

Managers' Perspective Towards Perceived Risks Associated with Technology Based Self Services- A case of Jordan Banks

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Abstract: *Perceived Risks associated with Technology Based Self Services (TBSS) provided by banking industry and financial institutions influences managers attitudes toward adopting such technology adversely. Despite the fact that TBSS is becoming a necessity tool for banking industry to adopt. The purpose of this study is to propose a conceptual model to examine the effect of perceived risks associated with (TBSS) on managers' attitudes towards adopting (TBSS). In this paper, perceived risk i.e financial risk, performance risk, strategic risk, psychological risk, social risk, time risk, technical risk, and safety risk are proposed as independent variables which influences bank managers' attitude towards adopting (TBSS). The main hypothesis of the present study is that perceived risks associated with (TBSS) negatively influences bank managers' attitude toward adopting (TBSS). A survey of 125 Jordanian bank managers was conducted through a validating questionnaires. SPSS was used for data measurement and regression analysis was done to measure the relationship among the observed construct. The results of the present study indicate that perceived risks negatively influences bank managers attitude towards adopting TBSS. Perceived time risk, perceived technical risk, perceived psychological risk and perceived financial risk perceived were respectively the highest risks perceived by bank managers and influences negatively the adoption of (TBSS). The study suggested some recommendation which can contribute significantly to reduce such risk and ways to deal with.*

Keywords: *Technology Based Self Services, Banking Industry, Perceived Risks, Services marketing, Technology adoption in Jordan.*

1. Introduction

In the banking and finance Industry (BFI), the benefits of Technology Based Self services (TBSS) seems to be quite well understood from both an academic and a practitioners perspective. However we still lack a thorough and empirically validated understanding of the risks associated with Technology Based Self Services (TBSS) especially concerning Banking processes. This raises questions about the impact of such risk such as physical, psychological, time, financial, strategic, performance, and social risks on (TBSS) decisions in banks operations and ultimately the challenges the bank and financial institutions would consider to propose sound technology based self services decisions support, which considers the benefits and the risks associated with such technologies.

As financial processes are almost fully digitizable, the banking and finance industry heavily relies on information technology (IT). Accordingly, IT has a strong driver of development in the banking industry with ATM being a large transaction volumes

possible (e, g. payments and securities processing), at the same time enabling new E_Commerce products and services like online banking. But despite its long history and the success of many firms in this field, the overall industry structure is still surprisingly not considering the marketing risks associated with technology base self services. A major reason is that (TBSS) as the major pillar of services delivery method in the banking industry has been much more easier to adopt by both the market and the bank. Such IT has provided banks with the opportunity to use (TBSS) as a means to reduce costs and focus on core competencies to enable the industry to move towards value network structures as has been successfully done in other industries (Homann, Rill and Wimmer, 2004, Azzam & Al-Ramahi, 2010).

While banks have gained some experience in self services technologies over the past decade, a new business processes related to (TBSS) together with the relevant IT from the market is quite a new challenge. TBSS is widely seen as an opportunity –

enabled by advancements in IT- to make Banks' processes sufficiently flexible and efficient(Bitner . M. J,2001 ,Akinci, et al.,2004,Meuter,L. ET AL., 2005, Lall Mahmood. L, et al., 2007, Hernandez, M,J., 2007). Accordingly (TBSS) is considered to be of a substantial importance in the banking and finance industry in Jordan particularly and in the world generally. In fact, a survey of Jordan's' many top banks reveals that all bank plan to focus on core business functions and that the current wave of (TBSS) in the banking industry is just the beginning of a major trend (, H. Gewald et al., 20006 , Azzam and Al-Ramahi, 2010).

This paper aims to bridge this gap by revealing the importance of different risk dimensions associated with (TBSS) in the banking and finance industry. On the other side, a thorough understanding of the risks associated with (TBSS) will be reviewed towards a more and a complete understanding of (TBSS). This paper will take into consideration managerial perspective and contribution to pinpoint the key marketing risks in their operations and develop solutions to deal with such risks for both market side and financial institution, which enables banks to provide distinctive and highly competitive services to the market.

Research Problem:

Methodologically, the main problem is measuring the associated risks and the effectiveness of risk reducing actions. While there is usually abundant loss of data and financial evaluation for high frequency of specific risks. A way to evaluate these risks despite the non-availability of quantitative data is to use the expert judgment of BFI managers. Supported by studies showing that the actual (TBSS) decision is strongly influenced by the particular manager in charge of the process and is thereby an individual rather than a group decision. Therefore, it becomes obvious that a managers individual perception of (TBSS) risks and benefits plays a major role as an antecedent to corporate (TBSS). This research focus on the risks associated with (TBSS) as managers perceive them , contrary to any objective risk measure . This is done because although the banking industry is an industry sector which professionally deals with risk as one of its major functions in developed economies, a coherent model to objectively measure the risks associated with (TBSS) has not yet been published. Therefore, if managers are involved in the decision process toward (TBSS) it is of utmost importance how they perceive the risks as no reliable objective measure is currently available. Thus, The research problem can be formulated in the following questions:

1. Do Jordan bank managers perceive marketing risks associated with technology based self services (TBSS)?
2. To what extent do bank managers perceive risks associated with (TBSS)?
3. To what level do bank managers attitudes is influenced in adopting (TBSS) in the presences of different risks?

Research Objectives

Generally speaking this research aims to achieve the following objectives:

1. Identifying bank managers' perception towards risks associated with Technology Based Self Services (TBSS).
2. Identifying the attitudes of banks' managers towards adoption of Technology Based Self Services in the presences of risks.
3. Identifying the main procedures banks managers are taking to reduce the level of risks associated with (TBSS).
4. Providing the necessary recommendations for bankers and researchers based on the findings of the present study.

