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Acceptance of Internet Banking in Tunisian Banks:
Evidence From Modified UTAUT Model

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ABSTRACT

The purpose of this study is to examine the factors which affect internet banking adoption acceptance in Tunisian banks by using the modified unified theory of acceptance and use of technology (UTAUT) model by adding attitude, trust, perceived risk, and perceived internet banking services quality. The proposed model was empirically tested using survey data provided by 203 respondents and was analyzed using a structural equation model (SEM). The analysis results indicated that performance expectancy, attitude, facilitating conditions, social influence, and perceived internet banking services quality show a significant positive impact on the users' behavioural intention to use internet banking services. This study contributes to the literature by providing a new research model for understanding internet banking adoption in Tunisia, and its findings provide useful guidelines to develop strategies and to improve their services in order to increase the adoption of mobile banking by their customers.

KEYWORDS

Adoption, Attitude, Customer, Internet Banking, Perceived Internet Banking Quality Services, Perceived Risk, Trust, Tunisian, UTAUT

INTRODUCTION

Electronic banking (MB) has been growing phenomenally over the banking sector and has become an integral banking channel alongside Internet banking, Tele-banking, and ATM (Lee et al., 2005). The Internet and new technologies in general, reduce the time, cost of communicating information, and therefore lead to cost savings. As a result, recent years have seen many banks embrace electronic banking in order to make banking easier for their customers and also to allow them to offer new services.

The dramatic growth among the Internet users in Tunisia is evident from fact that there were just 100,000 Internet users in 2000, which rose to 7,898,534 in December 2019. The penetration rate recorded was 66.8 per cent of population (Internet World Stats, 2019) which created opportunities for Tunisian' banks to expend to wider customers.

In the Tunisian context, on the 2émè edition of the International Forum on Innovative Digital Financial Instruments in April 2018, the Professional Association of Banks created in 1972 announced that adoption to the digital is an urgent imperative for banks. There are numerous benefits for banks in adopting and incorporating use of Internet banking such as cost savings, increase service quality and increase their revenue. Tunisian banks offer several online services. For example, the BIATNET (Banque Internationale Arabe de Tunisie) accessible online offers several operations such: account statement, search operation, prepaid card loading, card opposition, download transaction and

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documents, cheek book order, message for the processing of complaints, Bank Account Identification, International Bank Account Number printing…However, despite the relatively advanced and resources that have been projected in this vein by all Tunisian banks Internet banking is still a relatively new phenomenon in Tunisia and its adoption by the customers is reported to be very low. Therefore, it becomes imperative for bank managers and policy makers to understand the factors that influence the adoption and acceptance of Internet banking services by customers in Tunisia which enable them to formulate strategies to improve the take up of Internet banking.

The Unified Theory of Acceptance and Use of Technology (UTAUT) is particularly attractive for its parsimony and its good predictive performance in a variety of Information technology adoption contexts. However, for the adoption and use of Internet banking services, other relevant factors besides performance expectancy, effort expectancy, facilitating condition and social influence such as attitude, trust, perceived risk and perceived services quality should be considered in order to explaining Internet banking acceptance in Tunisia. By modifying the UTAUT to include these four factors, a more comprehensive theoretical perspective of user technology acceptance in the context of Internet banking will be provided. Furthermore, UTAUT model have not been widely tested in developing countries such as Arab countries in general (Abu-Shanab and Pearson, 2009; Zhao et al., 2012) and Tunisia in particular (Nasri, 2014).

The paper is organized as follows. The second section is presented with review of literature containing theoretical background, development of research model and hypotheses. In the third section, methodology for the research and data analysis are presented. Then, Section 4 discusses the empirical findings and the article concludes with theoretical and managerial implications, limitations that can be addressed in future research.

LITERATURE REVIEW

Theoretical Framework

There are a number of theories and models that have been employed over the years in understanding technology adoption behaviors. The Technology Acceptance Model (TAM) proposed by Davis in 1986 (Davis, 1989; Davis et al., 1989), has its roots in the Theory of Reasoned Action (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980) and the Theory of Planned Behavior to explain computer acceptance. These theories and models focus on people's intention to engage in a certain behavior such as the adoption and use of new technologies.

The Theory of Reasoned Action (TRA) (1980) has been widely used in technology adoption as well as used in a number of research fields as a foundation to such studies. TRA (Fishbein and Ajzen, 1975) assumes that human behavior is the outcome led by behavioral intentions. It is the degree of an individual's intention to perform a specified behavior. The intentions are influenced by attitude and subjective norms, which are formed from behavioral and normative beliefs (Fishbein and Ajzen, 1975).

The Theory of Planned Behavior (TPB) of the Theory of Reasoned Action (Fishbein and Ajzen1975), which incorporates perceived behavioral control as the third construct in the Theory of Reasoned Action model. TPB assumes that when people believe they are in control of their own behavior, their intention to perform that behavior will likely increase whether or not their attitudes about that behavior are favorable (Ajzen, 1991). Besides TPB, several other models have also postulated that behavior is predicated by intention, including the Technology Acceptance Model (TAM) (Davis et al., 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003).

The TAM formulated by Davis (1989) and Davis et al. (1989), is widely accepted as a framework to understand the determinants of users intention to adopt a given type of technology. According to TAM perceived usefulness and perceived ease of use determine an individual's attitudes toward their intention to use. Perceived usefulness can be defined as the degree to which a person believes that using

a particular system would enhance his or her job performance (Davis, 1989). Perceived usefulness has been found to have a significant positive effect on both attitude and usage intention toward use of technology. Perceived usefulness is also considered to be affected directly by perceived ease of use (Davis, 1989). Perceived ease of use can be defined as the degree to which a person believes that using a particular system would be free of effort (Davis, 1989). Therefore, perceived ease of use is expected to have an indirect effect on consumers' attitudes via perceived usefulness.

