The Role of Technology Readiness in Customer's Acceptance of Self-service

"A Comparative Study Among the Egyptian Banks"

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Abstract

The idea of this research stems from the importance of identifying the level of technology readiness of the banks to develop and provide self-services to their customers, as well as the level of technology readiness of the customers and their attitudes towards the use of technology and dependence on electronic dealings in receiving services, and to what extent it affects customers' acceptance of these services. A comparison was made between four banks in Zagazig representing all sectors. The National Bank of Egypt was chosen as representative of the public sector banks, CIB representing private banks, Abu Dhabi Islamic Bank representing Islamic banks and Housing and Development Bank representing specialized banks, according to a number of considerations. The researcher relied on the comprehensive inclusive method in choosing the sample of banks` managers and e-banking officials and a sample of 14 managers was chosen because of their limited number in these departments, and a quota sample was taken from customers by dividing the research population into several layers and withdrawal of a random sample (sample of those who visit the banks) from each bank whether are users or non-users of self-services. The final sample size of the research was 365.

Data were collected according to a survey list directed to both managers and customers through field interviews with the sample items. The study concluded a number of results, in which the most important of them were the high level of technology readiness of three of the banks under study, and there was a significant decline in the customer's tendency towards e-transactions, as well as a decline in the level of customer acceptance of self-service in three of

the banks under study. The results also revealed a significant influence of both the technology readiness of customers and the banks on the level of customers' acceptance of self-services. Both contribute to the level of acceptance of the self-service provided, if they are developed in a manner that contributes to the high readiness of the customer, and distinction of the services provided by the banks for their use in a manner that satisfies their customers' needs.

Introduction

In recent years, the development of self-service forms meant that customers had changed the way they access services, including banking services **(Bobbit and Dabholkar, 2001)**. In particular, banks have adopted many self-service types, including ATMs, phone banking, Internet banking and mobile banking. Self-service offers many benefits to both customers (such as providing their needs, providing better performance than the traditional alternative way of delivering services, saving more money and time, and reducing location restrictions) and Service providers as it Improves service delivery processes, increases the efficiency of the service, offers many functional benefits to customers and expands service delivery options **(Curran and Meuter, 2005)**.

Therefore, the use of technology in general and the self-service technology in particular may give service organizations a great opportunity to create competitive advantage in the services and products they provide to customers in the target market and thus, organizations can distinct and differentiate themselves from competitors in the services they provide or in the systems of production of these services and delivering them in the target market **(Al-Shaban and Burney, 2001)**.

Given the expanding role of technology in the delivery of services, it is necessary to understand the readiness of customers to use technological systems which is defined by **(Parasuraman, 2000)** as the tendency of individuals to adopt and use modern technology to achieve goals in practical life and work. Therefore, banks must take customers' technology readiness into consideration when developing self-service technology in order to ensure the success of their electronic banking services and predict the behavior of customers more accurately. The readiness of the individual to use new technology can be measured through four personality traits: optimism, innovativeness, discomfort, insecurity **(Parasuraman, 2000)**.

Although self-service technology can achieve high degree of efficiency and effectiveness in the banking sector, but it may cause a high level of implementation risk. So, banks need to assess their readiness to apply self-service technology and where they should improve themselves **(Huang et al., 2004)**. Banks that wish to provide their services electronically must first ensure that there is a strong infrastructure, a skilled workforce, having full knowledge of banking functions and working with maximum efficiency **(Maugis et al., 2005)**. They must continually create, renew or acquire organizational capacities and resources to meet the changing demands of the environment **(Wu et al., 2014)**.

By reviewing previous studies, researchers **(Venkatesh, 2000; Wang et al., 2003; Wangpipatwang et al., 2008; park, 2009)** have developed many theoretical models to understand and interpret individuals' attitudes and behavior towards the use of information technology. The technology acceptance model has proven to be effective among many theories in helping to understand the determinants of user acceptance of technology as well as explaining its behavior and trends in adopting these systems **(Lin and Chang, 2011)**.

The success of implementing any technology in the banking sector can not achieved unless there is acceptance by the customer of these systems and the availability of readiness to use them, in addition to the availability of a high level of banks` readiness to apply modern technological systems. the Egyptian banking environment still needs an understanding or a framework to show how the readiness of both the customer and the bank affects customer's acceptance of these systems. As previous studies have not provided frameworks that combine these three dimensions.

So, this study aims at identifying the differences between the banks in the Egyptian environment in their level of readiness to develop and provide new self-services to customers as well as the level of readiness of customers to use these services and the influence of this on the customers' acceptance of the services, and also providing a set of recommendations that will help the Egyptian banks to develop and offer new self services to achieve competitive advantage and attract more customers.

Literature review

The researcher had addressed some studies which combined technology readiness with the technology acceptance model from the newest to the oldest concerning its main objectives and findings.

1- (Walczuch et al., 2007) titled "The effect of service employees' technology readiness on technology acceptance"

The purpose of this study was measuring the relationship between the personality trait of the technology readiness index (optimism, innovativeness, discomfort, and insecurity) and the cognitive dimensions of technology acceptance model represented by (The perceived usefulness and the perceived ease of use). The sample of the study consisted of 810 employees of a multi-site financial service provider.

Findings showed that:

- Employees' optimism has the strongest impact on the perceived ease of use and the perceived usefulness of the provided information technology.
- Innovativeness negatively impacts the perceived usefulness.
- Discomfort had a negative effect on the perceived ease of use and had no impact on the perceived usefulness.
- Insecurity had a negative effect on the perceived usefulness and the perceived ease of use.

2- (Lin and Chang, 2011) titled "The role of technology readiness in self-service technology acceptance"

- The study proposes a research framework to suggest the direct and moderating roles of technology readiness on technology acceptance model (perceived usefulness – perceived ease of use – attitude – behavioral intention) toward using self-service technologies. Data was collected using a sample of 410 individuals selected from highly densely populated urban areas such as shopping malls, railway stations and subways.
- Results indicated the positive effect of technology readiness on the perceived usefulness, the perceived ease of use, individual's attitude toward use, and his intention to use.

3- (Erdogmus and Esen 2011) titled "An Investigation of the effects of technology readiness on technology acceptance in e-HRM"

- The aim of this paper is to investigate the effects of technology readiness on technology acceptance in e-HRM field based on a sample of 56 of largest private sector firms in Turkey. The sampling units were E-HRM managers.

- The results of the study showed that the optimism and innovativeness dimensions of the technology readiness index positively influenced the perceived usefulness and the perceived ease of use, but the discomfort and insecurity dimensions did not have any significant effects on them.

4- *(Godoe and Johansen 2012) titled "Understanding adoption of new technologies: Technology readiness and technology acceptance"*

The study aimed at identifying the aspects which can be used to expect consumers' adoption of modern technology through the relationship between the personal dimensions of the technology readiness index and the system specific dimensions of the technology acceptance model. The sample of the study consisted of 186 employees from various Norwegian governmental and private organizations

Findings showed that:

- Optimism and innovativeness significantly influence the perceived usefulness and the perceived ease of use.
- Insecurity and discomfort had no significant effect on the cognitive dimensions of TAM.
- The study revealed that the actual use was directly affected by perceived usefulness, but not by perceived ease of use.
- The results imply that both personality dimensions and system specific
- dimensions are of major importance when adopting new technology.

5- *(Iqbal and Bhatti 2015) titled "An investigation of university student readiness towards M-learning using technology acceptance model"*

- This study investigates the factors affecting university students' adoption of M-learning through examining the role of students' readiness towards m-learning and its impact on their acceptance of technology depending on a sample of 244 students selected from private universities operating in Islamabad.
- Findings revealed that the students' skills and psychological readiness significantly influence their perceived ease of use (PEOU) and perceived usefulness (PU) of m-learning, whereas both these constructs positively influenced their behavioral intention to use m-learning.

Research gap

(1) The researcher agrees with the previous studies which combined the technology readiness with the technology acceptance model to illustrate and explain the customers' behavioral intentions to use self-service technology, as the probable benefits of SST can not be realized unless customers adopt and use modern technologies.

(2) The study is an extension of the efforts of the researchers who addressed the impact of technology readiness in foreign countries, and its results can help to identify the extent to which customers accept the self-services provided by banks, and the banks' interest to develop new services that suits the customers' needs.

(3) The previous studies were conducted in different countries and environments and applied in different sectors but there are few studies that dealt with banks as a sector for application in spite of its importance as banks is one of the main pillars in the support and development of e-commerce. As e-commerce success is based on the success of banks in providing services to customers through electronic kiosks.