3. Research Importance.

This research is important at both the academic and practical levels. Academically, few studies are concerned with exploring the risks associated with technology based self service (TBSS) from bank managers' point of view. Most of the studies are concentrating on the customer side and examine the risks that customers perceive in using TBSS. So the study can contribute to the accumulated knowledge in this area. From practical point of view, the Bank represents one of the most important sectors in any economy in general and for Jordan economy in particular where the economy depends greatly on the Banking sector as a source of its competitive advantage in this region. From a marketing point of view, (TBSS) is considered as a new service and as a channel of distribution of bank services. Such efforts are contributing to developing close and trusting relationship with managers in Bank with understanding the risks associated with (TBSS), hence they can manage these risks to enhance better performance and gain a competitive advantage in the market.

Theoretical Background

Perceived Risk Theory

Our main hypothesis is that perceived risk has a negative impact on a managers attitude towards adopting (TBSS). As a fundamental theory enabling the analysis of the associated risks. Perceived Risk Theory is considered . Perceived risk is defined as the potential loss in the pursuit of the desired

outcome of (TBSS) business processes (Featherman and Pavlou, 2003). Researchers segregates perceived risk into five risk dimensions: performance risk, financial risk, psychosocial risk, safety risk, and opportunity \ time risk.

Safety risk, the risk dimensions gauging possible harm of physical damage to the human being, is generally not applicable (Featherman and Paylou 2003). However, two objects of the present study can potentially be harmed by the actual decision to increase the level of TBSS: the managers and the bank. The psychosocial risk dimensions captures the risk for the individual manager. It comprises two risks, psychological (the risk that the selection or performance of the producer (service provider) will have a negative effects on the managers' peace of mind or self-perceptions and social risk (the risk of loss of status in ones social group as a result of adopting a service (Featherman and Pavlou 2003). Psychosocial risk therefore accounts for the fears of the managers that their social environment will not value their role in the decision to automate a business process as well as the fear of actually making a decision which may produce unwanted outcomes. To account for the risk for the bank, the strategic risk dimensions is introduced, which comprise the risks which are potentially harmful to the intended long-term development of the bank, thus ultimately jeopardizing its existence in the market .This strategic risk dimension includes elements of the safety and opportunity \ time dimension and replaces them in the research model.

Perceived Risk

(TBSS) has acquired the reputation of being risky business (Aubert et al., 2002) and there is empirical evidence that numerous (TBSS) engagement have failed to deliver their desired value. TBSS is just as risky as many other uncertain business ventures [Aubert et al. 2002] .It is therefore sensible to assume that decision makers carefully analyze the risks associated with alternative governance modes before deciding to adopting (TBSS) in banking process.

This is particularly true of the banking industry in Jordan. Regulations explicitly state that the responsibility for the execution of the (TBSS) processes remains with the bank. This implies that the bank continues to be responsible for any errors of the service provider and cannot limit liability to clients, the regulator, or other third parties .This indirect responsibility is assumed to increase the awareness of (TBSS) risks among senior managers who are responsible for business processes.

Therefore it is assumed that the level of perceived risk, the potential loss in the pursuit of a desired

outcome of automated process. The negative relationship between perceived risk and attitude has been conceptually indicated and empirically tested in several environments (Featherman and Pavlou 2003; Pavlou2003; Ge-fen and Pavlou 2004, Gunningham, et al., 2005, H, Gewald 2006, Chu.k, and L, li, 2008, Kelly et al., 2010, M. Sajjed, 2010, You. How et al., 2011, Dash.M, et al., 2012).

The perception of risk is a behavioral belief and as such an important antecedent of the attitude towards adopting (TBSS). Therefore, perceived risk is taken as independent variable directly Influencing the attitude towards adopting (TBSS) by bank managers.

Attitude towards Adopting TBSS

A positive attitude towards (TBSS) is assumed to positively influence the intention to increase the adoption of (TBSS). The attitude towards (TBSS) as the overall evaluative appraisal, made by a manager who is responsible for a business process, of having that process automated. The relationship between attitude and adoption is based on the fact, which states that the beliefs about an outcome shape the attitude towards performing a behavior. A attitude in turn influences the intention to perform the behavior and ultimately influences the behavior itself (Wixom and Todd 2005). Therefore the more positive the attitude towards (TBSS), the greater the intention to increase the level of (TBSS) will be. This relationship has been empirically tested in numerous studies, especially those focusing on the Technology Acceptance Model (H.Gewald, et al., 2006, Mahmmad, Sajjad. Et al., 2010,You.H. Go, et al .,2011, Dash Manoranjan ,et al., 2012).

Dimensions of Perceived Risk

According to Cunningham (1967), perceived risk can be divided into two major categories which are performance and psychosocial risk. Performance risks consists of economic, temporal and effort risk. Meanwhile psychosocial risk consists of psychological and social risk. Later on perceived risk is categorized into six dimensions namely performance, financial, opportunity or time, safely, social and psychological risks. On the other hand, Jacoby and Kaplan (1972) classified perceived risks into seven dimensions that are financial, physical, psychological , social, time and opportunity cost risk. In the case of (TBSS), we adapt the framework developed by Jacoby and Kaplan (1972) and considered eight types of risks. The risks are recognized and believed to be the main factors that would influence (TBSS) adoption by bank managers(H. Gelwald., et al., 2006, Muhammad , Sajjad., et al., 2010,You, How.GO, et al., 2011,Dash, Manoranjan., 2012) .

