

Customer adoption of self-service technologies in Jordan: Factors influencing the use of Internet banking, mobile banking, and telebanking

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ABSTRACT

Self-service technologies (SSTs) are systems that enable customers to independently access banking services at a time and place of their choosing. Such technologies have been widely incorporated into banking logistical systems to increase the geographical coverage, reduce labor costs and provide customers with a better service, thereby enhancing their satisfaction and loyalty. The fundamental aim of this research is to propose and examine a conceptual model that best explains the key factors influencing Jordanian customers' intentions and usage of SST banking channels: Internet banking, Mobile banking, and Telebanking. The conceptual model proposed was based on the Unified Theory of Acceptance and Use of Technology (UTAUT2). This was extended by adding perceived risk as an external factor. A quantitative approach was selected and data gathered from 348 bank customers was analyzed through Structural equation modelling (SEM) was conducted using AMOS 21. The results show that behavioral intention is significantly influenced by performance expectancy, hedonic motivation, price value and perceived risk; however, social influences do not have a significant influence on behavioral intention. This study makes an important contribution by applying UTAUT2 to examine new technology (SSTs) in a new context (Jordan).

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1. Introduction

Self-service technology is one of the most well-known systems employed in the services' context over the last decade. Indeed, this technology has revolutionized the business environment as well as dramatically converting the way that customers interact with service providers from "low tech, high touch to high tech, low touch" (Bitner et al., 2000, p.138). This consolidates organizational efficiency and offers the capability to provide customers with a high service standard of consistent quality and greater convenience, helping to meet their growing demands (Asenso et al., 2020; Iqbal et al., 2018; Cao et al., 2021). Owing to the privileges and benefits for both customers and service providers, SST applications have been noted in different contexts: banking (e.g. Internet banking) e-commerce (e.g. online shopping), grocery stores (e.g. self-scanning checkouts), hotel services (e.g. automated hotel check-in and out), restaurants, and airlines (e.g. e-ticket airline reservations). This prevalence of SSTs can be attributed to the current worldwide technological revolution, combined with the availability of the technical infrastructure required to effectively introduce such emerging systems (Lin & Hsieh, 2011). Further, providing customers with a high service value by means of innovative, friendly and cost-effective channels at a time and place suitable to customers is an additional and important rationale for the widespread use of SSTs at the service context (Zhu et al., 2013). By utilizing SST channels in their logistical systems, organizations also endeavor to minimize the labor and operational costs that pertain to traditional encounters (Bitner et al., 2002; Lin & Hsieh, 2011). For instance, the cost of a transaction conducted via Internet banking is about US \$0.01, compared with US \$1.07 for those conducted by traditional methods (Lee, 2009). In addition,

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organizations are able to maximize their sales volume by providing customers with more options for accessing their products and services, and accordingly, contributing to their profitability (Asenso et al., 2020).

1.1 Self-Service Technology (SST)

Conceptually, and as an alternative to the traditional human encounters, *self-service technology* (SST) is defined as “*technological interfaces that enable customers to produce a service independent of direct service employee involvement*” (Meuter et al., 2000, p.50). For the purposes of this study, self-service technology is an umbrella term encompassing three kinds of technological interface in the banking context: Internet banking, Mobile banking and Telebanking. Service counters historically bear a substantial responsibility of direct interactions with customers by satisfying their needs and wants, and thus, affecting their loyalty, experience and value of the service provided (Asenso et al., 2020). This critical nature of interactions from both perspectives: the organizations (e.g. positive word of mouth, productivity, profitability, brand positioning) and the customers (e.g. a speedy delivery service, quality, need for interaction) (Cao et al., 2021). From the customers' point of view, SSTs have been perceived as a useful and convenient way of allowing customers to access a wide range of services with flexibility in time and place. This enhances the perceived advantages of this technology (Kokkinou & Cranage, 2013). Furthermore, SST is a modern and pioneering technology in the service context, displaying innovation and novelty seeking; therefore, there are further intrinsic utilities exhibited when using SSTs (e.g. playfulness, enjoyment, fun) (Lin and Hsieh, 2011). In addition, customers produce and transport services without any interference from employees. Thus, they are likely to perceive using SSTs as controllable, as long as they are able to customize the services based on their needs and standards (Park et al., 2020). It raises considerable questions about the profitability of implementing such systems, especially given the large amount of resources invested in this regard (Hilton et al., 2013; Cao et al., 2021). Customer reluctance to use this technology means it is futile to invest in SSTs, and companies find themselves having to continue to provide their services via human encounters, with their associated operational and labor costs. This has become more vivid and important during and upon the occurrence of Covid-19 global pandemic. Another important problem related to SSTs is that replacing the role of human interaction could hinder the momentum of marketing relationship bonds and, have subsequent negative effects on customers' loyalty (Park et al., 2020; De Leon et al., 2020). As a competitive necessity rather than for a competitive advantage, Demirci Orel and Kara (2014) argued that the installation of SSTs in the organizational logistic system was an important requirement to cope with rapid technological advances in the business environment and to maintain the current market share. Different sectors such as, banking, insurance, and telecommunication have been reported to have implemented SSTs to reduce costs and enhance their customer satisfaction and loyalty (Ezenwafor, 2020).

1.2 Internet Banking

According to Liao et al. (1999, p.69), *Internet banking* can be defined as the “*conducting of banking transactions through the Internet.*” In line with this definition, *Internet banking* refers to banking applications that allow customers to access and conduct their financial transactions using the World Wide Web, Wi-Fi technologies and the Internet, at a time and place of their choosing. Cutting labor costs, enhancing service value and quality, attracting new customers, and maintaining the current market share appear to be the primary reasons behind the implementation of this technology in banks (Ezenwafor, Okeke, & Aghara, 2020). Moreover, the cost of any transaction conducted via internet banking is about US \$0.01 compared with those for traditional branches (US \$1.07), ATM (US \$0.27) and telebanking (US \$0.54) (Lee, 2009). It is also worth mentioning that internet banking was recognized as the most cost-effective and profitable way to produce financial services particularly in terms of monetary and human resources necessary to implement (Ezenwafor et al., 2020). Internet banking characteristics (e.g. compatibility, complexity, trial-ability and convenience) have been commonly recognized as key drivers in explaining a considerable variance in customer intention and acceptance (Gerrard & Cunningham, 2003). Both aspects of innovation - relative advantage and complexity - were tested and found to be strong predictors of customer attitudes related to internet banking. Customers' decisions to use internet banking instead of traditional channels were significantly predicted by reliability, assurance, and responsiveness with differences between adopters and non-adopters in terms of social desirability regarding internet banking.