(4) There is a lack of Arab Studies especially the Egyptian studies addressing technology readiness which can be relied upon to determine the ability of individuals or institutions to use modern technology. Also, the lack of studies that have dealt with the technology acceptance model in Egyptian research, despite its importance in predicting and identifying the attitudes of individuals towards the use of technological applications.

(5) The study is one of the earliest studies aimed at comparing banks between banks operating in the Egyptian environment and indicating their level of readiness to develop and provide self-services to customers.

(6) The previous studies did not provide frameworks combining the readiness of banks and customers' readiness and customer acceptance of services and there are not enough studies tried to understand this relationship in the banking sector as one of the most used sectors of modern technological systems.

Research problem

Banks in a competitive banking environment are facing unprecedented challenges, which have led to increased competitive pressures and the fact that

modern technology is a safe haven to achieve competitive advantage. The success of implementing any technology in the banking sector is not achieved unless there is acceptance by the customer of these systems and the availability of readiness to use them, in addition to the availability of a high level of banks' readiness to apply modern technological systems.

Although the banks are considered to be one of the most organizations that apply self-technological systems, the Egyptian banking environment still needs an understanding or a framework to show how the readiness of both the customer and the bank affects customer's acceptance of these systems. As previous studies have not provided frameworks that combine these three dimensions.

In the light of the results of the pilot study, It was clarified that there were a variance in the level of technology readiness for the customers of the banks under study and also lack of acceptance by customers in most of the banks for the self-service provided, despite the availability of readiness at these banks to provide new services better to achieve a high level of customer acceptance of these services, indicating the need to identify the level of readiness in banks because of its significant impact on how to provide services to customers and support their acceptance of self-services provided by banks, in the light of the current trend of banks to convert all banking transactions to be electronically done.

The research problem can be formulated in the following questions:

1- What is the degree of availability of the technology readiness dimensions in the banks under study to develop and provide new self-services to customers.

2- Are there significant differences among banks under study in the level of customers' acceptance of self-service due to the banks' technology readiness.

3- What is the level of customers' technology readiness in the banks under study to use self-services provided by the banks.

4- What is the influence of the technology readiness of customers in the banks under study on their acceptance of self-services provided by the banks.

5- What is the level of customers' acceptance of the self-services provided by the banks under study.

Research importance

This research derives its importance from two aspects:

Scientific importance:

1- This study comes as a result of the lack of previous studies that dealt with the technology readiness of banks' customers to use self-services in the Arab environment in general and the Egyptian environment in particular, since there are a limited number of studies conducted in the foreign environment and it is not necessary to reflect the experiences of customers in the Egyptian environment .

2- The importance of the study stems from addressing an important topic related to the link between the technology readiness of the Egyptian banks and the level of readiness of customers to use self-services provided by banks, which is the main determinant of the success of self-banking services and their impact on customer acceptance of these services.

3- This study is an extension of the efforts of researchers who dealt with the subject of readiness in research and development in developed countries.

4- Assisting e-services officials in Egyptian banks to know how to raise the level of customers' acceptance of self-service provided by banks by adopting new self-services, which will contribute to the development of these services and strengthen the bank's competitive position.

Practical importance:

1- The banking sector is considered a knowledge-intensive sector that is constantly evolving and offers a wide range of electronic services that require continuous development.

2- Although electronic services in Egypt are still in its early stages, these services will have a promising future, which can be argued that these services will overcome the traditional branches of banks, which means the need for studies in the field of self-service technology.

3- Banks are one of the main pillars in supporting and developing e-commerce. The success of e-commerce depends on the success of banks in providing services to customers through electronic kiosks.

4- Increasing the competition between banks and each other, which necessitates the development of electronic services provided to customers in order to

retain existing customers and attract new customers and thus increase the ability of the bank to maintain its competitive position in the future.

Research objectives

1- Determining the level of technology readiness of the banks under study to develop and provide self-service to customers.

2- Identifying whether there are significant differences among banks under studying the level of customers' acceptance of self-service due to the banks' technology readiness.

3- Determining the level of customers' technology readiness to use self-services provided by the banks under study.

4- Recognizing the influence of customers' technology readiness on their acceptance of the self-services provided by the banks under study.

5- Determining the level of customers' acceptance of the self-services provided by the banks under study.

Research hypotheses

1- There is a high availability of the technology readiness of the banks under study to develop and provide self-services to the customers.

2- There is a low availability of the technology readiness of the banks' customers under study to use the self-services provided by the banks.

3- There is a low availability of the customers' acceptance of the self-services provided by the banks under study.

4- There are significant differences between banks under study in customers' level of acceptance due to the level of banks' technology readiness.

5- There are significant differences between banks under study regarding the influence of customers' technology readiness to use self-services on their level of acceptance of these services.

Research Method

To achieve the research objectives, the researcher will rely on the following two methods:

Library study method:

The secondary data needed for this research will be collected through browsing the books, periodicals and scientific theses related to the research

subject, as well as browsing the global information network to determine the theoretical framework and identify the most important previous studies.

Field study method:

Through this method, the primary data will be obtained through the survey lists that have been designed and tested for the degree of validity and reliability. They will be analyzed through the statistical methods prepared for this purpose in addition to the personal interviews with the sample of the study to help crystallize the research problem.

Research population and sample

(1) The research population: which is represented by:

1- all the banks operating in Zagazig city which are 18 banks according to the Central Bank of Egypt (CBE) statement on December 31, 2017. The study is based on the ranking of the data on the websites of the banks through **Alexa.com** to determine the order of the banks, in accordance with the indicators of dealing through the websites as an indicator of the size of customers who use the website to complete the banking transactions, as the website of the bank is the means through which the provision of banking online and therefore can be considered as an alternative way to the traditional branches of banks and in particular the data relating to visitors to the site in terms of the number and pages they see on the site and the time they take to browse the site.

Therefore, the researcher will rely on the available data on Alexa.com, which provides the various statistics of the websites and will evaluate the websites of the banks through some of the following statistics:

- Ranking of the bank's website in Egypt: This index measures the ranking of the bank's website compared to all the websites used in Egypt. This arrangement depends on the number of visitors to the website from the same country in the past three months.
- Views: This index measures the average number of pages a visitor browses on a daily basis, and browsing the same page multiple times through the same person on the same day can be viewed as a single page.
- Average time spent in browsing the site daily by the visitor.

2- Customers of the banks operating in Zagazig city.

(2) The sampling units:

1- Branch managers and managers related to electronic banking services. They have been selected as a preview units for application because of being highly aware of the bank's technology readiness and methods of developing and providing self-service to customers.

2- Customers of the banks, whether users or non-users of self-services.

(3) The research sample:

1- The Sample of the banks:

The researcher has chosen to apply four banks to be representative of all the sectors, as The National Bank of Egypt was chosen as representative of public sector banks, Commercial International Bank (CIB) representing private banks, Abu Dhabi Islamic Bank representing Islamic banks, and Housing and Development Bank representing specialized banks. Which represent 22% of the total number of banks operating in Zagazig city, According to the ratio of profits achieved in each bank according to the financial year ending in 2017 compared to other banks as well as the various statistics of websites according to **Alexa.com** as an indicator of the size of customers who use the website to complete banking transactions. The following table no. (1) shows the sample of the banks under study in Zagazig city according to Alexa.com, and table no. (2) the number of managers in the banks under study.

Table (1)

The sample of banks under study in Zagazig city

No	Name of the bank	Website	Website's order in Egypt	Percentage of visitors	The average number of pages	The average time spent on the website
1	Commercial International Bank	www.cibeg.com	245	79.2%	4.10	5:56
2	National bank of Egypt	www.nbe.com.eg	241	68.5%	2.04	1:58
3	Abu Dhabi Islamic Bank	www.Adib.eg	1874	74.2%	2.80	3:51
4	Housing and Development Bank	www.hdb-egy.com	2778	67.8%	3.20	3:37

Source: Prepared by the researcher.

Table (2)

Number of managers in the banks under study

Bank's name / Managers' sample	NBE	CIB	ADIB	HDB
Branch Manager	1	1	1	1
Customer service manager	1	1	1	1
Deputy customer service manager	2	-	-	-
Manager of banking operations	1	1	1	1
Total	5	3	3	3

Source: prepared by the researcher.