Performance Risk

Many researchers define that performance risk as the inconsistency of product function. In term of services, Kusma et al., (2007) state that the unexpected loss due to system breakdown or internet disconnection in executing online transaction reflects

performance risk. In (TBSS) context, performance risk is the difficulties encountered by users during assessing (TBSS), where (TBSS) does not perform what is expected. Hence, we expect that the greater the perceived risk in TBSS performance will lead managers to have inconvenient and frustration feeling towards adopting (TBSS). At all this will discourage managers from participating in (TBSS) adoption.

Physical Risk

According to Roselius (1971), and Jacoby and Kaplan (1972), physical risk is the possibility of products or services being considered for purchase or use that will threaten , harm or cause injury to customers health. In (TBSS) context, the mangers health will have a negative effects if they use the computer for long hours. For instance the managers of camera will be damaged if they spend long hours in front of the monitor due to the exposure of ultraviolet from the screen. This would also cause the managers to feel nauseas and dizzy. .

Psychological Risk

According to Jacoby and Kapllan (1972) Mitchell (1992) and Yang et al., (2006) psychological risk is defined as the unexpected negative effect towards managers mental health through online purchasing where they will feel tense and anxious if the products purchased by the client do not meet their expectation. In the context of services, psychological risk is defined as the potential losses of managers assurance peace of mind or self-perception. Therefore users will tend to worry, be frustrated or feel incompetent as the result of using (TBSS) services.

Social Risk

Jacoby and Kaplan (1972), and Cho et al., (2006), and Lither and Melanthiou (2006) state that social risk is associated with the perception of family and friends regarding the customers characteristic and behavior in purchasing a certain products and services online. From (TBSS) perspective, users will be viewed as having an individualistic character.

They are more willing to spend their time chatting online rather than meeting people face to face.

Time Risk

Time risk is referred as the expected loss and wastage of time due to online usage in purchasing products and services. Forsythe and Shi (2003) state that the occurrence of time risk is due to the productive time taken. Meanwhile Litter and Melanthiou (2006) state that managers face time risk when they have to learn how to assess and use the particular web site. For instance, managers tend to spend more time to provide the services needed With the reasons above, it shows that time risk has expected to have negative impact towards (TBSS) adoption among its users.

Financial Risk

Financial Risk is defined as the tisk that the actual costs may exceed the planned\budgeted costs of the TBSS engagement. In other words the fear of the manager that he will have to pay more for the service than originally anticipated From the BFI managers perspective, risk mainly arises from unexpected transition costs and hidden costs during service delivery. Unexpected transition costs include unforeseeable set-up costs, redeployment costs, relocation costs or parallel-running costs . These costs are particularly caused by the additional human resources needed to transfer the processes. Hidden costs emerge if the managers assumes that certain activities are included when the automation process and they eventually turn out not to be, resulting in costly implementation. Underestimated costs are caused by inexperience or the inability of the bank to calculate the business case correctly. (G. You et al., 2011)

Table 1. Definitions of Risk dimensions in a TBSS Context

Risk dimension	Definition
Physical Risk	Physical risk involves the potential threat to an individuals safety physical health and will being.
Functional Risk	Functional risk represent the probability that a product might not perform as expected.
Social Risk	Social risk is concerned with an individuals ego and the effect that a purchase will have on the opinions of reference groups.
Time – loss Risk	Time – loss risk refers to the possibility that a purchase will take too long or waste too much time.

Financial Risk	The Risk that the actual costs may exceed the planned \budgeted costs of the TBSS engagement ,
Opportunity cost Risk	Opportunity cost risk refers to possibility that the best alternative is not chosen will lose when a choice is made.
Performance Risk	The risk that the service provided through TBSS will not be delivered as expected by the bank.
Strategic Risk	The risk that the bank will lose its ability to react flexibly and unconstrained to changing market condition.
Psychosocial Risk	The risk that the decision to adopt TBSS as a business process will have a negative effect on the responsible managers peace of mind or self-perception (i.e. Loss of status in ones social group).
Information Risk	Information risk refers to the possibility that an individual is operating in an environment of a symmetric information.

Source: (Mitchel, 1992, Featherman and Pavlou 2003, Lu et al., 2006, Azmi et al, 2010)

Each risk dimension combines the perception regarding the underlying individual risks associated with this for every risk dimension the associated individual risks will be derivate by applying theoretical knowledge and analyzing the literature on the risks associated with (TBSS) and evaluating the information which has been gathered empirically by the respective relevance of each risk dimension which will be assessed by analyzing its individual component and by testing the impact on overall risk perception . This approach offers additional insights on risk formation and emphasizes the relative importance of the hypothesized risk dimension. Therefore the research model takes the risk dimensions as directly influencing, the attitude towards (TBSS) adoption.

Theory of Reasoned Actions

The theoretical foundation for analyzing the influence of perceived risk on the attitude towards adopting (TBSS) is based on the Theory of Reasoned Action (TRA). Ajzen 1991 states that attitude refers to the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question (Ajzen 1991) and argues for a strong relationship between attitude and the intention to perform an actual behavior in this context the intention to adopt (TBSS). Therefore it is decided to use attitude towards adopting TBSS as the latent variable immediately influenced by perceived risk. This has important for theorizing about the (TBSS) decision: this research analyzes variations in the attitude towards (TBSS) to predict level of (TBSS) adoption by bank managers. This approach is supported by two recent studied on (TBSS) that adopted a similar approach to assess the (TBSS) decision .(matthew rt al., 2005, Gewald et

al.,2006, Muhammad.Sajjad 2010,You,H, How . Go, 2011 .)