1.3 Mobile Banking

Mobile banking represents an innovative online banking channel enabling customers to carry out financial transactions using mobile devices, smartphones, or Personal Digital Assistants (PDAs). Zhou et al. (2010, p.760) identified mobile banking as the “*use of mobile terminals such as cell phones and personal digital assistants to access banking networks via the wireless application protocol (WAP).*” The current study encompasses all Mobile banking applications that allow customers to conduct banking transactions using mobile terminals, regardless of the nature of the network used to access such services. As one of the most innovative and novel technologies, mobile banking represents a good example of technological breakthrough in the banking logistic system, enabling customers to independently produce financial transactions (balance enquiries, fund transfers, payment of bills) through mobile devices. Nevertheless, in both developed and developing countries, the evolution in mobile banking services is not in line with the boom in mobile technology, and the growth in the adoption rate of this technology is still sluggish (De Leon et al., 2020). It is worth indicating that customer reactions related to mobile banking are more likely to be different when compared to their reactions to other SST channels like internet banking and telebanking (Hanafizadeh et al., 2014). Zhou et al. (2013) confirmed both perceived usefulness and trust as key factors determining the likelihood of customers using Mobile banking, as well as confirming their mediation role on information quality, structural

assurance and system quality, performance expectancy, facilitating conditions, social influences, and task technology. Along with its direct impact on behavioral intention, perceived ease of use was ascertained as a mediating factor facilitating the influence of perceived usefulness on customer intention. As for the barriers to mobile banking adoption, the customers' apprehensions regarding safety issues and initial costs pertaining to setting up the internet connections were seen by Yang (2009). According to Hanafizadeh et al. (2014), customers are less likely to accept Mobile banking if they perceive a higher monetary cost in comparison with other traditional channels.

1.4 Telebanking

Telebanking is an interactive voice response (IVR) system enabling customers to independently conduct banking transactions via automated call centers operated by a bank (Rajoriya et al., 2021). This is while, operator-attended services refer to those services accessed when a customer phones a bank employee to clarify any issues, or to process some kind of financial transaction. The current study focuses on telebanking services as a self-service banking channel in Jordan. IVR system is one of the most common types of SST applied in the service context. Telebanking has become increasingly popular as an indispensable banking channel in companies with internet banking, ATM, and mobile banking (Rajoriya et al., 2021). The theory of reasoned action (TRA) was proposed by Wan et al. (2005) to illustrate customers' behavior towards different banking channels: traditional branches, ATM, internet banking, and telebanking. They noted that telebanking has a lower adoption rate compared to ATM and internet banking and is also linked to demographic factors, convenience, user-friendliness and assurance. Among banking transactions which can be conducted using the SST channels are balance enquiries, downloading bank statements, fund transfers, requesting bank certificates, increase in credit limits, paying loan, mortgage installments and bills (Martins et al., 2014).

1.5 SST and Customer Satisfaction

The ability of SSTs to meet customers' needs at a suitable time and place is one of the main reasons for consolidating customer satisfaction with SSTs (Iqbal, Hassan, & Habibah, 2018). Further, customers who perceive SSTs as easy to use are more likely to be pleased about their experiences with SSTs and are more likely to use SSTs in the future (Chen et al., 2009). Business customers are more likely to be pleased about SST services if SSTs are able to speed up service times, enhance process efficiency, reduce monetary and time costs, be more reliable, alleviate time and place restrictions, and offer quick help for any unpredicted problems. Service quality dimensions including service fulfillment, customer service, perceived cognitive control, and service convenience are noted important sources of customer satisfaction and loyalty (Iqbal et al., 2018).

1.6 SST Service Quality

Several studies have discussed the issues concerned with service quality of SSTs either as outcomes of using SST or as antecedents of customer intention and behavior toward SSTs (De Leon, Atienza, & Susilo, 2020). Lin and Hsieh (2011) empirically showed that functionality, enjoyment, security/privacy, assurance, design, convenience, and customization were considered by customers as fundamental dimensions for assessing the quality of SST, which in turn played a role in forming their intention to use SSTs. The quality of services related to a self-service kiosk were able to contribute to the propensity of retail patronage of this technology via the mediating influence of three dimensions of retail service quality: reliability, personal interaction, and problem solving. Perceived service quality was rated as the most significant predictor of a passenger's intention to use a kiosk in an airline context. Similarly, perceived web quality was able to contribute to e-trust in SSTs, either directly by having considerable relationships with the three dimensions of e-trust (integrity, ability, and benevolence) or indirectly via mediating the influence of both enjoyment and anxiety (De Leon et al., 2020).

1.7 SST from Customers' Perspective

An Individual's Characteristics

These factors have been widely noted in SST studies as a critical factor affecting customers' willingness to adopt or reject SST (e.g. Park et al., 2020; De Leon et al., 2020). The influence of personal factors (perceived control) rather than aspects relating to external factors that might affect a customers' decision to use or avoid self-service options. Perceived behavioral control is of particular interest for SST users and plays a vital role in motivating their willingness to use SST (Park et al., 2020). Similarly, perceived behavioral control was found to be a positive driver for customer satisfaction with SST, and ultimately the customers' willingness to use SST in the future (Chen et al., 2009). Personal control was shown as a key factor not only in enhancing perceived value and mitigating the negative effect of perceived risk, but also in contributing to customers' intention to adopt SST.

Psychological Factors

Factors like self-control, self-image, and self-actualization were approved in promoting the adoption of SST. Consumer attitudes toward SST options were significantly predicted by the customers' traits, particularly those pertaining to novelty seeking, self-consciousness, a need for interaction, and self-efficacy. The role of personality traits has recently been reinforced (De Leon et al., 2020). In accordance with Lee et al. (2010), customer traits relating to technological innovations were identified as crucial enablers of their propensity to accept self-checkout technology. Other important personality traits are the

technology readiness dimensions (optimism, innovativeness, discomfort, and insecurity), and self-efficacy. Meuter et al. (2005), found three aspects of customer readiness: role clarity, intrinsic and extrinsic motivation, and customer ability that are linked to individual characteristics (i.e. technology anxiety, prior experience, and need for interaction).

Demographic Factors

The impact of demographic factors on SST has been recently examined in the context of SSTs (Asenso, et al., 2021). It is observed that men usually decide to use SST according to the benefits and advantages to be gained; while women usually pay more attention to complexity, facilitated resources, and assurance. There are significant differences among customers in terms of technological innovativeness relating to age and gender differences (Asenso et al., 2021). Younger customers expressed their intentions to use SST and ranked time and cost-saving as the main drivers behind using SSTs. Income level was found significant for both customer readiness and customer trials of SST. Given the particular nature of SSTs, adequate levels of knowledge and skills are important prerequisites to successfully apply the technology (Meuter et al., 2005). Hence, customer experience has been identified by a number of studies as crucial for customer perception and behavior (Guan et al., 2021).