2- The sample of the customers:

Due to the difficulty of identifying customers who use electronic self-services because of the confidentiality of this data, then the study faces the problem of the distribution of sample size on the banks evenly as it represents more time and effort and high cost to the researcher and this sample may not represent the population of the study properly, as a result of the existence of differences between the banks in terms of customers who use the electronic self-services.

The researcher used the hypothesis that the research population is open with more than 500,000 items. Therefore, the researcher will withdraw a sample of 384 individuals distributed to the banks under study according to the volume of transactions of each bank. The researcher will rely on the Quota sample method to achieve the objectives of the research, and commensurate with the use of non-probability sampling method, where the researcher will divide the population into layers and will withdraw a random sample (sample of those who visit the banks) from each bank in several stages by intercepting customers during different days of the week at different times throughout the day. The following table no.(3) shows the sample of customers in each of the banks under study:

Table (3)

The sample of customers in the banks under study

Bank	Customers' sample
NBE	125
CIB	100
ADIB	69
HDB	90
Total	384

Source: Prepared by the researcher.

Research variables

The variables of the research are divided into:

The independent variables:

1- **Customers' technology readiness**, which includes four main dimensions (optimism - innovativeness - discomfort - insecurity) and it will be assessed through the use of Technology Readiness Index (TRI) scale developed by **(parasuraman, 2000)** including 36-items. The TRI is a likert type scale with responses ranging from "strongly agree" represented by (5) to " absolutely Disagree" represented by (1).

2- **Banks' technology readiness**: which can be measured by the combination of organizational, and environmental factors addressed by **(Molla and Licker, 2005)** and **(Mutawa et al., 2014)**, and can be illustrated as follows:

A- Organizational factors:

- Awareness.
- Technological resources.
- Infrastructure.
- Governance.
- Human resources.
- Business resources.
- Commitment.

B- Environmental factors:

- Government e-readiness.
- Supporting industries e-readiness
- Market forces e-readiness.

The dependent variable:

Is represented in the technology acceptance model which includes three main dimensions: perceived usefulness, perceived ease of use, behavioral intentions to use, They will be measured through the use of scales developed by **(Davis,1989)** and **(Lin and Chang, 2011)**. Each item question was scored on a Likert scale with responses ranging from (1 to 5), with a (1) rating indicating strong disagreement and a (5) rating indicating strong agreement.

Theoritical and scientific background of the research

First: The technology readiness of customers:

The development of new technologies has revolutionized the service field with companies using technology to improve service operations, increase service

efficiency, and provide practical benefits for customers. Many service providers have begun to use a wide range of technologies that allows customers to get services electronically without any direct contact with service employees **(Lin and Hsieh, 2007).**

The results of several previous studies **(Meuter et al., 2003; Lin and Hsieh, 2007; Walczuch et al., 2007)** which dealt with self-services' acceptance and its usage have indicated that customers' acceptance of these services depends mainly on their perceptions and beliefs about these services. The technology readiness of individuals varies from one country to another and even within the single country it varies from one city to another. This difference may be due to some factors such as age, gender, educational level and other demographic factors **(Al-Mahamid, 2011).**

Although customers can be aware of the benefits of using self-services in banks, they may avoid it if they are not comfortable with and/or ready to use the technology **(Meuter et al., 2003).** So **(Parasuraman, 2000)** suggested that technology readiness should be taken into consideration when developing new self-service technologies in order to predict customers' behavior more accurately.

Technology Readiness Definition

Technology Readiness refers to "people's propensity to embrace and use new technologies for accomplishing goals in home life and at work" **(Parasuraman, 2000).**

According to **(Parasuraman & Colby, 2001),** it is a combination of positive and negative technology-related beliefs. These beliefs are assumed to vary among individuals. these beliefs can be categorized into four dimensions: optimism, innovativeness, discomfort, and insecurity **(Parasuraman, 2000).**

According to the technology readiness index, two dimensions of technology readiness are contributors (optimism and innovativeness) and two are inhibitors (discomfort and insecurity) of technology adoption. Many researchers have found that people's views and attitudes towards technology is a mixture of positives, which push them to adopt and use technology, and negatives, which pull them away from technology. Thus, a user's technology readiness consists of four dimensions as follows

1- **Optimism:** A positive view of technology and a belief that it offers people increased control, flexibility, and efficiency in their lives and represents a dimension of confidence in technology **(Parasuraman, 2000)**

2- **Innovativeness:** A tendency to be a technology pioneer and thought leader. Innovativeness measures the extent to which an individual believes he/she is at the forefront of trying out new technology based products and/or services and is considered by others as an opinion leader on technology-related issues **(Parasuraman, 2000).**

3- **Discomfort**: A perceived lack of control over technology and a feeling of being overwhelmed by it. This represents the extent to which people have a general paranoia about technology-based products and services, believing that they tend to be kept away rather than being inclusive for all kinds of people **(Tsikriktsis, 2004).**

4- **Insecurity:** Distrust of technology and skepticism about its ability to work properly. Although somewhat related to discomfort, this dimension focuses on specific aspects of technology-based transactions, rather than on a lack of comfort with technology in general **(Parasuraman, 2000).**

Second: The technology readiness of banks:

E-banking services have provided a lot of benefits for both banks and customers. From the bank's perspective, the main benefits of offering e-banking services are cost savings, reaching new segments of the population, increased efficiency, enhancement of the bank's reputation and better customer service and satisfaction **(Jayawardhena and Foley, 2000).** But, the most important driving force behind the implementation of full e-banking services by banks is the need to create powerful barriers to customer exiting **(Sheshunoff, 2000).**

Many firms has found that implementing and managing an effective Self-service technology system is more difficult than it looks **(Bitner et al., 2002).** This could be primarily attributed to the lack of the organizations' readiness to adopt and use Self-service technology. Therefore, it is critical for organizations to assess whether they possess the mechanisms necessary to be ready for implementing Self-service technologies. So that they can identify areas of improvements in their operations related to self-service technology and increase the degree of adoption of technological innovations.

With the great increase of the new technological innovations, the concept of adoption and assimilation of these creations is recognized by business organizations as a way that helps them to gain a sustainable competitive advantage. Organizations are expected to differ in their strategic responses to these innovations and also vary in the speed with which these creations are adopted. In the banking industry, success in adopting the latest technological innovations by banks - which is the most fundamental innovation in banking – **(Bradley & Stewart, 2003)** depends on the availability of internal technological readiness at banks and the electronic readiness of the environment in which they operate.

Banks will not achieve the desired success in adopting these innovations unless the required integration is achieved between banks' electronic readiness and the electronic readiness of the environment in which they operate **(Al-abd allah, 2015).**

Definition of organizations' E-readiness:

It was defined by **(Ramaseshan et al., 2015)** as it refers to the ability of organizations to effectively adopt and integrate self-service technologies with their internal processes, employees, customers and members of communication channels in order to create value for the organizations' stakeholders. While **(Zhu et al, 2006)** sees that technology readiness refers to what extent the technology infrastructure, relevant systems and technical skills in business can support e-commerce adoption. Also, **(Molla and Licker, 2005)** supports that e-readiness refers to an organization's assessment of the E-commerce, managerial, organizational, and external situations in making decisions regarding the adoption of E-commerce.

Theories and Models of E-Commerce Adoption:

Many researchers in the field of e-commerce have pointed out that most of the research conducted in this field was based on a number of basic theories and models, which include **(Tan et al., 2007):** The diffusion of innovation (DOI) theory, The technology – organization – environment (TOE) framework, Institutional theory, Resource-based theory and Perceived e-readiness model.

These theories and models focused on identifying a diverse range of dimensions of e-commerce adoption and studying different aspects of it. Some models examine only the external environment of organizations, while others

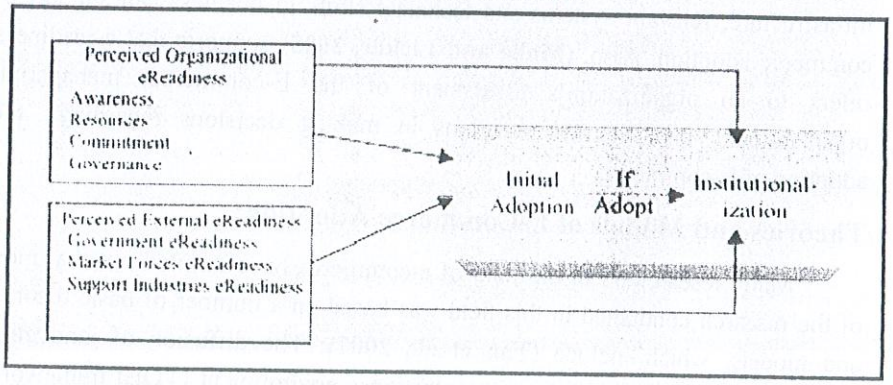
focused on technological aspects. In this research, the researcher depended on the Perceived e-Readiness Model of **(Molla and Licker, 2005)** as it identifies many of the relevant contextual and organizational factors that might affect e-Commerce adoption in developing countries. It is more comprehensive than earlier models. as it includes both extensive external environmental and internal organizational aspects. Also, the theoretical root of this model is interactionism, which allows for a multi-perspective audit of the managerial, internal organizational, and external contextual factors to provide meaningful predictors of business-to-business e-Commerce adoption in developing countries.