Research Model and Hypothesis

Based on the literature reviewed, the researcher proposed the following:

Hypothesis 1: Perceived financial risk associated with (TBSS) negatively influences banks managers' attitudes towards adopting TBSS.

Hypothesis 2: Perceived performance risk associated with (TBSS) negatively influences banks managers' attitudes towards adopting TBSS.

Hypothesis 3: Perceived strategic risk associated with (TBSS) negatively influences bank managers' attitude towards adopting (TBSS).

Hypothesis 4: Perceived psychological risk associated with (TBSS) negatively influences bank managers' attitude towards adopting (TBSS).

Hypotheses 5: Perceived social risk associated with (TBSS) negatively influences bank managers' attitude towards adopting (TBSS).

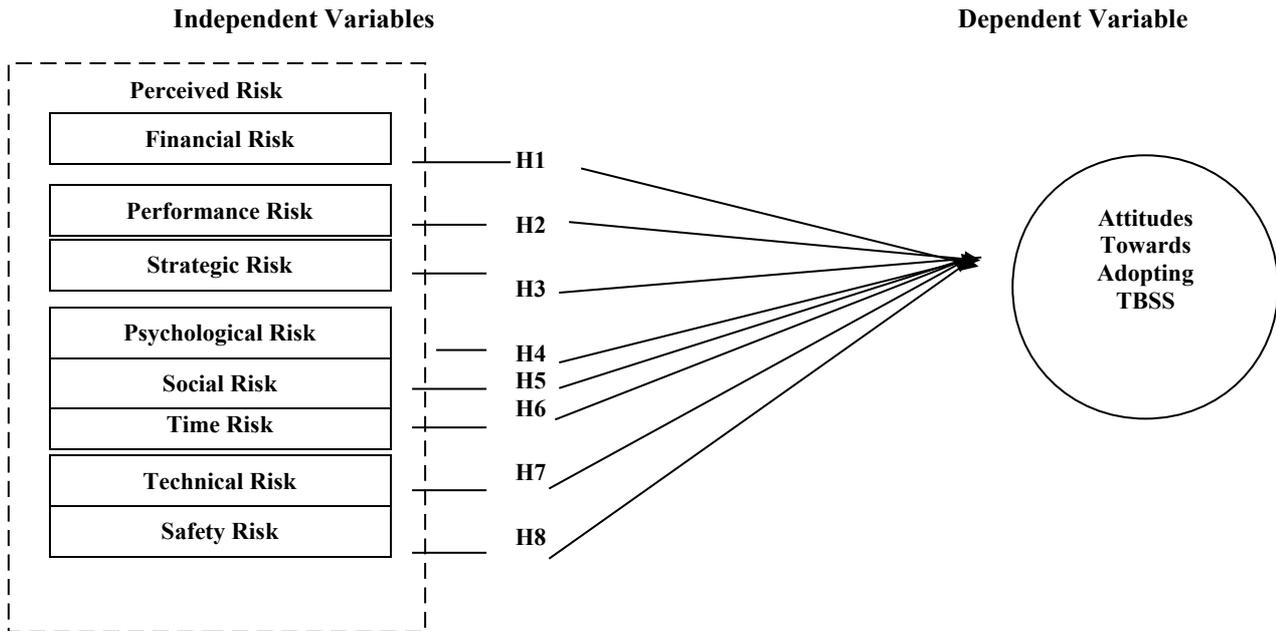
Hypotheses 6: Perceived time risk associated with (TBSS) negatively influences bank managers' attitude towards adopting (TBSS).

Hypothesis 7: Perceived technical risk associated with (TBSS) negatively influences bank managers' attitude towards adopting (TBSS).

Hypothesis 8: Perceived safety risk associated with (TBSS) negatively influences bank managers' attitude towards adopting (TBSS).

Research Model:

Based on the literature reviewed the researcher adopted the following model.



Technology Based Self – Service (TBSS)

Recently academic researchers have recognized the critical importance of technology in the delivery of service (Bitner, Brown, and Meuler 2000, Dabholkar 1994, 1996, Azzam & Al-Ramahi, 2010). Some suggest that the traditional marketplace interaction is being replaced by a marketplace transaction (Matthew. L, et al., 2005)

The market space is defined as "a virtual realm where products and services exist as digital information and can be delivered through information based channels" (Matthew L , et al., 2005). The foundation of customer- company interactions has scientifically changed in this new market space environment. Technology based Self-service are a classic example of market space transaction in which no interpersonal contact is required between buyer and seller.

Several studies have investigated issues involving (TBSS) mainly focusing on the development of use profiles some attempted to segment markets on the basis of willingness to participate actively in the delivery of services .This is one of the most comprehensive early studies done to identify and describe customers who might be willing to use a self – service delivery alternative . Some examines the attractiveness of self-service options when the usual monetary or time-saving incentives are controlled and finds that a significant group of people chose to use a self-service option even without monetary or time-saving benefits.

One issue to be noted from these early studies is that some make no distinction between technology-based self-service scenarios and more labor-intensive self service situations. Only two of the self-service

scenarios used across the studies were technology-based (i.e. using ATMs and purchasing travelers checks from an automated machine) .It is likely that the technological aspect of many recent self-service options has a unique influence on consumer perceptions of these self service encounters Researchers continue to be interested in how attitudes toward technology may influence the extent to which managers adopt technology based products and services (Matthew et. al., 2005). Dabholkar (1992) explores issues such as how attitudes towards computerized products and a need for interaction with service employees affect attitudes. Dabholker finds that both factors influence consumer attitudes toward using a computerized ordering (TBSS). In a more recent study, Dabholkar (1996) examines evaluations of TBSS service quality making comparisons between an attribute model based on what customers expect from the computerized fast food ordering SST across various attributes (expected speed of delivery ease of use, reliability enjoyment, and control and an overall affect model based on beliefs about the use of technology and the need for interaction with service employees. Dabholker finds the attribute model to be superior in predicting evaluations and enjoyment and control are the two most influential attributes.