In contrast, the UTAUT is a synthesis of eight distinct theoretical models based on sociological and psychological theories explaining human behavior namely, the TRA, TAM and TAM2, Theory of Planned Behavior (TPB) and Decomposed Theory of Planned Behavior, combined TAM and TPB, Innovation Diffusion Theory, Motivational Model, Model of PC Utilization and Social Cognitive.

The UTAUT has become a widely used model to study applications in various contexts including mobile banking (Zhou et al., 2010), Mobile phone technologies (Zhou, 2011), Internet banking (Riffai et al., 2012), E-government (Schauppet al., 2010), E-recruiting (Laumer et al., 2010) and virtual learning technologies (Chiu and Wang, 2008; Van Raaij and Schepers, 2008; Wang et al., 2009). It posits four antecedents of behavioral intention, including performance expectancy, effort expectancy, social influence, and facilitating conditions.

Furthermore, the literature indicates that there is limited use of the UTAUT in the Internet banking services adoption. Therefore, there is a need to examine the extended UTAUT model in the Arab countries, such as the case of Tunisia to examine the behavior intention to accept and use Internet banking services. By extending the UTAUT to include attitude, trust, perceived risk and perceived quality services a more comprehensive theoretical perspective of user technology acceptance in the context of Internet banking will be provided.

Attitudes Toward Use (ATT)

Attitude is defined as "learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object" (Fishbein and Ajzen, 1975). Attitude has long been shown to influence behavioral intention and actual behavior (Ajzen, 1991). Fishbein and Ajzen (1975) first introduced the attitude in TRA and later Davis (1989) employed attitude as a construct in TAM and advanced that attitude affects individual intention. The intention to adopt a prospective a technology is influenced by the users' overall attitudes towards using technology. The dependent variable in our research model is attitude towards Internet banking. The concept of attitude can be considered a key factor in most consumer behavior models and according to Venkatesh et al., (2003) attitude toward Internet banking is defined as an individual's overall affective reaction to using the Internet for his/her banking activities. Previous studies provide empirical evidence that consumers' attitude influences their intentions to use Internet banking services (Lai and Li, 2005; Cheng et al., 2006; Suh and Han, 2002; Lee, 2009; Nasri and Charfeddine, 2012). Thus, attitude influence is hypothesized as:

H1: Attitude will have a significant positive effect on user's intention to adopt Internet banking.

Performance Expectancy (PE)

Performance expectancy is defined as the degree to which any system would enhance the productivity of user or will help to attain the gains in job performance (Venkatesh and Davis, 2000; Venkatesh et al., 2003). Performance expectancy measures the degree to which an individual believes that using the Internet banking services will help him/her attain gain in performing bank tasks. Performance expectancy has been found, in most cases, to be the strongest predictor of intention to use Internet banking services (Al-Somali et al. 2009; Abu Shanab and Pearson, 2007). Performance expectancy is equivalent to the perceived usefulness of TAM. The original TAM suggests that perceived usefulness was instrumental in explaining the variance of the customer's attitude and then perceived usefulness along with customer's attitude determine customer's behavioral intention. Therefore, Davis et al. (1989)

articulated that perceived ease of use could contribute to the behavioral intention to use technology directly or indirectly by facilitating the role of perceived usefulness. Following these assumptions, it can be hypothesized that:

H2: Performance expectancy will have a significant positive effect on user's intention to adopt Internet banking.
H3: Performance expectancy will have a significant positive effect on user's attitude to adopt Internet banking.

Effort Expectancy (EE)

Effort expectancy is defined as the degree of ease associated with use of the system (Venkatesh et al., 2003). According to UTAUT model, effort expectancy positively influences the behavior intention to use the technology (Venkatesh et al., 2003). This has been empirically supported at the context of Internet banking by previous research (Al-Somali et al., 2009; Cheng et al., 2006; Celik, 2008; Eriksson et al., 2005). When users feel that Internet banking is easy to use and does not require much effort, then they are more likely to adopt it. Effort expectancy is equivalent to the perceived ease of use of TAM. The original TAM suggests that perceived ease of use was instrumental in explaining the variance of the customer's attitude, then perceived ease of use along with customer's attitude determine customer's behavior intention. Lee et al. (2013), found that perceived ease of use (similar to EE) to have an effect on behavior intention but it was not the strongest predictor. Thus, this study formulates the following hypotheses:

H4: Effort expectancy will have a significant positive effect on user's attitude to adopt Internet banking.

Facilitating Condition (FC)

The facilitating condition has been 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). In the context of this study, facilitating condition will be measured by the perception of customers of whether they are able to access the required resources and the necessary support to use the Internet banking services. Hence, the following hypothesis can be formulated:

H5: Facilitating conditions will have a significant positive effect on user's intention to adopt Internet banking.