The researcher sees adding the infrastructure component as it is considered the base for measuring the readiness of different institutions. This element includes information technology such as communications and information techniques such as (devices, equipment, software and systems .. etc) which can help in applying the electronic services.

The model includes two major constructs which measure both exogenous and endogenous factors including: perceived organizational e-readiness and perceived external e-readiness. The following figure no. (1) illustrates the e-readiness model.

Figure (1)

The E-Readiness Model



Source: Molla, A., & Licker, P. S. (2005). eCommerce adoption in developing countries: a model and instrument. Information & management, 42(6), 877-899.

The dimensions of the e-readiness model are illustrated as follows:

(1) Organizational factors: which include:

1- **Awareness**: It refers to the extent to which individuals in the organization perceive of the e-commerce elements in the environment; through measuring the degree of absorption of workers and their knowledge of eCommerce technologies, business models, requirements, benefits and threats and projection of the future trends of e-Commerce and its impact.

2- **Commitment:** Reflects the existence of support for applying e-commerce from all parts of the organization, especially from the authority of senior management, as well as indicates a clear vision and strategy for e-commerce supported by senior management and e-commerce leadership and organization-wide support of e-commerce projects and ideas.

3- **Human Resources:** Refers to the availability of employees with adequate experience and ability to use information and communications technology (ICT) and other skills such as marketing skills and the ability to develop business strategies and plans that are essential to apply and use e-commerce initiatives and projects.

4- **Technological Resources:** Refers to the existing ICT base of an organization. This dimension assesses the extent to which the organization uses the computer, the flexibility of existing systems, and its experience with network-based applications.

5- **Business Resources:** This covers a wide range of capabilities, resources and most of the intangible assets available in an organisation. It includes the assessment of the effectiveness communication channels, managers' risk-taking behavior, existing business relationships, as well as the abundance of funding to finance e-commerce projects.

6- **Governance:** It refers to the strategic, tactical and operational models and plans used by organizations in developing countries in order to regulate and control their business activities and e-commerce initiatives.

(2) Environmental factors: which include:

1- **Government e-readiness:** Organisations' assessment of the preparation of the nation state and its various institutions in terms of government

commitment and the legal infrastructure to promote, support, facilitate and regulate e-commerce and its various requirements.

2- **Market Force e-readiness:** The assessment that allows an organisation's business partners such as customers and suppliers to conduct their business electronically.

3- **Supporting Industries e-readiness:** Refers to the assessment of the presence, development, service level and cost structure of support-giving institutions such as telecommunications, financial, and the IT industry, whose activities might affect the e-commerce initiatives of businesses in developing countries.

Third: Customers' acceptance of self-service:

Information technology acceptance and usage is an issue that has drawn much attention for over a decade. This is because Information Technology (IT) usage has become more important and not limited to its traditional role of operational support, but now plays a central role in formulating business strategies. Successful investment in technology can lead to enhanced productivity, while failed systems can lead to undesirable consequences such as financial losses and dissatisfaction among employees and customers **(Bugembe, 2010)**.

In particular, to predict the acceptance of new technologies, researchers have extensively employed many theoretical approaches that tried to explain the factors that influence customers to accept new information technology including the technology acceptance model (TAM) **(Davis, 1989)**, which is an adaptation of the theory of reasoned action (TRA) **(Fishbein and Ajzen, 1975)** and the theory of planned behavior (TPB) **(Ajzen, 1985)**.

Theories of IT Acceptance:

1- There are many theoretical approaches that tried to explain the factors of acceptance and spread of new information technology to customers. Scholars have proposed several theoretical models for a better understanding and explaining individual attitudes and behaviors towards new information technology such as the Technology Acceptance Model, the Technology Acceptance Model 2, the Technology Acceptance Model 3, the Theory of reasoned actions, and the Theory of Planned Behavior. According to these

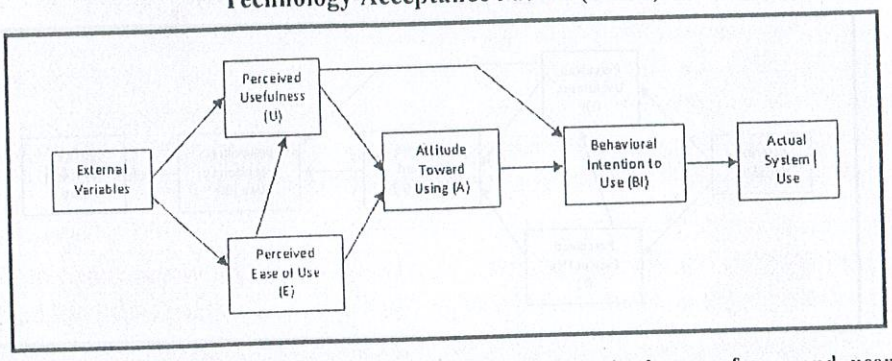
theories, intention to perform a certain behavior – as an alternative of actual adoption behavior – is theorized to be influenced by the beliefs of the individual about the outcomes of engaging in the behavior of interest **(Fishbein and Ajzan, 1975).**

Technology Acceptance Model (TAM):

(Davis, 1989) has developed a technology acceptance model based on the theory of reasoned actions introduced by **(Fishbein and Ajzen, 1975)**, through which the acceptance or rejection of the adoption of new information technology by customers can be interpreted. According to this model, behavioral intentions can be explained by the attitude towards the use of new technology and the perceived usefulness that can be gained as a result of that use. The attitude towards the use of new technology can be determined by perceived usefulness and perceived ease of use **(Amer, 2011)**. The following figure illustrates the technology acceptance model:

Figure (2)

Technology Acceptance Model (TAM)



Source: Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS quarterly, 319-340

This model consists of several dimensions as follows:

1- **Perceived usefulness:** It can be defined as the degree to which an individual believes that the use of a particular technology would enhance his performance in his job **(Davis, 1989).**

Many researchers have agreed on the importance of the influence of the perceived usefulness dimension on customers' intention to adopt e-banking services, including **(Wang et al., 2003; Singh, 2012; Santouridis and Kyritsi,**

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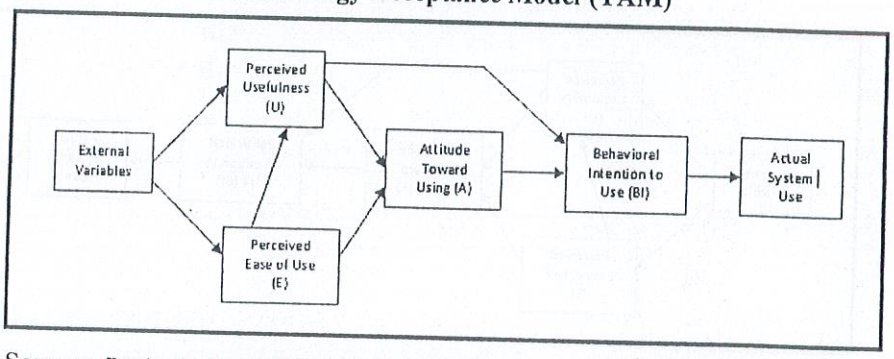

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Many researchers have agreed on the importance of the influence of the perceived usefulness dimension on customers' intention to adopt e-banking services, including **(Wang et al., 2003; Singh, 2012; Santouridis and Kyritsi,**

2014 ; **Davis et al., 1989; Amer, 2011)**, Where the ultimate reason for customers' acceptance of self-banking services is that they find that their dealings with these services will bring them many benefits that deserve to be adopted with a degree of risk **(Wang et al., 2003)**.

2- **Perceived ease of use:** defined as the degree to which the individual believes that the use of a particular technology will be free of effort **(Davis, 1989)**.