Types of (TBSS)

The existing research on TBSS focuses on either a single technology in a given study (e.g Dabholker 1992, 1996 Meuter et al., 2001, Dabholker and Bagozzi, 2002, Jamal 2004, Meuter, 2005, Azzam & Al-Ramahi 2010) or in the case of the early studies primarily low - technology-self service. None of the research attempts to examine the range of (TBSS)

available to consumers today. In the current study, a brief of (TBSS) available in the market place and provided by banks is reviewed. Some are well established, whereas other are in their infancy, and others may never be successful on a large scale.

The conceptualization of present study focus on (TBSS) options, which is based on a review of the academic literature, trade press, observation, and previous work. The following part represent the types of technology based self services and the purpose of such technology adopted by companies.

The purposes of the technologies from the customer perspective is what the customer can accomplish by using the technology. The types of technology interfaces include telephone-based technologies and various interactive voice response systems, direct online connection and inter-based interfaces, interactive free-stand kiosks, and video or compact disc (CD) technologies. Some times these technologies are used in combination. For example a company provides a CD that enables a customers

review products or services and then link directly to websites for more information or ordering .Similarly a customer might buy a mail-order item through an automated telephone system but then track the delivery time for the package through a Web site that provides automated package tracking capabilities.

Companies provide (TBSS) for a variety of purposes, the first many forms of customers service are now provided through technology. Question regarding accounts, bill paying, frequency, asked question and delivery tracking are just a few examples of customers excellence in this arena.

A second extremely rapidly growing arena for (TBSS) is direct transactions. The technology enables customers order, buy, and exchange resources with companies without any direct interaction with their employees.

The third use of (TBSS) is the broad category called self-help, which refers to technologies that enable customers to learn, receive information, train themselves, and provide their own services

Table No.2 Categories and Examples of TBSS in Use

Interface Purpose	Telephone/Interactive Voice Response	Online/ Internet	Interactive Kiosks	Video/CD*
Customer Service	<ul style="list-style-type: none"> • Telephone banking • Flight information • Order status 	<ul style="list-style-type: none"> • Package tracking • Account information 	<ul style="list-style-type: none"> • ATMs • Hotel checkout 	
Transactions	<ul style="list-style-type: none"> • Telephone banking • Prescription refills 	<ul style="list-style-type: none"> • Retail purchasing • Financial transactions 	<ul style="list-style-type: none"> • Pay at the pump • Hotel checkout • Car rental 	
Self-Help	<ul style="list-style-type: none"> • Information telephone lines 	<ul style="list-style-type: none"> • Internet information search • Distance learning 	<ul style="list-style-type: none"> • Blood pressure machines • Tourist information 	<ul style="list-style-type: none"> • Tax preparation software • Television/ CD-based training

Source: (Matthew et al., 2005)

Financial institutions may have to change structures, culture and processes to build and maintain customer relationship using the new technology. There are several tools of interactive technologies used by financial services institutions which are as follows (Harrison 2000; Meuter et al. 2000; Meuter et al. 2000; Bitner 2001; Dabholkar and Bagozzi 2002; Bitner et al. 2002; Jamal 2004; Meuter et al. 2005, Azzam and Al-Ramahi 2010, You. H. G. 2011).

(1) Automatic Teller Machine (ATM):-

It was first introduced in the UK more than 30 years ago early machines were largely cash- dispensing terminals which were originally put in place to reduce queues in branches at peak times, cut down the amount of paper work and cash handling and free up staff time in branches. Customers are taking the advantage of the 24-hour access to cash provided by the terminals. (McGoldrick & Green Land 1994; Dinleroz & Murillo 2005, Azzam & Al-Ramahi, 2010).

(2) Electronic Funds Transfer at Point Of Sale (EFTPOS):

There are several forces driving the introduction of electronic funds transfer at point of sale (EFTPOS). Consumers were demanding easier method of payment, retailers wanted to reduce the amount of cash in the payment system, financial services insinuations wanted to reduce the amount of cheque-based payments and the technology suppliers obviously wanted an outlet for their products. (Harisson 2000 & Gaur and Abdul Waheed 2003)

(3) Tele banking:-

People who enjoy conducting business over the telephone and prefer the telephone as a method of buying goods have dubbed telephone. According to the Henley Centre for forecasting, this includes half the population (Financial Times, 23, April, 1998). The cost advantages of telephone banking are very attractive when compared with the cost associated with a branch network. The cost of servicing retail bank customers by telephone can be as little as percent of the cost of similar transactions via a branch teller (Gaur 2003; Dinleroz & Murillo 2005) Furthermore, for telephone services operated from call centres, there are additional cost saving in terms of premises to be considered. Many centres located in out-of-town or edge-of-town warehouse –style office accommodation which is plentiful and considerably cheaper than high street locations. Telebanking systems can be operated via one of three main methods which differ in terms of the

amount of technology involved (Harrison 2000; Dinleroz and Murillo 2005).

(a) Person-to-person telephone operations:

Person-to-person telephone operations were the first to be established, in which the customer has direct contact to the personnel at the financial institution to process transactions and deal with enquiries. In technological terms it is the least sophisticated of telephone delivery channels since it is merely a development of the ad hoc service which any customer enjoys from their financial institution such service is accessed 24 hours a day. (Harrison 2000)

(b) Tone/Speech-based:

Tone or speech–based telephone services are based on communication via tone generation and can be operated by one of two main telephone -based method. The first of these operates via a push-button telephone or a tone pad and pulse/click phone. The second method is automated voice response. (Harrison 2000; Turban and King 2003).