Social Influence (SI)

Social influence is defined as the extent to which an individual perceives that others who are important to her/him, such as family and friends, consider that she or he should use the system (Venkateshet al., 2003, 2012). It is similar to subjective norms in Theory of Reasoned Action and Theory of Planned Behavior. These theories already identified the subjective norms as key variable for explaining the consumer intention to perform a specific behavior. These norms represent the expectations of other people regarding performing a particular behavior (Alsajjan and Dennis, 2010; Kim et al. 2008; Lee, 2009; Lee and Chung, 2010), thus they explain to what extent a person is influenced by the perception of his/her behavior by reference people such as family, friends, partner colleagues, parents, students and others. There have been many previous studies which provide empirical evidence of the significant effect of social influence or their similar factors (i.e. reference groups, subjective norms and opinion leaders) on the intention to use Internet banking (Al-Somali et al., 2009; Shih and Fang, 2004). Venkatesh and Davis (2000) found that when a person's perceived a system to be useful, that individual tended to share the same view. A series of recent studies Hu et al., 2009; Teo and Zhou,

2014; Nasri and Charfeddine, 2012) have provided empirical support for this. Thus, social influence is hypothesized as:

H6: Social influence will have a significant positive effect on user's intention to adopt Internet banking.

Trust (TR)

Trust is a cross-disciplinary concept, incorporating ideas from economics, marketing, sociology, psychology, organization behavior, strategy, information systems and decision sciences (Mukherjee and Nath, 2003). In the marketing literature, researchers have considered trust as a critical factor for the success of relationships (Macintosh and Lockshin, 1997; Morgan and Hunt, 1994). However, trust is even more important in an online situation (Gefen et al., 2003; Gefen and Straub, 2000; Harridge-March, 2006; Pavlou and Fygenson, 2006). One important reason for the importance of trust in e-commerce is the fact that in a virtual environment the degree of uncertainty of economic transactions is higher than in traditional settings (Grabner-Krauter, 2008). Ganesan (1994) showed that trust is related to environmental uncertainty, reputation and satisfaction. Trust is a fundamental prerequisite for any banking activity and unless customers can trust new technology, they will be reluctant to use it (Howcroft et al., 2002). This may be due to the absence of the physical contact between the service employee and consumer in the service delivery process (Bashir and Madhavaiah, 2015). Trust is defined, in the context of Internet banking services, as the assured confidence a consumer has in the Internet banking services provider's ability to provide reliable services through Internet. Basically, two broad dimensions of online trust can be distinguished (Grabner-Krauter and Faullant, 2008). The "hard dimension" of online trust has a functionality-based nature, involving the ability, competence, and predictability of the trusted object. This dimension is relevant for all objects of trust in the context of e-commerce: the e-commerce web site, the merchant that the web site represents, and the underlying technology. The "soft dimension" of trust comprises characteristics or attributes such as honesty, integrity, benevolence and credibility that refer to the intrinsic, value-based motivation of the trust to act in the interest of the trust. According to, Grabner-Krauter and Faullant, (2008), the analysis of online trust in the context of Internet banking should not focus exclusively on interpersonal relationships but also the technology serving as a transmission medium for conducting financial transactions and including security services and technical solutions embedded in e-commerce technologies has to be considered as an object of trust (Rotchanakitumnuai and Speece, 2003; Shankar et al., 2003). Following these assumptions, it can be hypothesized that:

H7: Trust will have a significant positive effect on user's intention to adopt Internet banking.

Perceived Risk (PR)

Perceived risk is defined as the consumer's subjective expectation of suffering a loss in pursuit of a desired outcome. In consumer behavior literature, perceived risk is well documented as a critical factor to the consumer in any financial transaction (Bettman, 1973). Consumers tend to consider all uncertainties and possible adverse outcomes when they make their product/service decisions (Mitchell, 1999). In online environment, using Internet banking channels have been extensively characterized with a high degree of uncertainty, intangibility, heterogeneity, and vagueness (Eriksson et al., 2005; Gan et al., 2006; Kolodinsky et al., 2004). Previous studies indicate perceived risk as a major factor that negatively influences Internet banking adoption (Celik, 2008; Lee, 2009). This may be due to the absence of the physical contact between the service employee and consumer in the service delivery process. Fears of hackers and privacy invasion compound the uncertainty surrounding online services (Hoffman et al., 1999; Yoon, 2010). In recent years, extant research provide evidence that perceived risk has negative influence on consumers' attitude and behavioral intention to adopt Internet banking (Celik, 2008; Chiou and Shen, 2012; Lee, 2009). Furthermore it was clearly noticed that perceived

risk could be one of the most important aspects that might play a vital role in forming the Jordanian customers' intention to use the Internet banking services. A closer look at the relevant studies leads the authors to observe that perceived risk is one of the most important obstacles hindering the customers' willingness to adopt Internet banking (Cruz et al., 2010; Lee et al., 2007). Accordingly, this study assumes the following hypothesis:

H8: Perceived risk will have a significant negative effect on user's intention to adopt Internet banking.

Perceived Services Quality (PSQ)

Services quality is defined as an individual's perception of how well a system performs tasks necessary to the user's job (Venkatesh and Davis, 2000). Hence, service quality revolves around the idea of customers comparing their expectations about the service with their perception of the way the service has been performed (Gronroos, 1984). Perceived quality has a vital impact on the behavior intention in an electronic context. Naik et al. (2010) found that dominant dimensions of services quality have direct influence on behavior intention and consumer satisfaction. Venkatesh and Davis (2000) suggested that when a set of multiple relevant information systems are available, then systems delivering the highest output quality are chosen by users. Other researchers identified a set of e-commerce features such as speed, security, reliability, accessibility, convenience, customization, and support (Madu and Madu, 2002; Santos, 2003). Therefore, consistent with these findings, this study hypothesizes that perceived services quality would have an influence on intention to use Internet banking. Hence, the following hypothesis is proposed:

H9: Perceived services quality will have a significant positive effect on user's intention to adopt Internet banking.