Innovation Characteristics

In spite of the important role of personal and environmental factors in forming customers' intentions and reactions towards SST, innovation characteristics (i.e. complexity, result demonstrability, observability, trial-ability, design, relative advantage, and compatibility) have been progressively identified as important predictors of behavioral intention and adoption of SSTs. Relative advantage, demonstrability and trial-ability have been commonly recognized as a fundamental antecedent of customer intention and adoption of SSTs, similar to complexity, (e.g. Kapoor et al., 2014; Meuter et al., 2005). More recently, observability has been approved as a considerable predictor of the adoption of Mobile banking by Saudi banking consumers (Al-Jabri & Sohail, 2012).

Customer Attitudes

This factor has been commonly outlined as a key predictor of customer intention and usage of SSTs (Cao et al., 2021). Furthermore, the role of customer attitude towards specific kinds of SST became more influential among customers who extensively used SST, rather than those with a lower usage rate. According to Berger (2007), both perceived ease of use and perceived usefulness were key antecedents of customers' attitudes which, in turn, led to a higher likelihood of customers accepting the technological interfaces. Perceived usefulness, perceived ease of use and reliability were noted vital for customer attitude towards SST. More recent research related to self-service information technology in the retail context has corroborated the usefulness of information content and the perceived ease of use as positive drivers of customer attitudes toward SST usage; ultimately contributing to customer willingness to continue SST use (Cao et al., 2021).

Motives for Using SST

Researchers have mentioned several motives that could accelerate customer inclinations to use SST. Noticeably, cost-saving has been widely recognized as a positive rationale clarifying why customers favor interacting with SST (Cao et al., 2021; Kim & Sung, 2021). Applying SST means that further roles and responsibilities are loaded onto customers. Therefore, customers are more likely to be price-sensitive as long as they expect to pay less for SST services (Kim & Sung, 2021). SST channels also allow customers to access information and services without any time and place restrictions. Thus, time saving is regarded as crucial (Kim & Sung, 2021). Furthermore, the convenience and hedonic utilities attained using SSTs were noted by Meuter et al. (2005). Mallat et al. (2008) pointed out that usefulness is an essential aspect for forming the customers' penchant to adopt self-service mobile ticketing. Three factors related to online shopping - perceived entertainment, perceived usefulness, and perceived ease of use - were advocated as positive drivers of shoppers' attitudes (Kim and Sung, 2021).

Barriers for Using SST

Initially, using SST converts customers to be co-producers and transporters of required services. Therefore, customers have to change the nature of their behavior/interaction with an organization (Riegger et al., 2021). Hence, convincing customers to adapt their behavior and effectively interact with SST has been noted as one of the most prominent challenges for organizations (Meuter et al., 2005). Accordingly, the need for interaction has been identified as a critical weakening of the customers' willingness to adopt SSTs (Lee et al., 2010). This factor may be more vivid during the global pandemic of Covid-19, which has restricted interactions on a global scale. Unexpected outcomes of using SSTs (i.e. technology failure, process failure, poor design, and customer-driven failure) were identified as major drawbacks causing customer dissatisfaction, and thereby, mitigating their willingness to use SST in the future (Riegger et al., 2021). Furthermore, problems like long waiting times and/or difficult navigation cause customer dissatisfaction with SST, similar to perceived risk and complexity.

Environmental (Situational and Social) Factors

Customers' decisions to accept or reject SST were found to be predicted by other external factors such as, the physical environment (situational factors: waiting time, perceived crowdedness, urgent needs, accessibility, facilities) or social environment (e.g. social influences, reference group, family, word of mouth, subjective norms) (Yoon & Choi, 2020). Also, the surrounding

environment has been addressed as an important aspect forming customer expectations towards self-service kiosks. Perceived crowdedness was a dominant factor predicting passenger acceptance of interface technologies. Other situational factors were pressure of time, urgent needs, and unavailability of cash were recognized as key determinants (Mallat et al., 2008). Such important cognitive, physical, and relational resources, required to facilitate the use of SSTs, were addressed by Hilton et al. (2013) as key predictors of customer value. Usage of SSTs seems to be effectively facilitated, when organizations provide customers with the assistance and resources necessary. The considerable role of social factors (i.e. reference groups, subjective norms and opinion leaders) in enhancing customer intentions and the use of SSTs has been reported in the relevant literature (e.g. Yoon & Choi, 2020).

Customer Trust and Perceived Risk

Trust, perceived risk, privacy and security, assurances, integrity, competence, credibility, confidence, and reliability have been regarded as important matters in the context of SSTs (Le, Hill & Troshani, 2020; Tiwari & Tiwari, 2020). These constructs have been widely regarded as crucial determinants of customers' intentions and the adoption of SST, particularly in the banking sector. High uncertainty, intangibility, heterogeneity and vagueness characterized in the e-commerce area, along with the absence of human interaction are major drivers of this notion (Le et al., 2020). These factors lower the tendency towards using SSTs. Trust has been commonly documented as a crucial predictor of customer intention and behavior towards SST (Tiwari & Tiwari, 2020). The important role of trust could be due to the fact that customers have been found to depend on trust to lessen their concerns and approve their decision to use a targeted system, and concerns regarding financial matters (Le et al., 2020).

Theoretical Framework

Theoretically, researchers have formulated various theories and models (e.g. information system -IS, information technology -IT, and disciplines relating to human behavior). The theories and models used include the technology acceptance model (TAM) (Davis et al., 1989); the theory of reasoned action (TRA) (Fishbein and Ajzen 1975); the theory of planned behavior (TPB) (Ajzen, 1985); the decomposed theory of planned behavior (DTPB) (Taylor & Todd, 1995); the innovation diffusion theory (IDT) (Rogers, 2003); the unified theory of acceptance and use technology (UTAUT) (Venkatesh et al., 2003); and the social cognitive theory (SCT) (Bandura, 1986). UTAUT has been a dominant approach towards the subject in the banking sector of Jordan as it addresses customers' perspective. This is the focus of current research and consistent with the aim and objectives of this study. UTAUT2 is based on UTAUT which is considered to be the most predictive, inclusive, and parsimonious theory over the information system domain (Bagozzi, 2007; Le et al., 2020). In view of the justifications discussed above, UTAUT2 has been selected as an appropriate theoretical foundation for proposing the conceptual model utilized in this study to explain the Jordanian customers' intention and usage of SSTs.