(c) Screen-based:

In screen-based systems communication occurs between the customer's computer television or video text system and the financial institutions computer system. (Turban and king 2003)

(4) Smart Cards:-

Smart cards are a relatively recent innovation which offers variety of possible applications including prepayment functions, advanced identification of cardholders, road- pricing schemes and retailers loyalty cards, as well as electronic cash. The card uses a microchip instead of the magnetic stripe which is currently used in debit and credit cards and many other plastic cards on the market. There are several advantages which the microchip offers over the magnetic stripe (Harrison, 2000):

- It enables increased amount of data to be stored on the card.
- The microchip allows the data to be accessed and processed remotely as well as on line.
- The microchip is more secure than the magnetic stripe which reduces fraud in payment system.

(5) On-line banking:-

On-line banking systems have wider reaching implications because they do not rely on ATM's or EFTPOS and they are not dependent on co-operative schemes with other banks. They do, however, require the intermediation of communication companies to provide the interactive communication networks.

On-line or PC banking from a personal computer at home or place of work provides the customer easy way to perform common banking transactions that

would normally require a visit to the branch or perhaps telephone call to process. Thus, it creates convenience allowing the sometimes onerous task of financial management to be fitted around individual's busy life style. There are two main approaches to on-line banking which can be distinguished (Harrison, 2000; Sarel and Marmostien 2004; Dinleroz and Murillo 2005; Sullivan 2005).

(a) Home banking:

Such service requires the user to dial directly to the financial service provider system. Basic facilities offered includes; the ability to check account balances, view transactions records and account history, pay bills , apply for other services communicate with the financial institution, and transfer money instantly between accounts. Customers can also download information on to their own PC which enable them to manage their own finances without needing to stay on-line. (Harisson 2000; Turban and king 2003; Gunningham et al. 2005)

(b) Internet Banking:-

Where access to the financial institution is made across the internet using a web browser, the internet offers an alternative and more portable means of operating on- line banks. (Hughes 2003;Lang and Colgate 2003; Gaur and Abdul Waheed 2003; Jayawardhena 2004; Meuter et al. 2005).

(6) Interactive TV:-

Interaction TV offers the integration of television cable satellite and internet services. The concept has been around for more than 25 years, yet its adoption could herald a whole new world in retailing and banking. (Harrison 2000; Dinleroz and Murillo 2005).

Methodology

The population of the present study consists of all Jordanian Domestic Banks (Local and Foreign). The number of banks operating in Jordan is twenty six banks. The researchers covered only the banks headquarters located in Amman city the capital of Jordan who apply technology based self services (TBSS), where the targeted respondents were expected to exist. The data is collected by using a self-administered questionnaire that measures bank managers' attitudes towards perceived marketing risks associated with technology based self services (TBSS) and the influence of such risks on the adoption of such technologies in the financial services institutions namely financial risks, performance risk, strategic risk, psychological risk, social risk, time risk, technical risk, and safety risk. The questionnaire was designed after a preliminary observation on the practice and reviewing the

available literature. The researchers circulated the research questionnaire among the parties that had the ability and knowledge to answer it. Therefore, the researcher distributed the questionnaire to the domestic and foreign banks departments' managers, which was later on collected.

The questionnaire is drafted in English and divided into two main parts. The first part of the questionnaire contained questions related to demographic variable of the respondents regarding their years of experience in their current position and experience in the observed bank. The second part of questionnaire. containing Likert-scaled items scoring form 1 (strongly disagree) to 5 (strongly agree) to measure all the variables used in the study related to perceived risk and its impact on bank managers' attitude towards adopting (TBSS).A common or traditional method of measuring the effect of perceived risk on managers attitudes towards adopting such technologies in financial and services marketing institutions involves the use of semantic differential scales or Likert type scales.

The questionnaire of the present study was designed by the researcher, taking into consideration the following perceived risk dimensions according to their functions and goals were considered:-

Perceived risks associated with technology based self services (TBSS) as independent variables:

- Financial risk (6 Questions).
- Performance risk: (4 Questions).
- Strategic risk (3 Questions).
- Psychological risk (4 Questions).
- Social risk (4 Questions).
- Time risk (4Questions).
- Technical risk (5 Questions).
- Safety risk (7 Questions).

138 questionnaires were distributed to the selected respondents; 125 were received in a usable format, indicating a response rate of 90.57%. One way to assess the potential for non-response bias is to compare data from late respondents to data from on time respondents based on Wallace & Mellor (1988) and Oppenheim (1992). In the current study three responses were received following a reminder. Those late responses were not significantly different from responses in any of the analysis reported in the following results section.

To investigate study instrument validity, the researchers consulted ten experts (Professionals and Academics). The experts were asked to make sure that the research questionnaire does not miss any element that might affect the study results or create bias in the questions. The researchers used Cronbach's Alpha to check the questionnaire for all of its components which equals 0.86914 for all the

items of the constructs used in the study. Furthermore, reliability analysis allowed the researchers to study the measurement scales and the items that make them up*. In the current study, the researchers did not use some of the central tendency measurements such as the mean, because it is only valid for the nominal scale. Furthermore, variance measure was not used because it was calculated by using squared distances from the mean since the researchers utilized the nominal scale.

Results

The majority of the respondents (80%) as shown in Table (3) reported that they had three or more years of experience in their current position, while only (20%) of the respondents had less than three years of experience in their current position.