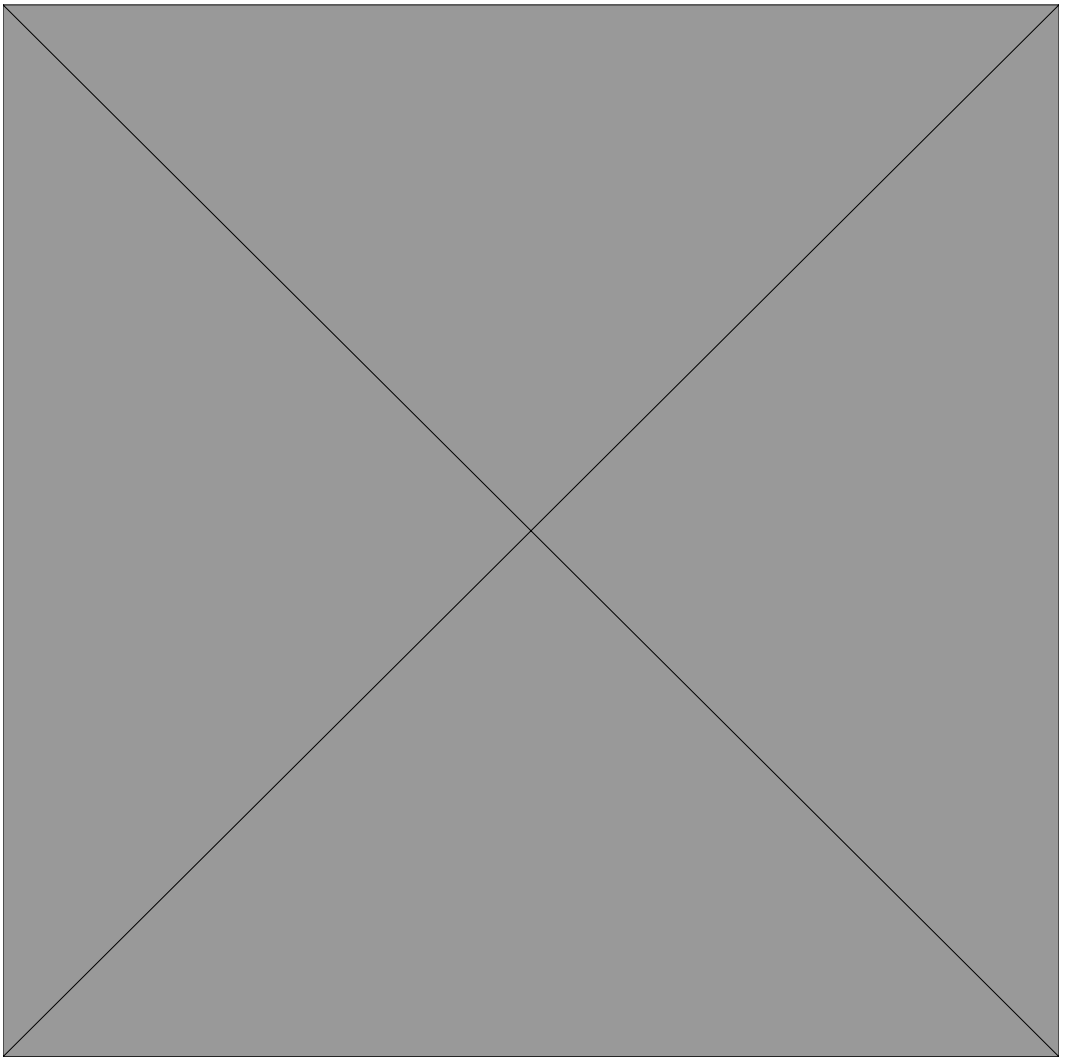
Based on the literature review discussed above, the conceptual model adopted in the present study was developed, as shown in Figure 1.

METHODOLOGY

Data Collection

The sample size of the study is 250. This research focuses on the actual users of Internet banking services in Tunisia. The study is conducted in April-May 2018. A total of 218 questionnaires (87.2% response rate) were returned. Of these, 15 questionnaires were invalid and this resulted in 203 valid responses (81.2% response rate). Sample demographics are depicted in Table 1. Majority of the respondents were males (54.18%) while females were (45.81%). All the respondents (203 out of 250) were Internet users. The reason for this finding is obvious because the survey was conducted among highly educated: academics and staff. The age of the respondents 5.91% is for less than 24 years old, 14.77% that counts at age between 25 to 29 years, 83.54% for 35 to 39 years and above 40 there are 10.34% respondents. 4.92% of the respondents reported high school education level, 75.86% college degree while 19.21% had a masters or higher degree. Most 35.96% had been using the Internet banking for more than 5 years. These findings suggest that the highly educated populations in Tunisia are generally experienced Internet users. The data analysis was done with SPSS version 17.0 and LISREL version 8.3. Data analysis includes descriptive statistical analysis, exploratory factor analysis, confirmatory factor analysis, validity and reliability tests and structural equation modeling analysis.