Case Narrative

Jordan is considered one of the fastest growing countries in the Middle East in terms of mobile and telecommunication technology; there are four mobile service providers working within the Jordanian market. This is also evidenced by the increasing penetration rate of mobile and landline phone services which had climbed by 140% in 2012 (The Jordan Times, 2013). Out of 26 different commercial banks in Jordan, 23 banks have implemented Internet banking, 15 banks have Mobile banking, and 13 banks have Telebanking (Association of Banks in Jordan, 2010). Despite large amounts of effort and money being invested, the adoption of SSTs in Jordan is not in line with what was expected and Jordanian banking customers are still slow in adopting these technologies (Al-Rfou, 2013). However, a recent study showed improvements in usage of SSTs through personal initiatives and previous experience (both indirect and direct) (Ashour & Al-Qireem, 2021). They further suggested that perceived ease of use, perceived usefulness and perceived risk pose a mediating effect on customers' attitudes towards SST usage in a positive manner. The current research tends to contribute to the extant literature of the banking sector, particularly SSTs in Jordan.

2. Model and Hypotheses Development

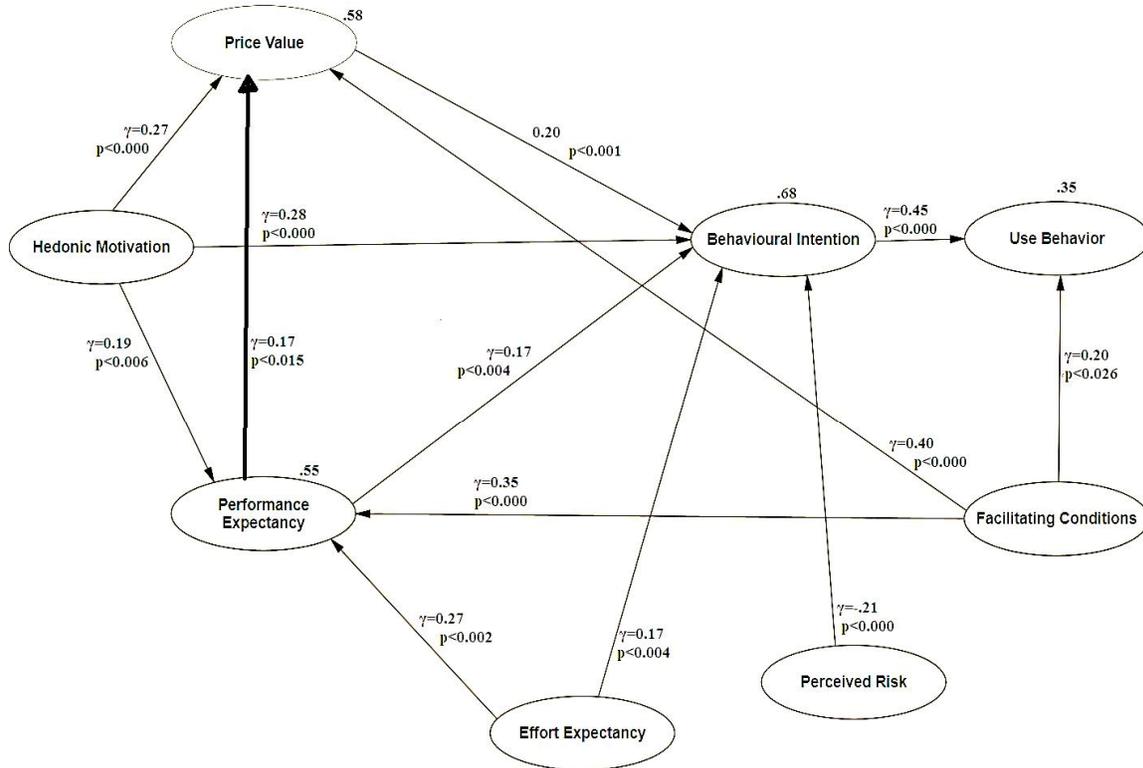
The main constructs in UTAUT2 (performance expectancy, effort expectancy, social influences, hedonic motivation, and price value) are proposed as direct determinants of customers' intention to use SST. In keeping with Venkatesh et al. (2012), two factors (behavioral intention and facilitating conditions) are identified as key predictors of usage behavior of SST. The model is presented in Fig. 1 and exhibits the included factors.

Venkatesh et al. (2012) argued that customers are involved in a rational comparison process between the extent of benefits and utilities obtained by using technology in relation to the monetary cost paid to use technology from another point of view. Thus, further benefits and utilities perceived by using SST could contribute to the price value of SST. In accord with this notion, this study articulates the following hypotheses:

H₁: *Performance expectancy positively influences Jordanian customers' intention to use SSTs.*

H₂: *Performance expectancy positively influences price value related to using SSTs.*

Venkatesh et al. (2003, p.450) defined effort expectancy as “the extent of ease connected with the use of a system. Effort expectancy, either in a voluntary or mandatory context, was able to maintain its significant impact on the individuals’ intention to use the system. Therefore, due to the particular nature of self-service banking channels which require a certain level of knowledge and skill, effort expectancy could play a crucial role in determining the customers’ intention to use SST. In keeping with the argument of Davis et al. (1989), individuals could be involved in the cognitive trade-off process between the efforts required to successfully apply the technology in front of the benefits and advantages attained by using technology. In other words, those customers who perceive that using SST requires less effort by finding it simpler and easier to use are likely to have a positive perception regarding the usefulness of SST. Thus, this study assumes the following hypotheses.



CMIN/DF= 1.900, GFI= .92, AGFI= .89, NFI= .94, CFI= .98, RMSEA= 0.050

Fig. 1. Theoretical Model

H₃: Effort expectancy positively influences Jordanian customers’ intention to use SSTs.

H₄: Effort expectancy positively influences performance expectancy of SSTs.

The selection of social influences as a key determinant of the behavioral intention is built on prior literature which supports the influences on customers’ propensity to use SST. This implies the effect of social influences on usage of internet banking. Subjective norms, family recommendations, word of mouth, reference groups, social desirability, personal contact with employees, and image are among social influences (Ashour & Al-Qirem, 2021; Lin & Hsieh, 2007). Thus, the following hypothesis is shaped:

H₅: Social influences positively influence Jordanian customers’ intention to use SSTs.