Many researchers have agreed on the importance of the perceived ease of use influence on the intention of customers to adopt self-banking services, including **(Wang et al., 2003; Singh, 2012; Santouridis and Kyritsi, 2014 ; Davis et al., 1989; Amer, 2011)**

(Wang et al., 2003) argues that e-banking should not only be easy to use but must also be easy to learn for customers, which affects the degree of customers' trust in services. perceived ease of use is also a way to attract users to use the system because of its ease. If the customer feels easy to use, he will be more confident. In contrast, if the customer does not feel easy to use the system, there will be no confidence to use technology **(Siang and Santoso, 2015)**.

3- **The attitude towards the use of the system:** The attitude towards the behavior can be defined according to **(Fishbein and Ajzen, 1975)** as the positive or negative feelings of the individual towards the use of a particular system. The attitude towards behavior can also be interpreted in accordance with prominent or important beliefs of that behavior and thus affecting the intention and actual use of the new goods or services **(Amer, 2011)** adopted from **(Taylor and Todd, 1995)**.

4- **Behavioral intention:** It is defined as the individual's willingness to adopt or not adopt the target behavior **(Fishbein and Ajzen, 1975)**.

As **(Amer, 2011)** adopted from **(Taylor and Todd, 1995)** pointed out that behavioral intention is considered the most important influent on the actual adoption of a new product or service. As behavioral intention is influenced by many factors, either directly or indirectly.

(Davis et al., 1989) found that factors of perceived usefulness and perceived ease of use are important intermediaries between exogenous factors that influence the behavioral intention of customers.

5- **Actual use of the system:** the individual's actual adoption of the system **(Fishbein and Ajzen, 1975)**.

This model assumes that the higher the perceived usefulness rate and the more perceived ease of use, the better the reaction of individuals to the use of new technology and the intention to adopt them.

The TAM assumes that user's acceptance of a new information system is determined by his/her intention to use the system, which in turn is determined by two behavioral beliefs; perceived usefulness and perceived ease of use.

Although many studies have empirically replicated or extended the TAM, a key feature of the TAM is the opportunity for increasing contribution and extension by tracing the impact of different external factors in explaining individual's internal beliefs, attitudes, and intentions **(Davis et al., 1989)**. It is also one of the most widely used and influential models in the field of information systems, technology and services. It has been validated to be powerful as a framework to predict user acceptance of new technology.

Like in many other studies of TAM the attitudes construct has been removed to simplify the model as it was omitted fromTAM2 **(Venkatesh and Davis, 2000)**. The researcher also excludes the actual usage behavior. Many researchers have used intentions rather than the actual behavior as a final construct **(Wang et al., 2003 ; Venkatesh, 2000 ; Lin et al., 2007 ; Erdogmus and Esen, 2011 ; Guhr et al., 2013 ; Kuo et al, 2013 ; Iqbal and Bhatti, 2015 ; Santouridis and Kyritsi, 2014)**. The researcher expands in the external variables that are expected to better influence acceptance of TAM variables.

Fourth: Self-service Technology

Self-service technology has attracted the attention of many academics and practitioners in the marketing and management of services **(Meuter et al., 2005)** because of its relative novelty, strategic importance, and when implemented successfully, it proves its importance in providing service standards efficiently and effectively without any direct intervention from the traditional employee. Also, it is an essential part of service delivery processes where organizations either replace or complement human-based services for reasons including cost savings, market pressure, operational efficiency and service failure prevention **(Oh et al., 2016)**.

With regard to the Egyptian banks, the application of self-service technology has a significant impact on supporting economic development through the provision of effective financial services. As a result of the nature of global competition in the field of banking services, banks' application of self-service technology may be the possible solution for banks to stay in the near future **(Aliyu et al., 2014)**.

(Meuter, Ostrom, Roundtree and Bitner, 2000) are the first to use the term self-service technology and defined it as a technological interface that allows customers to produce services independent of the direct participation of the employee.

(Lin and Hsieh, 2007) sees that self-service technology is considered as a means for customers to access their services based on information technology and the Internet without any intervention by employees. He explained that one of the most important advantages of this technology is that it significantly reduces the cost of employing the workforce, as it does not depends on the client's contact with the employee to complete what he needs, but he/she can complete all transactions in electronic form far from the human factor.

Banking Self-Service Technology in Egypt:

There is no doubt that Egyptian banks are constantly seeking to apply e-banking services, since e-banking is no longer viewed as a competitive advantage but a competitive necessity **(Rod et al., 2009)**.

It is necessary to highlight the Egyptian banking sector in general. The number of banks operating in Egypt is 40 banks (three of which are public sector banks, the National Bank of Egypt, Banque Misr and Banque du Caire). The total assets of banks operating in Egypt are 2846.1 billion L.E at the end of June 2016 compared to 1220.6 billion L.E at the end of June 2010. Total deposits amounted to 2116.1 billion L.E at the end of June 2016 compared to 893.5 billion L.E at the end of June 2010 **(Central Bank of Egypt, Annual Report, 2015/2016)**.

These indicators are evidence of the strength of the banking sector and increase confidence in this sector despite the crises facing the countries, whether political or economic and Egypt has huge potential for expansion of self-service activities because of its high population, which exceeds 95 million people according to the website of the Central Agency for Packaging And Statistics **(http: // www.Capmas.gov.eg)**.

Egypt has a number of factors that are conducive to the success of the application of self-service technology. For example, there is an expansion in the infrastructure of Internet services in Egypt reaching 33.19 million users in 2017 compared to 26.8 million in 2016 **(Ministry of Communications and Information Technology Indicators Bulletin, August 2017)**. This means that there is a growth rate in the number of Internet users in Egypt is 23.8% in one year, which is a high percentage indicating the promising future of electronic services in Egypt, especially as a large number of users rely on high-speed Internet services (which is required for the performance of electronic services), **(MCIT Bulletin August 2017)** showed that the percentage of mobile Internet users reached 33.22% in April 2017 compared to 27.37% in April 2016. These indicators are the most important factors determining the level of demand for electronic banking services in the future.

According to the Central Bank of Egypt statistics in 2017, the number of ATMs in Egypt reached 11000 machines at December 2017. According to the simple data, there are 11 machines per 100,000 people in Egypt. This rate is still very little compared to the United States (114 machines per 100 thousand people) **(Al-Buluk, 2014)**.

It can be said that using the Internet in banking transactions is still not mature, since self-service in Egypt is still in its advanced stages and the success of the application of self-service technology in banks depends on the readiness of both the bank and the customer and thus the relationship between them must be developed, Further studies in this area are needed to help Egyptian banks - which have already started to provide many services through the Internet - to attract more customers and enable them and facilitate their banking transactions through the use of technology.

Designing the questionnaire and testing its validity:

(1) Testing the validity of the questionnaire:

a- Content validity:

In order to verify the validity of the content of the two questionnaires directed at each of the managers (for measuring the degree of readiness of the bank) and the other for the customers (for measuring customers' readiness and acceptance of self-services), the researcher presented them to a number of specialized arbitrators of the professors of business administration and information systems, and also the managers of the banks under study for

verifying the validity of the standards used in this research and verifying the validity of their content and their coverage of all dimensions of independent and dependent variables, and the appropriateness and clarity of the formulation of the statements to measure what was set for it, and the appropriateness of each statement of the variable to which it belongs, even reached the final questionnaire.

b- Internal consistency of the bank's technology readiness variable:

The internal consistency reflects the consistency of each of the sub-dimensions with the variable to which it belongs. The questionnaire list directed to the managers was verified by calculating the Pearson correlation coefficient for each of the phrases in this list. The results of the statistical analysis revealed the internal consistency for the dimensions of the banks' technology readiness.

c- Testing the validity of the questionnaire directed to customers using Confirmatory factor analysis:

Confirmatory factor analysis is a method for determining the relationship between observable variables and latent variables. In the case of prior information to the researcher about the data structure based on previous results, the confirmatory factor analysis can be used to test the possibility of collecting some data and representing them by one or several factors. Therefore the objective is testing the data representation of the expected structure. Thus, the goodness of fit of the models used in the current study can be judged by some of the indicators as follows:

❖ **The results of the confirmatory factor analysis of the customer's technology readiness measures:**

Table (4)

The total goodness of fit indicators of the customer's technology readiness measurement model

Type of Indicator	Index	Value	The value that indicates conformity
Absolute Fit Indicators	1- Chi- square	1.898	Less than 3
	2- GFI	0.861	0 – 1
	3- RMSEA	0.050	Less than 0.08
Incremental Fit Indicators	1-NFI	0.865	0 – 1
	2-TLI	0.924	More than 0.9
	3-CFI	0.931	More than 0.9
	4-IFI	0.931	0 – 1

Source: The results of the statistical analysis using Amos

From the previous table no.(4), it is clear that:

- All the goodness of fit indicators are acceptable to some extent whether Goodness of Fit Index is 0.861, Normed Fit Index 0.865, Incremental Fit index 0.931, Tucker Lewis Index 0.924 index Comparative Fit Index 0.931.
- The Root Mean Square of Error Approximation value is 0.050 and its value is within the permissible limits, which means the fitness of the model.
- The value of the standardized chi-square 1.898, It is the result of the division of chi-square on the degrees of freedom and if the value is less than 3, this means the fitness of the model.