Figure 1. Theoretical model



Measures

The questionnaire was first developed in English, and then translated into Arabic by a professional translator in English-Arabic language. Although the questionnaire items used in the survey instrument to measure the constructs were identified and adopted from prior research; particularly from Information System research. The UTAUT scales measures of performance expectancy (5 items), effort expectancy (7 items), social influence (5 items) and facilitating condition (5 items) are adapted from Venkateshet al, (2012). Attitude was measured using the 4 items adopted Cheng et al. (2006). Four items to measure trust were adopted from Suh and Han (2002) and Nor et al. (2010). Perceived risk was measured using five items which were adapted from Featherman and Pavlo, (2003). Perceived services quality was measured using four items from Thompson et al. (1991). Intention to use was measured using three items adopted from by Cheng et al. (2006). Responses were measured on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), except for demographics

Table 1. Demographic Profile of the Respondents

Measures	items	Frequency	Percentage (%)
Gender	**Male**	**110**	**54.18**
	Female	**93**	**45.81**
Age	**20 - 24**	**12**	**5.91**
	25 – 29	**30**	**14.77**
	30 – 34	**62**	**30.54**
	35 – 39	**78**	**83.42**
	40 – 50	**12**	**5.91**
	> 50	**9**	**4.43**
Education	**High school**	**10**	**4.92**
	College/university	**154**	**75.86**
	Master	**12**	**5.91**
	Phd	**27**	**13.30**
Years using Internet banking for experienced users	**< year**	**15**	**7.38**
	3 years	**107**	**52.70**
	3 – 5 years	**73**	**35.96**
	> 5 years	**8**	**3.94**

and experience of usage, which were measured on a nominal scale. The operationalization of each measure is provided in Appendix A.

Measurement Model: Examination of Reliability and Validity

To perform an exploratory analysis, convergent and discriminant validities and scale reliability are concerned (Fraering, 2005). Convergent validity measures whether items can effectively reflect their corresponding factors, while discriminant validity measures whether two factors are statistically different (Anderson and Gerbing, 1988). Fifteen items, EE6, SI3, SI4, SI5, FC1, FC2, FC3, PR4, PR5, PR6, TR3, TR4, TR5, QS3 and QS4, were eliminated, due to lower standardized outer loading recommendation by Churchill (1979). No cross-loadings between measurement items in Table 2 were observed which satisfied the condition of discriminant validity at item level. We examined the convergent validity of the model using Fornell and Larcker criterion (1981) which asserts that average variance extracted (AVE) of each construct should be equal or above than 0.5 (see Table 2). It was found that AVE extracted of each construct in Table 3 was higher than the corresponding squared inter-construct correlation and confirmed the discriminant validity at construct level (Fornell and Larcker, 1981). Finally, Table 2 presented internal consistency reliabilities (CR), which were greater than 0.80 for all the constructs, and Cronbach was higher than the 0.7 except for the SI, which was still in acceptable range. Both CR and a value were higher than the recommended values (Nunnally and Bernstein, 1994). Thus, the measurement model showed an adequate convergent validity and discriminant validity.

To ensure that the measurement model possesses a sufficiently good model fit, several fit indices were consulted to determine the overall fit of the proposed model to the data. This model was found to be valid, as evidenced by the adequacy indices such as: the smaller the $\chi 2$/df (normed chi-square) is less than 3.0. Several other fit indices are examined (Hair et al., Black, 2003). According to Gefen, et al., (2000) and Hair et al. (2003), goodness of fit index (GFI), comparative fit index (CFI), normalized

Table 2. Results of rotated factor loading and composite reliability

Latent variable	Observed variable	Standardized loading	AVE	Cronbach' Alpha
Performance expectancy	PE1	0.723	0.846	0.922
	PE2	0.770		
	PE3	0.786		
	PE4	0.782		
	PE5	0.757		
Effort expectancy	EE1	0.819	0.749	0.874
	EE2	0.749		
	EE3	0.792		
	EE4	0.734		
	EE5	0.858		
	EE7	0.754		
Facilitating condition	FC4	0.846	0.739	0.818
	FC5	0.846		
Attitude	ATT1	0.79	0.725	0.822
	ATT2	0.823		
	ATT3	0.752		
	ATT4	0.864		
Social Influence	SI1	0.813	0.980	0.77
	SI2	0.813		
Perceived risk	PR1	0.728	0.784	0.632
	PR2	0.792		
	PR3	0.758		
Trust	TR1	0.826	0.980	0.789
	TR2	0.810		
Perceived services quality	PSQ1	0.827	0.81	0.538
	PSQ2	0.827		
Intention	INT1	0.860	1	0.880
	INT2	0.927		
	INT3	0.909		

fit index (NFI) and non- normalized fit index (NNFI) are best if above 0.90 and demonstrate marginal acceptance if above 0.80, adjusted goodness of fit index (AGFI) above 0.80, root mean square residual (RMR) below 0.05, root mean square error of approximation (RMSEA) below 0.08. As shown in Table 4, all the model-fit indices exceeded their respective common acceptance levels suggested by previous research, thus demonstrating that the measurement model exhibited a fairly good fit with the data collected.

Table 3. Correlation matrix

	ATT	PE	EE	PR	FC	SI	TR	QS	INT
ATT	0.852								
PE	0.56	0.92							
EE	1.09	0.44	0.864						
PR	0.04	0.02	0.04	0.886					
FC	0.18	0.28	0.14	0.01	0.86				
SI	0.23	0.37	0.18	0.01	0.35	0.99			
TR	0.23	0.35	0.18	0.01	0.34	0.45	0.99		
PSQ	0.15	0.23	0.12	0.01	0.22	0.30	0.29	0.9	
INT	0.34	0.54	0.17	0.01	0.52	0.68	0.66	0.34	1

Notes: ATT: Attitude; PE: Performance expectancy; EE: Effort expectancy; PR: perceived risk; FC: facilitating condition; SI: Social influence; TR: Trust; PSQ: Perceived services quality, INT: Intention; The diagonal element represent the square of AVE (Average variance extracted)

