.770	.228	.	.270	.227	.530
		N	145	145	145	145	145	145
	S4	Correlation Coefficient	.124	.085	.092	1.000	.083	.094
		Sig. (2-tailed)	.136	.311	.270	.	.318	.260
		N	145	145	145	145	145	145
	O1	Correlation Coefficient	.055	.048	.101	.083	1.000	.026
		Sig. (2-tailed)	.510	.566	.227	.318	.	.753
		N	145	145	145	145	145	145
	O2	Correlation Coefficient	.210*	.150	.053	.094	.026	1.000
		Sig. (2-tailed)	.011	.073	.530	.260	.753	.
		N	145	145	145	145	145	145

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

Appendix – D. Correlations between Organizational and Technological Context

Correlations between Organizational and Technological Context

			O1	O2	T1	T2	T3	T4	T5
Kendall's tau_b	O1	Correlation Coefficient	1.000	.025	.114	-.021	.070	.023	-.019
		Sig. (2-tailed)	.	.738	.123	.780	.309	.758	.800
		N	145	145	145	145	145	145	145
	O2	Correlation Coefficient	.025	1.000	.176*	.168*	.033	.293**	.028
		Sig. (2-tailed)	.738	.	.023	.035	.647	.000	.716
		N	145	145	145	145	145	145	145
	T1	Correlation Coefficient	.114	.176*	1.000	.075	-.010	.345**	.060
		Sig. (2-tailed)	.123	.023	.	.346	.886	.000	.438
		N	145	145	145	145	145	145	145
	T2	Correlation Coefficient	-.021	.168*	.075	1.000	.079	.182*	.123
		Sig. (2-tailed)	.780	.035	.346	.	.288	.024	.122
		N	145	145	145	145	145	145	145
	T3	Correlation Coefficient	.070	.033	-.010	.079	1.000	.051	.067
		Sig. (2-tailed)	.309	.647	.886	.288	.	.485	.352

		N	145	145	145	145	145	145	145
	T4	Correlation Coefficient	.023	.293**	.345**	.182*	.051	1.000	.078
		Sig. (2-tailed)	.758	.000	.000	.024	.485	.	.317
		N	145	145	145	145	145	145	145
	T5	Correlation Coefficient	-.019	.028	.060	.123	.067	.078	1.000
		Sig. (2-tailed)	.800	.716	.438	.122	.352	.317	.
		N	145	145	145	145	145	145	145
Spearman's rho	O1	Correlation Coefficient	1.000	.026	.130	-.024	.085	.026	-.022
		Sig. (2-tailed)	.	.753	.120	.777	.309	.756	.795
		N	145	145	145	145	145	145	145
	O2	Correlation Coefficient	.026	1.000	.188*	.178*	.039	.314**	.031
		Sig. (2-tailed)	.753	.	.024	.033	.645	.000	.711
		N	145	145	145	145	145	145	145
	T1	Correlation Coefficient	.130	.188*	1.000	.079	-.013	.368**	.064
		Sig. (2-tailed)	.120	.024	.	.348	.877	.000	.445
		N	145	145	145	145	145	145	145
	T2	Correlation Coefficient	-.024	.178*	.079	1.000	.089	.189*	.130
		Sig. (2-tailed)	.777	.033	.348	.	.289	.023	.120
		N	145	145	145	145	145	145	145
	T3	Correlation Coefficient	.085	.039	-.013	.089	1.000	.059	.077
		Sig. (2-tailed)	.309	.645	.877	.289	.	.484	.355
		N	145	145	145	145	145	145	145
	T4	Correlation Coefficient	.026	.314**	.368**	.189*	.059	1.000	.083
		Sig. (2-tailed)	.756	.000	.000	.023	.484	.	.321
		N	145	145	145	145	145	145	145
	T5	Correlation Coefficient	-.022	.031	.064	.130	.077	.083	1.000
		Sig. (2-tailed)	.795	.711	.445	.120	.355	.321	.
		N	145	145	145	145	145	145	145

Appindix – E. Total Variance Explained

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.101	16.165	16.165	2.101	16.165	16.165
2	1.301	10.005	26.170	1.301	10.005	26.170
3	1.247	9.590	35.760	1.247	9.590	35.760
4	1.170	8.998	44.758			
5	1.042	8.017	52.775			
6	1.025	7.887	60.662			
7	.920	7.073	67.736			
8	.902	6.941	74.676			
9	.801	6.163	80.840			
10	.762	5.858	86.698			
11	.642	4.940	91.637			
12	.612	4.707	96.344			
13	.475	3.656	100.000			

Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	2.027	15.594	15.594
2	1.320	10.151	25.745
3	1.302	10.016	35.760
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			

Extraction Method: Principal Component Analysis.