Facilitating conditions are defined as “the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system” (Venkatesh et al., 2003, p.453). In the original model of UTAUT, one direct path between facilitating conditions and usage behavior while behavioral intention was not supposed to be predicted by facilitating conditions. Given that facilitating conditions are not freely available for the customers as in the case of the employee context, Venkatesh et al. (2012) supposed that the facilitating conditions could have direct influence on the customers’ intention in UTAUT2. However, the vast majority of Jordanian banks provide these facilities free of charge or with a cheaper price (e.g. Bank of Jordan, 2014). Therefore, in this study, facilitating conditions were proposed to have only one direct influence on the actual usage behavior. Customers could be more motivated to use SST if they have an extensive level of support services and resources as well as perceive SST as compatible with other technologies already used by them. Martins et al.

(2014) documented that the usage of Internet banking by Portuguese banking customers was not significantly associated with facilitating conditions. The variations in findings has led to the following hypothesis:

H₆: *Facilitating conditions positively influences Jordanian customers' use of SSTs.*

Hedonic motivation is conceptualized as the feelings of cheerfulness, joy, and enjoyment, which are stimulated by using technology. A direct link between hedonic motivation and customer intention to use technology (Ha, 2020). Hedonic motivation and intrinsic benefits (perceived enjoyment) are considered along with instrumental utilities (performance expectancy) in the same model (Venkatesh et al., 2012). For SSTs, hedonic motivation could be theorized as the extent to which using SSTs stimulates the customers' feelings of enjoyment and entertainment. Theoretically, the factors related to hedonic motivation (e.g. fun, enjoyment, playfulness) have been largely identified as critical predictors of customer intention and adoption over the marketing and information system area (e.g. Ha, 2020). By the same token, perceived enjoyment, playfulness, entertainment and fun have been recognized as some of the most influential factors (Demirci Orel & Kara 2014). If hedonic motivation of using SST is high, the overall benefits perceived by using this technology will increase, and accordingly, that will contribute to either the performance expectancy or the price value of using SST. Therefore, the following hypotheses are formed:

H₇: *Hedonic motivation positively influences Jordanian customers' intention to use SSTs.*

H₈: *Hedonic motivation positively influences the performance expectancy of using SSTs.*

H₉: *Hedonic motivation positively influences the price value of using SSTs.*

Price value is theorized as a "consumer's cognitive trade-off between the perceived benefits of the application and the monetary cost for using it" (Venkatesh et al., 2012, p.161). Building on the marketing perspective, perceived value is usually identified by how the customer cognitively compares between how much he should pay and how many benefits are obtained from using this technology (De Leon et al., 2020). This means that if the utilities obtained from using SST are higher than the financial cost, the price value will be positive and, consequently, the customers are more likely to be motivated to adopt this technology. Lower costs of financial transactions applied by Mobile banking were found to be one of the positive influences on the adoption of Mobile banking. Customers who perceive a higher value in using internet banking are more likely to continue using this technology in the future. Consequently, this study proposes that:

H₁₀: *Price value positively influences Jordanian customers' intention to use SSTs.*

According to Pavlou (2001, p.109), perceived risk is conceptualized as "the consumer's subjective expectation of suffering a loss in pursuit of a desired outcome." Progressively, perceived risk enjoys a particular interest from both the practitioner and scholars in the marketing field due to the decisive impact of customers' concerns and fears on customers' propensity and decisions (Le et al., 2020). In fact, customers experience different kinds of risk such as performance, social, financial, psychological, and physical risk which makes the impacting role of perceived risk on behavioral intention more complicated. In the current study, perceived risk is defined as the likelihood of a customer suffering a loss in pursuit of the favored consequences of applying SST channels. This has been noted in the extant relevant literature (Ashour & Al-Qirem, 2021). Crimes have derived considerable attention from the mass media in Jordan and the Middle East in general, which, in turn, lets customers be more unsure about the outcomes of using such technologies (The Jordan Times, 2014). Overall, the abovementioned review obviously supports formulating the perceived construct among the conceptual model in this study. This is in addition to the fact that neither UTAUT nor UTAUT2 considered the impact role of perceived risk, thus, representing a worthy attempt to enlarge the theoretical horizon of UTAUT2. Accordingly this study assumes the following hypothesis:

H₁₁: *Perceived risk negatively influences the Jordanian customers' intention to use SSTs.*

According to Venkatesh et al. (2012), behavioral intention is conceptualized as the extent of the tendency of the customer to use SST. Behavioral intention has been examined and confirmed as an extremely powerful determinant of individual behavior regarding technology acceptance stream (Ikhsan, & Simarmata, 2021). Furthermore, prior literature in the SST has strongly supported customer intention as a decisive driver of the actual usage behavior of SST (e.g. Martins et al., 2014). Therefore, this study conceptualizes that behavioral intention is a decisive construct between the main antecedent constructs and customer usage of SST. Accordingly, the following hypothesis is merged:

H₁₂: *Customer intention positively influences customer usage of SSTs.*

3. Methodology

In keeping with the aim of the current study and centered on examining and understanding the main factors influencing the Jordanian customers' intention and use of SSTs (Internet banking, Mobile banking, and Telebanking), the positivist paradigm was identified to be the most suitable research paradigm for the current study (Bhattacharjee, 2012).

1. The existence of strong theoretical foundations (e.g. TAM, UTAUT, TPB, TRA, and UTAUT2) allows the researchers to pick up the relevant factors, either dependent or independent, that could be used to predict individuals' intention and behavior towards emerging systems
2. The focus of the current study is conducting an objective test for the main factors influencing consumers' intentions and use of SSTs. This is more likely to be attained by adopting the positivist approach which usually comprises a higher degree of objectivity (Bhattacharjee, 2012). In the current study, the main factors included in the proposed model have been selected according to sufficient theoretical and logical justification. Additionally, the current study utilizes a self-administered questionnaire which allows the respondents to answer the questions unbiased, and provide more objective data.
3. An empirical study was required to examine the research hypotheses and to validate the proposed model in the current study. The tendency of this study was to attain a higher generalizability and reliability in the yielded results. For this reason, there was a necessity to obtain accurate and sufficient quantitative data from a substantial sample of Jordanian banking clients, and to employ sophisticated statistical analysis (SEM). Accordingly, such instances of positivist approaches (i.e. field survey) which usually obtains the required data using convenient instruments (e.g. self-administered questionnaire).

This, in turn, could provide Jordanian banks with an accurate and more generalizable and reliable picture explaining the fundamental factors motivating or hindering customers' intention and use of SSTs. Moreover, it would alert the Jordanian banks to choose more suitable marketing strategies that would guarantee effective implementation and use of SSTs for customers.