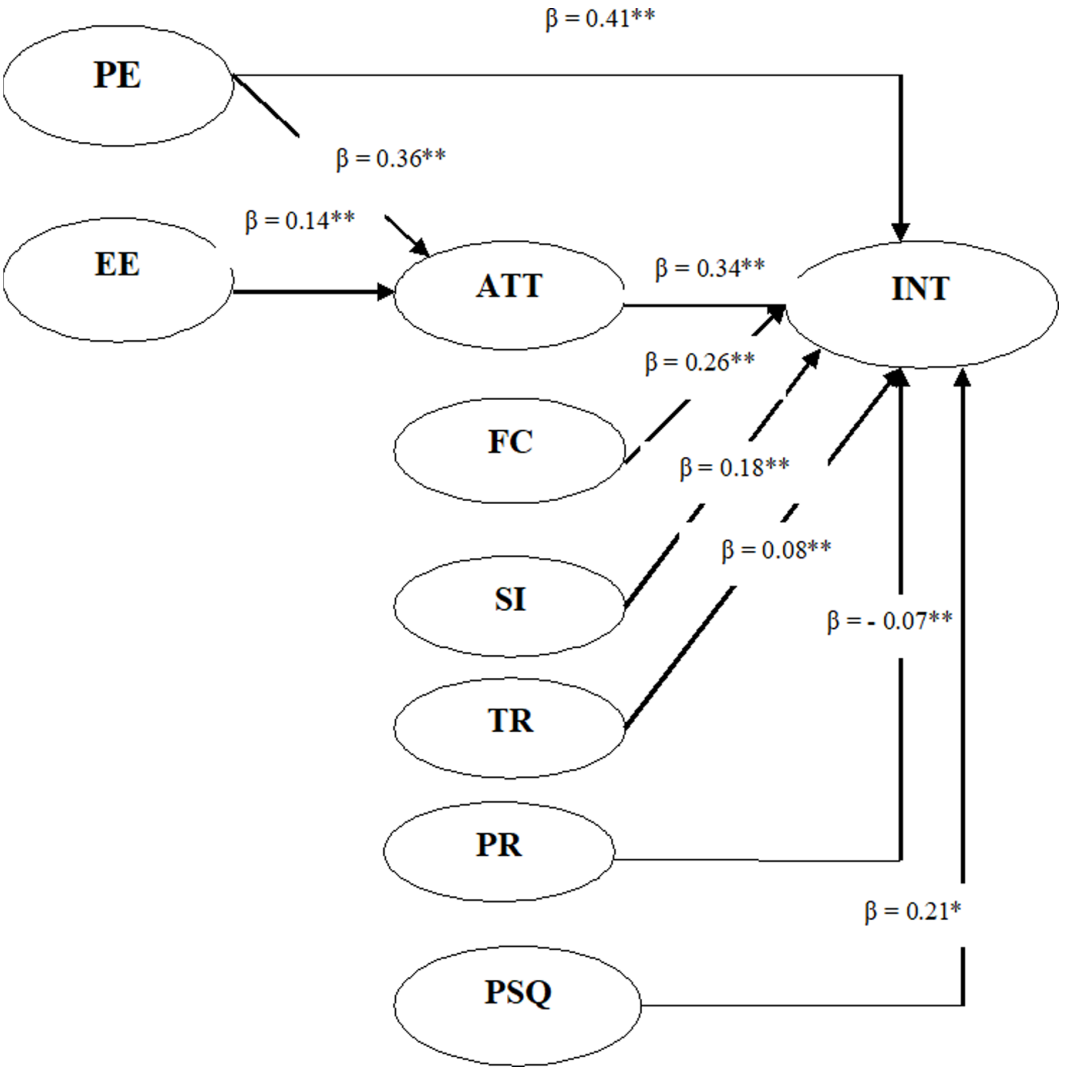
Structural Model

After establishing a measurement model with fairly good model fit, the next step was to access the structural model. A similar set of model-fit indices of the measurement model was used to examine the structural model. The goodness-of-fit indices are summarized in Table 4, and demonstrated a good overall fit of the structural model to the data. Therefore, it is proceeded to examine the path coefficients of the structural model (see Figure 2). The hypothetical validity b and t-value are presented in Table 4. More specifically, performance expectancy ($\beta = 0.410$, $p<0.01$), attitude ($\beta = 0.34$, $p<0.01$), facilitating condition ($\beta = 0.260$, $p<0.01$), perceived services quality ($\beta = 0.210$, $p<0.$ 1) and social influence ($\beta = 0.18$, $p<0.01$) were found to have a significant positive influence on behavioral intention towards using Internet banking, with performance expectancy having the strongest magnitude on the relationship with behavioral intention. These results donate support for H1, H2, H3, H4, H5, H6 and H9. Our results shows also that attitude to use and adopt Internet banking was found to be significantly affected by performance expectancy ($\beta = 0.14$, $p<0.01$) and effort expectancy ($\beta = 0.10$, $p<0.01$). Surprisingly, the path coefficient from trust ($\beta = 0.08$, $p<0.01$) and perceived risk ($\beta = - 0.07$, $p<0.01$) was not significant. As a result, this study failed to find support for H7 and H8 (Table 5).