Thus: the above results indicates the goodness of fit and strong internal cohesion of the scale

❖ **The results of the confirmatory factor analysis of customer's acceptance of self-service measures:**

Table (5)
The total goodness of fit indicators of the customer's acceptance of self-service measurement model

Type of Indicator	Index	Value	The value that indicates conformity
Absolute Fit Indicators	1- Chi – square	2.852	Less than 3
	2- GFI	0.960	0 – 1
	3- RMSEA	0.071	Less than 0.08
Incremental Fit Indicators	1-NFI	0.975	0 – 1
	2-TLI	0.976	More than 0.9
	3-CFI	0.984	More than 0.9
	4-IFI	0.984	0 – 1

Source: The results of the statistical analysis using Amos

From the two previous table no. (5) it is clear that:

- All the goodness of fit indicators are acceptable to some extent whether Goodness of Fit Index is 0.960, Normed Fit Index 0.975, Incremental Fit index 0.984, Tucker Lewis Index 0.976 index Comparative Fit Index 0.984.
- The Root Mean Square of Error Approximation value is 0.050 and its value is within the permissible limits, which means the fitness of the model.
- The value of the standardized chi-square 2.852, and it is the result of the division of chi-square on the degrees of freedom and if the value is less than 3, this means the fitness of the model.

Thus: the above results indicates the goodness of fit and strong internal cohesion of the scale.

(2) Testing the reliability of the two questionnaires:

Table (6) shows the results of the reliability of the questionnaire directed to the managers and the questionnaire directed to the customers.

Table (6)

Reliability test results of the research questionnaires

Research variables	Value of Cronbach's Alpha coefficient	Reliability
Total customer's technology readiness	0.765	Reliable
Total customer's acceptance	0.937	Reliable
Total Bank's readiness	0.953	Reliable

Source: Prepared by the researcher based on the statistical analysis results

Receiving responses and response rate:

Table (7) shows the number of distributed questionnaire lists of customers in each bank and the number of lists suitable for analysis in each of them:

Table (7)

The number of distributed questionnaire lists of customers and the number of lists suitable for analysis in the banks under study

Bank / Lists	NBE	CIB	ADIB	HDB	Total
Number of distributes lists	125	100	69	90	384
Number of excluded lists	11	-	2	6	19
Number of lists suitable for the analysis	114	100	67	84	365
Response rate	91%	100%	97%	93%	95%

Source: Prepared by the researcher, from the process of data collection.

While the managers' lists had a response rate of 100% as shown in Table (8):

Table (8)

The number of distributed questionnaire lists of managers and the number of lists suitable for analysis in the banks under study

Bank / Lists	NBE	CIB	ADIB	HDB	Total
Number of distributes lists	5	3	3	3	14
Number of excluded lists	-	-	-	-	-
Number of lists suitable for the analysis	5	3	3	3	14
Response rate	100%	100%	100%	100%	100%

Source: Prepared by the researcher, from the process of data collection.

The behavioral description of the research sample:

The following table no. (9) clarifies the description of the customers of the banks under study by the degree of their usage of self-services.

Table (9)

The behavioral description of the customers of the banks under study by the degree of self-services usage

The Service		Bank								Total	
		NBE		CIB		ADIB		HDB			
		Frequency	Percentage %	Frequency	Percentage %	Frequency	Percentage %	Frequency	Percentage %	Frequency	Percentage %
ATM	Non-Users	27	28.1%	4	4%	19	28.4%	13	15.5%	68	18.6%
	Users	82	71.9%	96	96%	48	71.6%	71	84.5%	297	81.4%
Internet banking	Non-Users	100	87.7%	55	55%	53	79.1%	84	100%	292	80%
	Users	14	12.3%	45	45%	14	20.9%	-	-	73	20%
Mobile banking	Non-Users	114	100%	57	57%	58	86.6%	84	100%	313	85.8%
	Users	-	-	43	43%	9	13.4%	-	-	52	14.2%
E-wallet	Non-Users	107	93.3%	78	78%	61	91%	84	100%	330	90.4%
	Users	7	6.1%	22	22%	6	9%	-	-	35	9.6%

Source: Prepared by the researcher according to the distributed questionnaire lists

- Table (9) shows that the use of ATMs represents the largest and predominant percentage of using the rest of the self-services in all the banks under study. The usage rate for this service was 71.9% at (NBE) and 96% at (CIB), 71.6% at (ADIB) and 84.5% at (HDB), indicating the importance of this service to the customers in relying on it through their transactions with the banks.
- Internet banking was the second used service, Where the percentage of its usage in (CIB) was the highest percentage between banks, which accounted for 45%, While (ADIB) and (NBE) customers were less dependent on it, with a usage rate of 20.9% and 12.3% respectively, and this service has not been provided yet to customers in (HDB).
- Mobile banking services have not been yet developed and submitted to customers (NBE) and (HDB), while the percentage of its usage and reliance on banking transactions was about 43% in (CIB) and 13.4% in (ADIB).
- The E-Wallet service was ranked the last in terms of the use of self-service in the banks under study, with 6.1% usage rate at (NBE) , 22% in (CIB), 9% in (ADIB), but this service has not been submitted yet to the customers of (HDB).

Data analysis and hypotheses testing:

This section deals with the analysis of the field study results related to the levels of technology readiness of each of the banks to develop and provide self-services to customers, as well as the technology readiness of customers to use self-services technology and their acceptance, and how the technology readiness of both banks and customers influences customers' acceptance of the self-services.

For determining the managers and the customers attitudes towards the research dimensions, The researcher relied on comparing the value of the weighted mean of the variable with the values of the Likert scale, The availability of technology readiness and acceptance of self-services in the banks under study has been judged through three levels:

If the arithmetic mean falls within the range (from 1 to 2.99), this indicates a low degree of readiness and acceptance, and if the arithmetic mean falls within the range (from 3 to 3.99), this indicates a medium degree of readiness and acceptance, , and if the arithmetic mean falls within the range (from 4 to 5), this indicates a high degree of readiness and acceptance.

The following table no. (10) shows the means of both the banks' and the customers' technology readiness. and the level of customers' acceptance of the self-services provided by the banks under study.

Table (10)

The results of descriptive statistics of the dimensions of customers' technology readiness in the banks under study

Dimension	Bank															
	NBE				CIB				ADIB				HDB			
	Mean	SD	Strength of direction	Sig.	Mean	SD	Strength of direction	Sig.	Mean	SD	Strength of direction	Sig.	Mean	SD	Strength of direction	Sig.
Total organizational factors	4.37	0.380	68.5%	Strong	4.64	0.219	82%	Strong	3.84	0.327	42%	Weak	4.59	0.160	79.5%	Strong
Total environmental factors	3.86	0.467	43%	Weak	3.70	0.422	35%	Weak	3.92	0.449	46%	Weak	4.36	0.653	68%	Strong
Total banks' technology readiness	4.28	0.363	64%	Strong	4.47	0.254	73.5%	Strong	3.85	0.318	42.5%	Weak	4.55	0.140	77.5%	Strong
Total Customers' readiness	2.84	0.723	-8%	Weak	3.32	0.613	16%	Weak	3.21	0.658	10.5%	Weak	2.99	0.584	-0.5%	Weak
Total acceptance level	3.52	1.114	26%	Weak	4.21	0.737	60.5%	Strong	3.93	0.756	46.5%	Weak	3.75	0.771	37.5%	Weak

Source: Prepared by the researcher based on the statistical analysis results

The strength of the direction was calculated by the following equation:

$$\text{Strength of direction} = \frac{\text{Weighted mean - midpoint}}{\text{(Upper limit of scale - minimum scale) / 2}} \times 100$$

If the value of the strength of the tendency (or direction) is greater than 50% , it indicates that the tendency is strong, and if the value is less than 50% it indicates that the tendency is weak.