Table (3). Frequency distribution of the respondents experience in their current position:

Experience	Frequency	Percent
1-3 Years	26	20.8%
3-7 Years	40	32 %
7-11 Years	32	25.6 %
11-15 Years	27	21.6%
Total	125	100 %

Almost (54%) of the respondents declared that they had three or more years of experience in the same bank, while only (46.4%) reported that they had less than four years of experience in the observed bank.

Table (4). Frequency distribution of the respondents experience in the observed bank

Experience	Frequency	Percent
1-3 Years	58	46.4%
3-7 Years	38	30.4%
7-11 Years	29	23.2%
Total	125	100%

Table No.(5) Frequency Distribution of Respondents Rank in the Bank

Rank	Frequency	Percentage
IT Manager	32	25.6%
Human Resource Manager	27	21.6%
Marketing Manager	26	20.8%
Financial Manager	13	10.4%
Research and Development Manager	15	12%
General manager	12	9.6%
Total	125	100%

It can be concluded from the above tables that the individuals who answered the questionnaire had the minimum required level of knowledge, which may

increase the credibility and reliability of their answers.

Hypothesis Testing:

Table No.6 Overall Model Summary of Regression Analysis

Model	R	R ²	Adjusted R ²	T	Sign
1	0.56 a	0.39	0.38	9.77	0.010

a. Predictors: (Constant), attitude towards adopting TBSS

* SPSS tutorial.

Table No. (7)

α	β	R	R^2	T	<i>Sig.</i>	<i>Adjusted R²</i>	<i>Dependant Variable</i>
1.011	0.198	0.55901	0.3140	9.95	0.002	0.304	<i>Perceived Financial risk</i>
1.113	0.213	0.42837	0.2216	7.33	0.003	0.211	<i>Perceived performance risk</i>
0.849	0.233	0.32134	0.1526	6.21	0.000	0.143	<i>Perceived strategic risk</i>
1.321	0.198	0.59124	0.4122	12.13	0.004	0.188	<i>Perceive psychological risk</i>
1.014	0.232	0.51033	0.3817	9.97	0.001	0.221	<i>Perceived social risk</i>
1.298	0.198	0.8146	0.6631	16.97	0.004	0.188	<i>Perceived time risk</i>
.9910	0.186	0.78012	0.6081	14.23	0.007	0.176	<i>Perceived technical risk</i>
1.090	0.232	0.42131	0.2116	8.63	0.001	0.223	<i>Perceived safety risk</i>

Regression analysis was employed for testing the eight independent variables from factor analysis. Results of this study indicate that 39% of the variance of bank managers' attitude towards adopting TBSS was explained by these eight variables with a significant T value of 9.77 being significant at P less than or equal to 0.05 which is equal to 0.002. Therefore, there is evidence that these eight factors are significantly influencing bank managers' attitudes towards adopting TBSS. The results of coefficient values of regression analysis is shown in table (6).

H 1: Perceived financial risk associated with (TBSS) negatively influences banks managers' attitudes towards adopting TBSS.

Upon the result of simple regression shown in table (7), the analysis of linear regression shows correlation between perceived financial risks associated with TBSS and banks managers' attitudes towards adopting TBSS (R = 55.9%).

In addition, the results show that (31.24%) of the variance in the attitude towards adopting TBSS frequency is explained by perceived financial risk. On the other hand T value is (9.95) and this value is significant at P equal or less than (0.05), where the P value is (0.002), which is less than the significant level. According to the previous findings, the researcher reject the null hypothesis and accept the alternative hypothesis which states that perceived financial risk associated with (TBSS) negatively influences banks managers' attitudes towards adopting TBSS.

H 2: Perceived performance risk associated with (TBSS) negatively influences banks managers' attitudes towards adopting TBSS.

Upon the results of simple regression shown in table (7), the analysis of linear regression shows correlation between perceived performance risk associated with TBSS and bank managers' attitude towards adopting TBSS (R = 42.83%). In addition, the result shows that (22.16%) of the variance in attitude toward adopting TBSS is explained by perceived performance risk. On the other hand, T value is (7.33) and this value is significant at P equal or less than (0.05); where the P value is (0.003), which is less than the significant level. According to the previous findings, the researcher reject the null hypothesis and accept the alternative hypothesis which states that perceived performance risk associated with TBSS negatively influences bank managers' attitude towards adopting TBSS.

H 3: Perceived strategic risk associated with (TBSS) negatively influences bank managers' attitude towards adopting (TBSS).

Upon the results of simple regression shown in table (7), the analysis of linear regression shows correlation between perceived strategic risk and bank managers' attitude towards adopting TBSS (R = 32.12%). This result shows that (15.26%) of the variance in attitude towards adopting TBSS is explained by perceived strategic risk. On the other hand, T value is (6.212) and this value is significant at P equal or less than (0.05), where the P value is (0.000), which is less than the significant level. According to previous results, the researcher reject the null hypothesis and accept the alternative hypothesis which states that perceived strategic risks negatively influences bank managers' attitude towards adopting TBSS.

H 4: Perceived psychological risk associated with (TBSS) negatively influences bank managers' attitude towards adopting (TBSS).

Upon the results of simple regression shown in table (7), the analysis of linear regression shows correlation between perceived psychological risk and bank managers' attitude towards adopting TBSS (R = 59.12%). This result shows that (41.22%) of variance in attitude towards adopting TBSS is explained by perceived psychological risk. On the other hand, T value is (12.13) and this value is significant at P equal or less than (0.05), where the P value is (0.004) which is less than the significant level. According to the previous findings, the researcher reject the null hypothesis and accept the alternative hypothesis which states that perceived psychological risks negatively influences bank managers' attitude towards adopting TBSS.