Table 4. Fit indices for measurement and structural model

Fit indices	Recommanded value	Measurement model	Structural model
Chi squared of freedom	≤3.00	2.03	1.98
Normalized Fit Index (NFI)	≥0.90	0.93	0.95
Non- Normalized Fit Index (NNFI)	≥0.90	0.95	0.97
Comparative Fit Index (CFI)	≥0.60	0.95	0.96
Goodness of Fit Index (GFI)	≥0.90	0.89	0.92
Adjusted goodness of Fit (AGFI)	≥0.80	0.86	0.9
Root mean square residual (RMR)	≤0.10	0.062	0.065
Root Mean Square Error of Approximation (RMSEA)	<0.08	0.076	0.068

Figure 2. The proposed research model with hypothesis **Significance at p <0.01 *Significance at p <0.1



DISCUSSION

The main aim of this study was to extend the UTAUT by integrating attitude, trust, perceived risk and perceived services quality constructs in order to investigate the factors that affect the consumers' intention to use Internet banking in Tunisia.

The relationship between the performance expectancy and intention to use Internet banking is consistent with the findings of prior studies (Davis et al., 1989; Venkatesh et al., 2003. Zhou et al., 2010, Baptista and Oliveira, 2015). The result indicates that if Internet banking improves the customer's performance, they will opt for these services (Ghalandari, 2012; Yu, 2012).

In predicting customers' attitude towards Internet banking, performance expectancy and, effort expectancy were found to contribute substantially to variance in attitude towards Internet banking, with performance expectancy the most significant factor influencing attitude towards Internet banking. Previous studies suggest that the concept perceived usefulness and perceived ease of use in the behavior models such as the Technology Adoption Model (TAM) are consistent with the performance

Table 5. Results of hypothesis testing

	Path	Path coefficient	Results
H1	ATT → INT	0.34	Supported
H2	PE → INT	0.41	Supported
H3	PE → ATT	0.36	Supported
H4	EE → ATT	0.14	Supported
H5	FC → INT	0.26	Supported
H6	SI → INT	0.18	Supported
H7	TR → INT	0.08	No supported
H8	PR → INT	-0.07	No supported
H9	PSQ → INT	0.21	Supported

expectancy and effort expectancy. The results of the analysis are consistent with those of previous research (Venkatesh et al., 2012; Venkatesh and Zhang, 2010). Hence, when the users find the system to be useful then they are more likely to have better perception about using the technology.

Facilitating condition also has an impact on behavioral intentions to use Internet banking, indicating that the Tunisian customers are more concerned about the facilities, resources, and skills that are needed to conduct the Internet banking services. These results are in the line with other studies (Wang and Shih, 2009; Zhou et al., 2010; Venkatesh et al. 2012, Alalwan et al., 2017).

The results showed that there is a significant positive relationship between social influence and intention to use Internet banking which is consistent with the majority of previous studies (Foon and Fah, 2011; Zhou et al., 2010). This means that the most important people to the customer play some positive role in influencing their intention to use Internet banking services.

Perceived risk variable was found to have no significant impact on the intention to use e-banking in Tunisia. This result contradicts the findings of other studies on the acceptance of Internet banking (Chen et al., 2016; Afshan and Sharif, 2016; Oliveira et al., 2014).

The results also indicated that, contrary to our expectations, the effect of trust constructs on intention to adopt Internet banking was not supported. Indeed, several studies suggested that trust is a critical determinant of behavioral intention in Internet banking adoption and in an online situation (Gefen et al., 2003; Gefen and Straub, 2004; Harridge-March, 2006; Pavlou and Fygenson, 2006).

The empirical results have also supported the significant relationship between perceived services quality and intention to use Internet banking. Such results of perceived services quality extracted in the current study are in line with existing literature in the Internet banking area (Venkatesh and Davis, 2002; Madu and Madu, 2002; Santo, 2003; Naik et al. 2010; Parasuraman et al. 1991). If consumer identify a set of e-services features such as speed, security, reliability, accessibility, convenience, customization, and support they are more likely to use Internet banking.

CONCLUSION, IMPLICATIONS, LIMITATION AND FUTURE RESEARCH

The purpose in this study was to investigate the factors that affect the consumers' intention to use Internet banking in Tunisia. The overarching theoretical framework for this research is the UTAUT by integrating attitude, trust, perceived risk and perceived services quality constructs. This study found that the most important factor influencing Intention to use Internet banking is performance expectancy, attitude, facilitating condition and perceived services quality and social influence.

The results of the study revealed that performance expectancy has a considerably higher influence than attitude on intention to use Internet banking services. Banks should make electronic banking

services more useful. They could achieve this by increasing the customers' awareness of the usefulness of using Internet banking services through advertising. In order to achieve this, policy makers should provide user manual that include a detailed instructions about the benefits of the system such as services that allows users to perform banking transactions at anytime from anywhere in the world.

Furthermore, the antecedents of attitude are performance expectancy and effort expectancy. Performance expectancy has a considerably higher influence than effort expectancy on attitude towards Internet banking. According to our findings, attitude towards using Internet banking can strongly affect user intention to use Internet banking services. If the user sees a benefit from Internet banking, he intends to use it. In addition, individual's beliefs, news, commercials influence user's intention to use Internet banking. Moreover, the benefits that user gains from using Internet banking and ease of use affect user's attitude towards using the service. It is essential, from a strategic perspective, for Tunisian banks to understand the factors that influence their customers' attitude towards Internet banking within their environmental context. Banks should use effective media advertising such as radio and TV advertisement, brochures, and web pages to introduce Internet banking services to a wider audience and educate potential customers about how to become Internet banking users, the range of services Internet banking provides, and the benefits of Internet banking. To access more adopters, information about benefits of Internet banking should be also provided by bank tellers and bank assistants at bank branches. Our results also show that facilitating condition play an important intention to use Internet banking services. Therefore, banks need to invest more in infrastructure and should also provide all facilities for the customers such as marketing campaigns, setting up customer service centers to increase the users' skills in using computers. In addition, bank websites should be available 7 days and 24 hours and banks should regularly provide accurate information and update records on their websites.