Testing the first hypothesis:

The first hypothesis states that "There is a high availability of the banks' technology readiness of the banks under study to develop and provide self-services to the customers".

Through the results indicated in table (10) shows that:

There is a strong rapprochement of opinions of the managers of the banks under study on the availability of a high degree of technology readiness to develop and provide high quality self-service to their customers. This is evident in the arithmetic mean where it reached 4.55 strongly with 77.5% direction strength in the (HDB) which was ranked the first in the ranking of the banks under study in the degree of availability of high technology readiness, followed by (CIB), where the arithmetic mean was 4.47 with a strong direction strength of 73.5%, then the (NBE) with a mean of 4.28 with a strong direction strength of 64%. Finally, (ADIB) came in the last rank with a mean of 3.85 a strong direction strength of 42.5%.

Based on the analysis of the previous results, the first hypothesis will be partially accepted.

Testing the second hypothesis:

The second hypothesis states that "There is a low availability of the technology readiness of the banks' customers under study to use the self-services provided by the banks".

Through the results indicated in table (10) shows that:

- The overall indicator of (CIB)'s customers' readiness reflects a medium degree, as the arithmetic mean was 3.32, with a weak tendency towards the use of technology in day-to-day dealings which amounted for 16%, indicating that the bank's managers and e-services should pay attention to their customers' readiness in order to maintain the bank's level of service delivery, its continued demand and develop them to ensure that it maintains its competitive position as the largest private sector bank.
- (ADIB) was ranked the second in terms of the degree of technology readiness of its customers with a mean of 3.21, which has a value within the medium range

with a strength of direction of 10.5%, indicating the weakness of customers' dependence on technology.

- The (HDB) was the third ranked in terms of the technology readiness of its customers, where the arithmetic mean was 2.99, which has a value within the low range with a strength of direction of -0.5%, indicating a very weak customers' dependence on technology.
- While the (NBE) came in last rank in terms of the technology readiness of its customers with a mean of 2.84, which has a value within the low range with a strength of direction of -8%, which indicates that this ratio is a serious indicator for the bank showing insufficient attention from the bank to its customers and their views, opinions and beliefs towards the technology, and that the bank should review the readiness of its customers in order to ensure their preservation from the direction towards other banks to meet their needs, especially as it is the largest public sector bank.

Based on the analysis of the previous results, the second hypothesis will be partially accepted.

Testing the third hypothesis:

The third hypothesis states that "There is a low availability of the customers' acceptance of the self-services provided by the banks under study".

Through the results indicated in table (10) shows that:

- The (CIB)'s overall indicator of total customers' acceptance of self-services reflects the highest acceptance rate among the banks surveyed, with a mean of 4.21 and falls within the high range of 60.5%, indicating the positive trend of the bank's customers towards accepting the self-service provided by the bank.
- (ADIB)'s customers came in second rank , as the value of the arithmetic mean of the customers' attitudes towards the acceptance of the self-services provided by the bank was 3.93 and falls within the medium range, but with a direction strength of 46.5%, which means a decrease in customers' acceptance for self-service provided by the bank.
- (HDB)'s customers were ranked the third in the attitudes of customers towards the acceptance of self-services, with a mean value of 3.75 and falls within the

medium range, But with a direction strength of 37.5%, indicating a decline in customers' acceptance for self-service provided by the bank.

- (NBE)'s customers were the fourth and last in the ranking of customers' attitudes toward self-services acceptance, as the value of the arithmetic mean was 3.52 and is in the medium range, but with a direction strength of 26%. Indicating a decline in customer acceptance for self-service provided by the bank.

Based on the analysis of the previous results, the third hypothesis will be partially accepted.

Testing the fourth hypothesis:

The fourth hypothesis states that "There are significant differences between banks under study in customers' level of acceptance due to the level of banks' technology readiness".

For testing this hypothesis, the researcher used the discriminate analysis method to determine the ability of the technology readiness of the banks to influence the levels of customer acceptance of self-services, Where the customer population was divided into three groups, the first with a high level, the second with the intermediate level and the third with a low level. The discriminate analysis was used to determine the extent of differentiation between these groups and the significance of the differences between them through the Wolks Lambda coefficient as shown in the following tables no. (11) and (12):

Table (11)

Wolks' coefficient to explain discriminate level in customers' acceptance of self-services

Statement	Wolks Lambda	Chi-square	Degrees of freedom	Sig.
Customers' acceptance of self-services	92.8%	12.821	4	0.012

Source: Results of the statistical analysis.

Table (12)

Standardized Discriminate Function Coefficients

Statement	Organizational factors	Environmental factors
Customers' acceptance of self-services	-0.635	0.991

Source: Results of the statistical analysis.

Tables (11) and (12) illustrate the following:

- The Wolks coefficient is more than 50% and less than the correct one, which indicates that the independent variable (The technology readiness of the bank) can explain the high rate of acceptance in the banks under study.
- The technology readiness of the bank is not completely responsible for the level of customers' acceptance, but it contributes with a high rate in the formation of acceptance of self-service.
- All Wolks coefficients were significant for both perceived usefulness and perceived ease of use at a significant level of 1% and 5%. This indicates that there are differences in the level of customers' acceptance due to the level of technology readiness of the bank.

Based on the analysis of the previous results, the fourth hypothesis will be accepted.

Testing the fifth hypothesis:

The fifth hypothesis states that "There are significant differences between banks under study regarding the influence of customers' technology readiness to use self-services on their level of acceptance of these services".

In order to test this hypothesis, the researcher used the multiple regression method to determine the influence of customers' technology readiness on their level of acceptance of self-service technology, as well as the contribution of each dimension of the customers' technology readiness in explaining the variance in their acceptance of self-service technology. The following tables illustrated the results of the multiple regression in the banks under study.

Table (13)

The results of the multiple regression analysis for the influence of customers' technology readiness on their level of acceptance of self-services in the (NBE)

Independent Variables	Standardized Coefficients β	t value	Sig.	VIF
Constant	-	3.466	0.001	-
Optimism	0.616	7.659	0.000	3.396
Innovativeness	0.174	2.192	0.030	3.317
Discomfort	-0.080	-1.442	0.152	1.603
Insecurity	-0.125	-2.275	0.025	1.577
R^2 = 79.2%		Adjusted R^2 = 78.4%		
F value = 103.800		Sig. F = 0.000		
The value of Durbin-Watson test = 1.849				
Sig. Kolomogrov-Smirnov test = 0.991				

Source: Results of the statistical analysis.

Table (14)

The results of the multiple regression analysis for the influence of customers' technology readiness on their level of acceptance of self-services in the (CIB)

Independent Variables	Standardized Coefficients β	t value	Sig.	VIF
Constant	-	4.809	0.000	-
Optimism	0.168	2.094	0.039	1.657
Innovativeness	0.586	6.981	0.000	1.819
Discomfort	-0.079	-0.966	0.337	1.734
Insecurity	-0.120	-1.508	0.135	1.642
R^2 = 63.1%		Adjusted R^2 = 61.6%		
F value = 40.664		Sig. F = 0.000		
The value of Durbin-Watson test = 2.036				
Sig. Kolomogrov-Smirnov test = 0.664				

Source: Results of the statistical analysis.

Table (15)

The results of the multiple regression analysis for the influence of customers' technology readiness on their level of acceptance of self-services in (ADIB)

Independent Variables	Standardized Coefficients β	t value	Sig.	VIF
Constant	-	2.574	0.012	-
Optimism	0.702	8.942	0.000	1.996
Innovativeness	0.193	2.487	0.016	1.957
Discomfort	-0.158	-1.994	0.051	2.034
Insecurity	0.076	0.977	0.332	1.951
R^2 = 80.8%		Adjusted R^2 = 79.6%		
F value = 65.362		Sig. F = 0.000		
The value of Durbin-Watson test = 1.726				
Sig. Kolomogrov-Smirnov test = 0.903				

Source: Results of the statistical analysis.

Table (16)

The results of the multiple regression analysis for the influence of customers' technology readiness on their level of acceptance of self-services in the (HDB)

Independent Variables	Standardized Coefficients β	t value	Sig.	VIF
Constant	-	3.162	0.002	-
Optimism	0.546	5.302	0.000	1.823
Innovativeness	0.228	2.234	0.028	1.791
Discomfort	-0.286	-3.200	0.002	1.379
Insecurity	0.132	1.361	0.177	1.613
R^2 = 54.1%		Adjusted R^2 = 51.8%		
F value = 23.281		Sig. F = 0.000		
The value of Durbin-Watson test = 1.909				
Sig. Kolomogrov-Smirnov test = 0.583				

Source: Results of the statistical analysis.