Hypotheses 5: Perceived social risk associated with (TBSS) negatively influences bank managers' attitude towards adopting (TBSS).

Upon the results of simple regression shown in table (7), the analysis of linear regression shows correlation between perceived social risk and bank managers' attitude towards adopting TBSS (R = 51.01%). This result shows that (38.17%) of the variance in attitude towards adopting TBSS is explained by managers' perceived social risk. On the other hand, T value is (9.970) and this value is significant at P equal or less than (0.05), where P value is (0.001) which is less than the significant level. According to the previous findings, the researcher reject the null hypothesis and accept the alternative one which states that perceived social risks negatively influences bank managers' attitude towards adopting TBSS.

H 6: Perceived time risk associated with (TBSS) negatively influences bank managers' attitude towards adopting (TBSS).

Upon the result of simple regression shown in table (7), the analysis of linear regression shows correlation between perceived time risk and bank managers' attitude towards adopting TBSS ($R = 81.46\%$). This results shows that (66.31%) of the variance in the attitude towards adopting TBSS is explained by managers' perceived time risk. On the other hand, T value is (16.97) and this value is significant at P equal or less than (0.05), where P value is (0.004) which is less than the significant level. According to the previous findings, the researcher reject the null hypothesis and accept the alternative hypothesis which states that perceived time risks negatively influences bank managers' attitude towards adopting TBSS.

H 7: Perceived technical risk associated with (TBSS) negatively influences bank managers' attitude towards adopting (TBSS).

Upon the result of simple regression shown in table (7), the analysis of linear regression shows correlation between perceived technical risk and bank managers' attitudes towards adopting TBSS ($R = 78.01\%$). This results shows that (60.81%) of the variance in the attitudes towards adopting TBSS is explained by managers' perceived technical risk. On the other hand, T value is (14.231) and this value is significant at P equal or less than (0.05), where the P value is (0.007), which is less than the significant level. According to the previous results, the researcher reject the null hypothesis and accept the alternative hypothesis which states that perceived technical risks negatively influences bank managers' attitude towards adopting TBSS.

H 8: Perceived safety risk associated with (TBSS) negatively influences bank managers' attitude towards adopting (TBSS).

Upon the result of simple regression shown in table (7), the analysis of linear regression shows correlation between perceived safety risk and bank managers' attitudes towards adopting TBSS ($R = 42.13\%$) this results shows that (23.16%) of the variance in the attitudes towards adopting TBSS is explained by managers' perceived safety risk. On the other hand, T value is (8.630) and this value is significant at P equal or less than (0.05), where the P value is (0.001), which is less than the significant level. According to the previous findings, the researcher reject the null hypothesis and accept the alternative one hypothesis which states that perceived safety risks negatively influences bank managers' attitude towards adopting TBSS.

Conclusion and Recommendations & Future Research Directions:-

Conclusion and Recommendations

The research main hypothesis is that perceived risks associated with technology based self services (TBSS) negatively influences bank managers' attitudes towards adopting such technologies. This was done by conducting a quantitative empirical study within Jordanian Banks through questioning 125 senior executive managers. Regression analysis was employed for testing the eight independent variables from factor analysis. Results of this study indicate that 39% of the variance of bank managers' attitude towards adopting TBSS was explained by these eight variables with a significant T value of 9.77 being significant at P less than or equal (0.05) which is equal 0.002. Therefore, there is an evidence that these eight factors are significantly affecting bank managers' attitudes towards adopting TBSS. The present study considered eight main risk dimensions that has great influence on bank managers' attitude relating to decision of adopting self services technologies, the findings of the present study shows that perceived time risk, perceived technical risk, perceived safety risk, psychological risk and perceived social risk are respectively the most influencing perceived risks associated with (TBSS) on banks managers' attitudes toward adopting such technologies with R square values of (0.6631, 0.6081, 0.4122, 0.3817) respectively. Therefore, the main contribution of this study is to integrate the influences of perceived risks associated with TBSS on managers' attitude towards adopting such technologies with the aim that the risk can be very well determined so that it can be reduced to enhance the adoption of (TBSS). Based on the above conclusion the researcher suggests the following recommendations:

1. Banks top management authorities should conduct special sessions to their managers in which they are introduced about different types of perceived risks associated with their (TBSS) and different tools to face such risks since it has negatively affect their decision of adopting such technologies.
2. Managers in the banking and financial industry may use the results of the present research to construct risk assessment tools which guide risk analysis within the (TBSS) in order to provide highly competitive services to the customers.
3. Improving the mutual understating of perceived risks from both the market side (customer) and the services provider is necessary.

Future Research Directions:-

Technology based self services has become an integral part of the market place specially in the banking industry. Services providers are increasingly given the options or are being asked to provide services for their clients through the use of electronically based services. Therefore, it is important for bank managers to understand the main risk dimensions that should be considered before taking the decision of adopting such technologies through which competitive advantage, customer satisfaction, customer relationship, cost reduction, speed in delivering services and high image can be attained. The present study concentrated on the main perceived risk dimension that affect bank managers' attitudes toward adopting such technologies, but there might be other risks which are more important than those covered in the present study. This fact, motivates researchers to conduct additional research to examine perceived risk associated with TBSS that affect its adoption. Greater insight into these and other issues will enable bank managers and services providers to make the most effective use of technology based self services. This research represents a step for better understanding perceived risks and how to meet such risk in order to compete in the market place. In addition, the present study is focusing on banking industry, yet there is an opportunity to replicate the same study on other type of firms either in services field or product related field.

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