4. Sampling and Measures

Jordanian banks prevent the provision of any information regarding their customers' addresses and contacts for privacy and security reasons. This, in turn, led to self-administered questionnaires for data collection methods. Arabic is the native language of the respondents being targeted in the current study (Jordanian banking customers). The questionnaire, therefore, was converted to the Arabic language using the back translation method (Malhotra et al., 1996). Seven-point Likert scale was used to measure the main items of the UTAUT2 constructs and perceived risk with anchors ranging from strongly agree to strongly disagree / never to several-times-a-day. A pre-test was carried out for both the original English versions of the questionnaires as well as the Arabic versions to test for item quality, content adequacy, repetition, simplicity and appropriateness, notes and suggestions.

Items of performance expectancy, effort expectancy, social influences, facilitating conditions, and behavioral intention were derived from Venkatesh et al. (2003) in validating the original version of UTAUT, while UTAUT2, was taken from Venkatesh et al. (2012) to measure hedonic motivation and price value. The items for perceived risk were drawn from Featherman and Pavlou (2003). A set of six common financial services were adopted to measure the use behavior of SSTs by Jordanian banking customers (Ikhsan, & Simarmata, 2021; De Leon et al., 2020). In addition, these services have been approved by number of the most well-known Jordanian banks that have introduced such services (i.e. Bank of Jordan, Housing Bank, Arab Bank, Kuwait Bank, Jordan Islamic Bank, and Cairo Amman Bank). Furthermore, 5 close-ended questions were devoted for demographic variables: age, gender, education level, internet experience, and computer experience. A field survey was conducted by distributing 1500 questionnaires for each kind of SST through convenience sampling method from Amman and Al-Balqa' during the months of June, July and August 2019. A total 1,107 questionnaires were returned [IB (379); MB (377); TB (351)] which yielded 74% as a response rate. However, among those obtained questionnaires, 60 were found incomplete. Also, 28 were answered for all scale items with one option (e.g. all 1). Moreover, 5 Mobile banking questionnaires had response errors (multiple answers for one question) and were removed (348 remaining in total). To reach a better representation of the targeted population, diversity of the banking customers' profiles and characteristics (e.g. education level, income level, gender, occupation, area of residence, social status) was considered by the researcher during the questionnaire distribution. The respondents were allowed to freely choose any form of questionnaire: IB, MB and TB which they perceived to be the most suitable according to their awareness and experience. As the data of the current study is self-reported and where the items of both dependent and independent variables were answered by the same participants, a concern regarding the common method bias was raised (Podsakoff et al., 2003). With regard to the current study, Harman's single factor test was applied to address the issue associated with the common method bias (below threshold of 50% for each factor). The gathered data was subjected to a number of important preliminary tests including data editing and coding, treatment of missing data, outliers, and normality (skewness below 3 and kurtosis below 9) (Kline, 2005). From 348, 199 respondents were female and 149 male. 25-30 and 31-40 age ranges had the most rates (32.2% and 37.4% respectively). 69.6% of respondents had bachelor degree, followed by master degree; 92.2% of respondents had over 3 years of computer experience; and 87.6% had over 3 years of internet experience.

5. Analysis and Discussion

By running AMOS21, the model fitness and constructs' reliability and validity were assessed in stage one (the measurement model) by means of the confirmatory factor analyses (CFA) (Byrne, 2010). This is followed by a structural model assessment which is related to the validation of the conceptual model proposed and the testing of the causal paths between the main

independent (exogenous) and dependent factors (endogenous) (Hair et al., 2010). The main independent constructs (exogenous) are effort expectancy (EE), social influences (SI), facilitating conditions (FC), hedonic motivation (HM), and perceived risk (PR) while the use behavior (UB), behavioral intention (BI), price value (PV), and performance expectancy (PE), are all dependent (endogenous) constructs in the conceptual model. Construct reliability is reported in Table 1, while construct validity measurements are presented in Table 2. Furthermore, discriminant validity of parameters is measured in Table 3.

Table 1
Construct reliability

Latent Constructs	Cronbach's alpha (α)	Composite Reliability (CR)	Average Variance Extracted (AVE)
PE	0.93	0.92	0.81
EE	0.90	0.90	0.75
SI	0.85	0.85	0.74
FC	0.87	0.86	0.70
HM	0.90	0.90	0.81
PV	0.88	0.87	0.78
PR	0.88	0.87	0.62
BI	0.92	0.92	0.80
UB	0.81	0.80	0.57

Table 2
Construct Validity

Latent Constructs	Items	Factor Loading	AVE
Performance Expectancy	PE1	0.90	0.81
	PE2	0.90	
	PE3	0.90	
Effort Expectancy	EE2	0.88	0.75
	EE3	0.87	
	EE4	0.86	
Social Influences	SI1	0.82	0.74
	SI2	0.90	
Facilitating Conditions	FC1	0.76	0.70
	FC2	0.82	
	FC3	0.91	
Hedonic Motivation	HM1	0.89	0.80
	HM2	0.91	
Price Value	PV2	0.90	0.78
	PV3	.86	
Perceived Risk	PR2	0.77	0.62
	PR3	0.88	
	PR4	0.95	
	PR6	0.60	
Behavioral Intention	BI1	0.88	0.80
	BI2	0.90	
	BI3	0.90	
Use Behavior	Service1	0.80	0.57
	Service2	0.77	
	Service4	0.69	

Table 3
Discriminant validity

Latent Constructs	PE	EE	SI	FC	HM	PV	PR	BI	UB
PE	0.90								
EE	0.66	0.86							
SI	0.59	0.59	0.86						
FC	0.68	0.81	0.56	0.83					
HM	0.60	0.62	0.66	0.71	0.89				
PV	0.60	0.58	0.60	0.70	0.66	0.88			
PR	-0.40	-0.37	-0.40	-0.45	-0.42	-0.46	0.78		
BI	0.65	0.65	0.60	0.70	0.70	0.68	-0.55	0.89	
UB	0.49	0.41	0.36	0.52	0.45	0.46	-0.28	0.57	0.76

Note: Diagonal values are squared roots of AVE; off-diagonal values are the estimates of inter-correlation between the latent constructs.