Banks in Tunisia can benefit from social influence that could result in potential customers transferring to electronic banking services. Hence, banks should use effective media advertising such as radio and TV advertisement, leaflets, brochures, and web pages to introduce Internet banking services to a wider audience and educate potential customers about how to become Internet banking users.

The results showed also that perceived quality services was a significant factor hindering behavioral intention to adopt Internet banking services. Banks can also advertise the safety of their websites and announce publicly the efforts to maintain this safety to increase the level of customer trust for the banks and enable Internet banking to be viewed more favorably. Moreover, banks should emphasize the full functionality of their systems to response efficiently to the different banking needs of users. In addition, banks should improve help and facilities in their services to enable customers to accomplish their operations effectively.

This study has a few limitations. First, the relatively small size of the sample limits generalization of the outcome of the study. Secondly, this study empirically examined eight factors that may influence the adoption of Internet banking. Moreover, the future researches in Internet banking field should expand to include other factors that can impact the adoption of Internet banking and all user categories, from inexperienced to very experienced users, as well as non-users.

Conflicts of Interest

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

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APPENDIX A. TABLE 6

Table 6. Survey Instruments

Constructs	Items	Measures
Performance expectancy statements (PE) Adopted from Venkatesh et al. ((2003	PE1	- Using Internet banking websites enable me to access banking services more quickly.
	PE2	- Using Internet banking websites would enhance my effectiveness on the access banking services.
	PE3	- Using Internet banking websites would make it easier to access banking services
	PE4	- I would find Internet banking websites useful to access banking services
	PE5	- If I use Internet banking websites, I will spend less time to access banking services.
Effort expectancy statements (EE) Adopted from Venkatesh et al. ((2003	EE1	- Learning to operate Internet banking websites to access banking services would be easy for me
	EE2	- My interaction with Internet banking websites to access banking services would be clear and understandable.
	EE3	- I would find Internet banking websites flexible to interact with
	EE4	- It would be easy for me to become skilful at using Internet banking websites.
	EE5	- I would find Internet banking websites easy to use.
	EE6	- Using the Internet banking websites takes too much time from my normal duties.
	EE7	- Overall, I believe that Internet banking websites is easy to use.
Facilitating conditions statements (FC) Adopted from Venkatesh et al. ((2003	FC1	- I have the resources necessary to use Internet banking websites.
	FC2	- I have the knowledge necessary to use Internet banking websites
	FC3	- Given the resources, opportunities and knowledge it takes to use Internet banking websites to access banking services, it would be easy for me to use the system
	FC4	- I think that using Internet banking websites fits well with the way I like to access banking services
	FC5	- Using Internet banking websites to access banking services fits into my work style.
Social Influence Statements (SI) Adopted from Venkatesh et al. ((2003	SI1	- My friends and colleagues think that I should use the Internet banking websites
	SI2	- My family members and relatives think that I should use the Internet banking websites
	SI3	- People around me who use the Internet banking websites have more prestige.
	SI4	- I find it difficult to use the Internet banking services due to lack of information and awareness campaigns.
	SI5	- Overall, I am not satisfied with the awareness campaign‘s (TV, radio, newspapers, banners in government agencies websites, and in shopping malls) level obtained from Internet banking officials.

continued on following page

Table 6.Continued

Constructs	Items	Measures
Intention to use (INT) Adopted from Cheng et al.(2006)	INT1	- I will use Internet banking websites to access government services on regular basis in the future.
	INT2	- I expect my use Internet banking websites to access government services to continue in the future.
	INT3	- I will strongly recommend others to use Internet banking websites to access banking services.
Attitude toward Internet banking (ATT) Adpoted from Cheng et al. (2006)	ATT1	- I think that using Internet banking websites to access banking services is a good idea
	ATT2	- I think that using Internet banking websites to access banking services would be a wise idea
	ATT3	- I think that using Internet banking websites to access banking services is pleasant
	ATT4	- In my opinion, it is desirable to use e-Government websites to access banking services.

APPENDIX B. TABLE 7

Table 7. Survey instruments (Cont.)

Constructs	Items	Measures
Perceived risk (PR) Adopted from Featherman and Pavlou (2003)	PR1	- Using Internet banking services subjects my banking account to potential fraud
	PR2	- Using Internet banking services subjects my banking account to financial risk
	PR3	- I think using Internet puts my privacy at risk
	PR4	- Hackers might take control of my bank account if I use Internet banking.
	PR5	- Using Internet banking will not fit well with my self-image
	PR6	- Internet banking/ might not perform well and will create problems with my bank account.
Trust (TR) Adopted from Dodds et al. (1991)	TR1	- I believe that it is always safe to transfer money using Internet banking
	TR2	- I believe it is reliable to transfer money using Internet banking
	TR3	- My bank promptly informs me whenever anything goes wrong with any of my transactions
	TR4	- I am confident that my transaction through Internet banking will always be transparent because of the regulator, RBI
	TR5	- Based on my past experience, I can say that using Internet banking is trustworthy
Perceived services quality (PSQ) Adopted from Parasurman et al, (2005)	SQ1	- Internet banking services make it easy to find what I need
	SQ2	- Internet banking services technology enables
	SQ3	- Internet banking services technology protects my information
	SQ4	- Internet banking services technology provides me with convenient options for conducting financial transactions.

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