The previous tables no. (13), (14), (15), and (16) illustrates the following:

- The estimated regression models are free from any econometric problems that may probably affect them or lead to the unreliability of their results.
- The "F" test showed the significance of the regression models, which reflects the effectiveness of the customers' technology readiness dimensions in explaining

the variation in their level of acceptance of self-services provided by the banks under study.

- The total influence of the customers' technology readiness dimensions on their level of acceptance of the self-services was expressed by the value of "R2" which was 79.2% in the (NBE), 63.1% in (CIB), 80.8% in (ADIB), 54.1% in (HDB), which indicates that the technology readiness can explain the difference in the level of customers' acceptance with a percentage of 79.2%, 63.1%, 80.8%, 54.1% in (NBE), (CIB), (ADIB), and (HDB) respectively, as the customer's readiness to use technology is largely responsible for his acceptance level of the self-services, while the remaining percentages are due to other factors that are not included in the regression relationship

Based on the analysis of the previous results, the fifth hypothesis will be partially accepted, as there were an agreement on the dimensions influencing the level of acceptance in both (ADIB) and (HDB), but there was a difference in the dimensions influencing the level of acceptance in both (NBE) and (CIB).

Research findings:

The research resulted in a set of findings which can be illustrated as follows:

1- This research sought to try to identify the actual reality of the availability of the technology readiness in the banks under study as one of the main factors to adopt modern technological innovations.

2- This study dealt with the relationship between the technology readiness of banks as one of the main factors influencing the decisions taken to adopt or not adopt modern technology, and the technology readiness of customers and the necessity of its availability in order to achieve a high level of usage of self-services, and indicating the influence of both of them on customers' acceptance of self-services provided by the banks under study.

3- The importance of this research for bankers is to support their decisions to develop self-service technology through factors influencing customers' adoption and acceptance of these services. Also, this study provides banks with information about the differences among customers according to their

preferences and demographic factors, which should be taken into account in the development of modern technological systems.

4- Most customers prefer to carry out their transactions through the automatic teller machines (ATMs), which are the most used self-service, but there was a decline in the usage rates of the rest of the services.

5- According to **The National Bank of Egypt (NBE):** the managers' opinions indicated the availability of a high level of technology readiness in the bank to develop and provide self-service to customers. But it did not reach the maximum level of the arithmetic mean, and there was weakness in the strength of the direction toward the environmental factors. Results also indicated the availability of low level of technology readiness among the Bank's customers, as well as an average level of their acceptance of the Bank's self-services with a strong strength of direction towards the dimensions of acceptance.

6- According to **The Commercial International Bank (CIB):** The managers' views indicated a high level of technology readiness at the bank to develop and provide self-service to customers. There was also a weakness in the strength of the direction toward environmental factors. The results showed a high level of availability of customers' acceptance of self-services provided by the bank with a highly strong direction, despite the level of customers' readiness which was available at a medium level.

7- According to **Abu Dhabi Islamic Bank (ADIB):** The opinions of the managers showed the availability of a medium level of the technology readiness of the bank with a weak power of direction, also, there was an availability of the customers' technology readiness with a moderate level and the direction strength was weak towards using technology. Their opinions indicated a low direction strength towards their level of self-services acceptance which was in the medium range.

8- According to **Housing & Development Bank (HDB)**, the findings showed that HDB was superior to the rest of the banks in terms of the high availability of technology readiness in the bank with a strong direction strength, while there was a medium level of customers' acceptancé of the services provided. Customers opinions expressed a low degree of availability of the technology readiness dimension to use self-service technology.

Research recommendations:

In light of the findings of the research, a number of recommendations can be presented as follows:

1- Developing and expanding the self-banking services of all its kinds to enable the category of customers, which is unable to use the internet banking services, to gradually move into the electronic dealings world.

2- Developing aspects of the operations and usage of self-service to make them easy to use and not limited to the highly qualified customers only.

3- Providing the support by banks to customers, who visit the banks in executing their transactions, electronically within the bank with the assistance of the bank's staff.

4- Accurate Identification of the Bank's shortcomings regarding the level of readiness of the branch by conducting a comprehensive study of the Bank.

5- Assignment of the research department of each bank to investigate customers' opinions to identify their expectations about their self-service, its level and their evaluation of the services provided.

6- The need of focusing on the security and privacy aspects of the technology provided, including physical protection of electronic channels, and actions taken in banks such as maintenance and supervision system and the protection of the website.

7- Achieving the continuous compatibility between the level of technology readiness of the bank and the technology readiness of the customers, by eliminating the differences in technology level between them.

8- The need to work on spreading e-banking awareness among customers of the electronic channels and services which are provided through them in order to increase electronic transactions.

9- Banks should change the culture of individuals to deal with self-service technology, especially with the current tendency of banks to transfer all transactions to be done electronically.

10- The need for banks to pay attention to the manner of which the service id designed and delivered, and that the self-service provided must be easy to use

and not having complex procedures, as not all customers at the same level of readiness.

11- Banks need to pay attention to the confidence factor as one of the factors contributing to the adoption of mobile self-service, in addition to providing adequate protection for mobile applications, which helps to increase the level of its usage.

12- Innovation of new types of self-banking services that satisfy customers' desires and attract them to use these electronic channels in their banking transactions.

13- Working on the continuous improvement and development of ATM machines and services provided through them, through adding some of the improvements and developments on them

14- The necessity to focus on the appearance of physical facilities for ATMs in terms of quality and safety of machines and devices used, as well as its external appearance to be able to create a comfortable atmosphere for the customer and find them easy to use.

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ملخص البحث

تنبع فكرة هذا البحث من أهمية التعرف على مستوى الجاهزية التكنولوجية للبنوك لتطوير وتقديم خدمات ذاتية لعملائهم، وكذلك مستوى الجاهزية التكنولوجية للعملاء واتجاهاتهم نحو استخدام التكنولوجيا والاعتماد على التعامل الإلكتروني في تلقي الخدمات، وإلى أي مدى يؤثر ذلك على تقبل العملاء لهذه الخدمات. وتم إجراء مقارنة بين أربعة بنوك في مدينة الزقازيق ممثلة لجميع القطاعات فتم اختيار البنك الأهلي المصري ممثلاً لبنوك القطاع العام، والبنك التجاري الدولي CIB ممثلاً لبنوك القطاع الخاص، وبنك أبو ظبي الإسلامي ممثلاً للبنوك الإسلامية، وبنك التعمير والإسكان ممثلاً للبنوك المتخصصة، وذلك وفقاً لعدة اعتبارات، حيث تم أخذ حصر شامل للمديرين ومسئولي الخدمات المصرفية الإلكترونية بالبنوك محل الدراسة والبالغ عددهم ١٤ مفردة، وأخذ عينة حصصية من العملاء من خلال تقسيم مجتمع البحث لعدة طبقات وأخذ عينة عشوائية من العملاء المترددين على البنوك سواء كانوا مستخدمين أو غير مستخدمين للخدمات الذاتية، وقد بلغ حجم العينة النهائي للبحث ٣٦٥ مفردة، وتم تجميع البيانات بالاعتماد على قائمتي استقصاء موجهة لكلاً من المديرين والعملاء من خلال المقابلات الميدانية مع مفردات العينة، وخلصت الدراسة إلى عدد من النتائج ومن أهمها توافر مستوى عال من الجاهزية التكنولوجية لثلاثة من البنوك محل الدراسة، ووجود انخفاض شديد في قوة ميل العملاء نحو التعاملات الإلكترونية، وكذلك وجود انخفاض في مستوى تقبل العملاء للخدمات الذاتية في ثلاثة من البنوك محل الدراسة. وكذلك أوضحت النتائج وجود تأثير معنوي لكلاً من الجاهزية التكنولوجية للعملاء والبنوك على مستوى تقبل العملاء للخدمات الذاتية، حيث تساهم كلاً منهما في تشكيل مستوى تقبل العميل للخدمات الذاتية المقدمة إذا ما تم العمل على تطويرهم بالكيفية التي تساهم في توافر جاهزية مرتفعة لدى العميل وكذلك تميز الخدمات المقدمة من قبل البنوك لإستخدامها بالشكل الذي يرضي رغبات عملائهم.