To ensure that the data set is free from common method bias, an inspection of Harman's single-factor with nine constructs (PE, EE, SI, FC, HM, PV, PR, BI, and use behavior) and 25 scale items was conducted (Harman, 1976). All the items shown in were loaded into the exploratory factor analysis and examined via using an un-rotated factor solution. The statistical results in this respect indicated that no single factor was able to emerge and the first factor was able to account for a maximum

46.116% of variance below cut-off 50% (Podsakoff et al., 2003). Thus, the data set of Internet banking does not have any concerns regarding the common method bias. An inspection of the structural model was conducted with twelve causal paths between independent and dependent factors. This is shown in Table 4 below:

Table 4
Fit Indices of Structural Model: Internet Banking

Fit indices	Cut off point	Initial structural model	Modified structural model 2	Modified structural model 2
CMIN/DF	≤3.000	1.997	2.081	1.900
GFI	≥ 0.90	0.901	0.906	0.915
AGFI	≥ 0.80	0.87	0.875	0.885
NFI	≥ 0.90	0.93	0.933	0.94
CFI	≥ 0.90	0.964	0.97	0.975
RMSEA	≤ 0.08	0.054	0.053	0.050

With regard to the path coefficients analyses, the coefficient values of the paths ending to behavioral intention including performance expectancy ($\gamma=0.14, p<0.026$); effort expectancy ($\gamma=0.19, p<0.002$); hedonic motivation ($\gamma=0.29, p<0.000$); price value ($\gamma=0.18, p<0.006$); perceived risk ($\gamma=-0.21, p<0.000$) were found to be statistically significant (figure 2). Yet, the path between social influences ($\gamma=0.029, p=0.645$) and behavioral intention was recognized as insignificant. The path coefficients starting with performance expectancy ($\gamma=0.31, p<0.000$) and hedonic motivation ($\gamma=0.50, p<0.000$) and ending in price value were found statistically significant. Moreover, both facilitating conditions and behavioral intention had statistically significant paths with usage behavior ($\gamma=0.18, p<0.035$; $\gamma=0.45, p<0.000$, respectively). The non-significant path observed between social influences and behavioral intention led to modification of the model, with Chi-square significant ($\chi^2= 434,663$ DF = 209, P = 0.000), the fit indices (CMIN/DF was 2.080, GFI= 0.906, AGFI=0.875, NFI=0.934, CFI= 0.97 and RMSEA= 0.053). Accordingly, the modified structural model was slightly better than the original one. The statistical analyses of the path coefficients regarding the modified structural model after removing social influences indicated that the predictors of behavioral intention such as performance expectancy ($\gamma=0.15, p<0.014$), effort expectancy ($\gamma=0.20, p<0.002$), hedonic motivation ($\gamma=0.29, p<0.000$), price value ($\gamma=0.18, p<0.003$), and perceived risk ($\gamma=-0.21, p<0.000$) had statistically significant estimates.

Further, effort expectancy was recognized as a significant robust determinant of performance expectancy ($\gamma=0.50, p<0.000$). Price value was significantly influenced by both performance expectancy ($\gamma=0.32, p<0.000$) and hedonic motivation ($\gamma=0.48, p<0.000$). In addition, hedonic motivation had a significant path with performance expectancy ($\gamma=0.31, p<0.000$). Usage behavior was significantly associated with behavioral intention ($\gamma=0.44, p<0.000$) and facilitating conditions ($\gamma=0.19, p<0.032$). Moreover, the modified model was able to account for 67%, 35%, 55%, and 55% of variance in behavioral intention, usage behavior, performance expectancy, and price respectively. Two candidate paths from facilitating conditions were noted to both price value and performance expectancy, which upon inclusion, statistical fit indices were considerably improved (CMIN/DF 1.900, GFI= 0.915, AGFI= 0.885, NFI= 0.94, CFI= 0.975 and RMSEA= 0.050, albeit, chi-square was still significant ($\chi^2= 401.618$, DF= 212, P = 0.000)). The final versions of structural models on IB, MB and TB are illustrated in figures 2, 3 and 4 respectively.

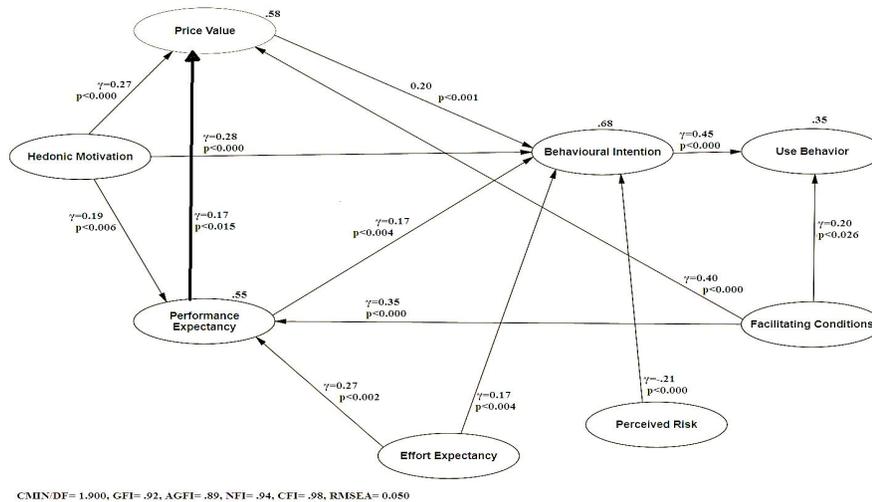


Fig. 2. Internet Banking SEM Final

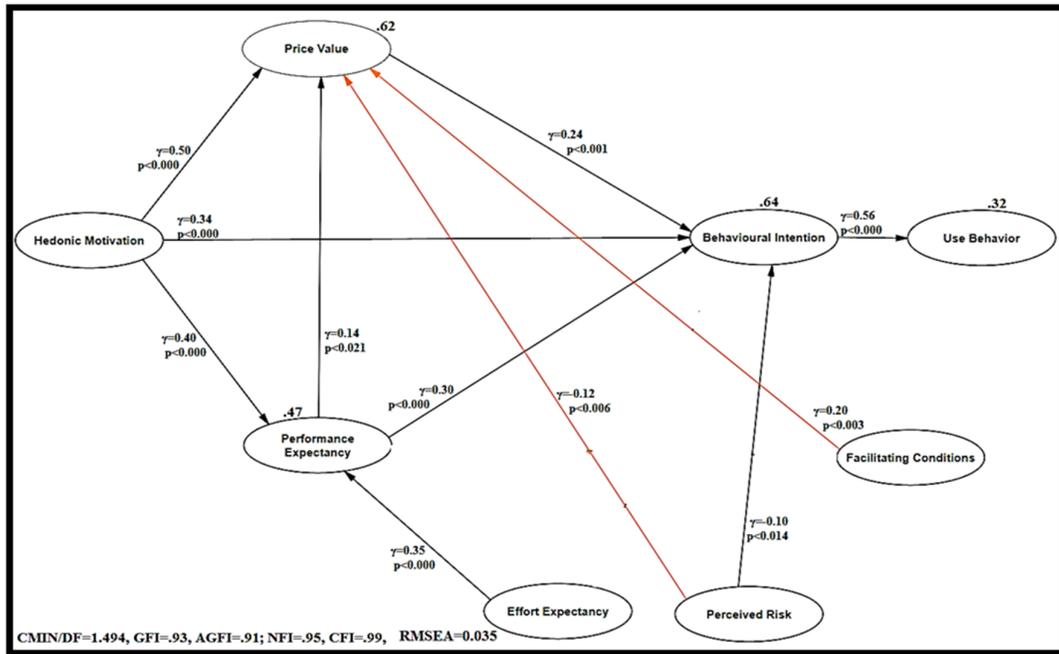


Fig. 3. Mobile Banking SEM Final

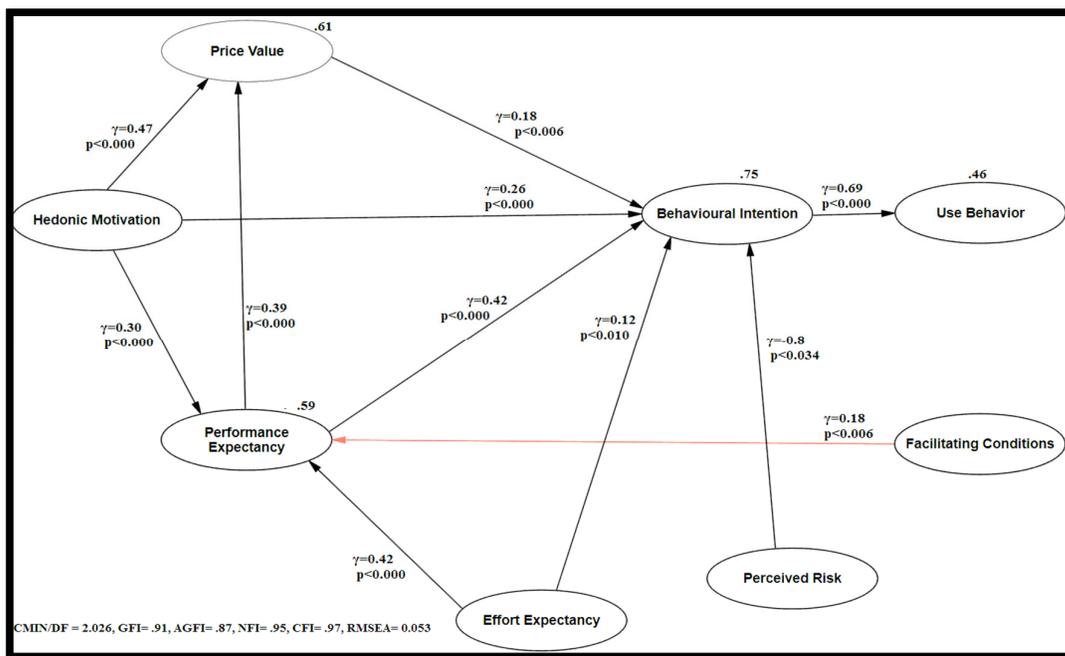


Fig. 4. Telebanking SEM Final

6. Conclusion (Theoretical and Practical Implications)

Having studied the most important factors predicting Jordanian customers’ intention and use of the three kinds of SSTs: Internet banking, Mobile banking, and Telebanking, the current study represents a substantial contribution to existing knowledge regarding SSTs and technology acceptance area. This study was able to comprise a fundamental contribution via integrating the related literature in the SST area in general with other closely relevant literature in Internet banking, Mobile banking, and Telebanking. As the UTAUT2 is precisely theorized to explain technology acceptance from the customers’ perspective (Venkatesh et al., 2012), the current research extends the applicability and generalizability of UTAUT2 and SST theories through structural analysis, further contributing to the extant literature. Moreover, unlike most studies, this research

included all elements of SST in the proposed model. By doing so, this study is able to form original contributions to both UTAUT2 and SST literature.

As it has been discussed earlier, implementing SSTs is not feasible unless customers widely adopt these technologies as full alternatives for human encounters (Meuter et al., 2005). Persuading customers to switch his/her behavior from a traditional encounter to using SSTs is not an easy process as long as there is shortage in understanding and awareness regarding the main factors forming the consumers' intention and behavior towards SSTs. It seems that there were factors (behavioral intention, performance expectancy, price value, hedonic motivation, and perceived risk) that were able to keep their crucial role over the three models. Hence, aspects relating to these factors must be the focus of attention of any bank in their endeavor to motivate their customers to use SSTs. Allowing customers to try using these applications through experimental accounts rather than using their own accounts could create a positive experience and let customers actually experience how much they will benefit by using these valuable, useful and easier applications. These findings are in consensus with the extant literature and further expand current understanding (e.g. Cao et al., 2021; Park et al., 2020; Venkatesh et al., 2012; Ezenwafor et al., 2020).

The results of this study also provided clues for Jordanian banks about the important influence of performance expectancy. Therefore, banks have to initially be sure that online channels are able to conduct financial transactions efficiently, more specifically, and within less time along with the availability of information required by customers to successfully use these channels, expanding the range of financial services provided by SSTs and maintaining permanency of their performance efficiently and effectively will certainly support the role performance expectancy (Zhou et al., 2010). Marketing plan should pay a particular interest in the aspects that contribute to hedonic motivation. For instance, by conducting a well-designed campaign, banks could contribute to the perception of these channels as a more novel and innovative technology and, thereby, contributing to hedonic motivation (Venkatesh et al., 2012). More importantly, banks have to convince their customers that using SST is now a basic requirement of a modern lifestyle; it represents an interesting experience along with saving time and cost; and using these channels is considered a normal extension for other innovations that could be used by customers such as smartphones, Internet, e-mail, and social media (Lin & Hsieh, 2011; Park et al., 2020). Banks could also enhance the price value by convincing their customers that implementing these technologies will provide them with a better quality of life and will save them time, cost, and effort which makes using SSTs more valuable relative to the cost paid in this regard.

7. Limitations and Recommendations

The current research was limited in various ways including, time restrictions, costs and budgeting, and resources. Incorporation of cultural elements is another important limitation that can be noted as a pathway for future studies. Sampling was done conveniently and in a cross-sectional manner, which can hinder generalizability. Future studies can undertake longitudinal studies, or gather data in multiple stages to avoid such issues. Additionally, samples of this research were more young and had experience with the internet and computer. Future studies can expand sampling criteria to include those with different experience levels and/or age ranges. As data was gathered through self-reported surveys, objectivity can be regarded as a limitation. Thus, future studies may undertake different approaches to ensure elimination of bias in response. Lastly, other countries in the region can be examined to provide cross-cultural and comparative results.

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