

PERCEIVED FACTORS AFFECTING THE INTERNET BANKING IMPLEMENTATION IN SUDAN: AN APPLICATION OF (UTAUT2)

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Abstract: *This study aims to examine factors influencing the use of "Internet Banking" in Sudan by recognizing the effect of bank website quality, social impacts, facilities available and price value. A questionnaire of 500 Sudanese customers was carried out to examine the proposed Model using multiple linear regression analysis. The study concluded that the proposed model explain 90.6% of the change in intention to use with a 99% of confidence, with statistical significance of (0.000). Thus, the proposed model is giving more powerful indicators than the basic model (UTAUT) and UTAUT2, and significantly contributes to understanding factors influencing the use of Internet banking in Sudan.*

Keywords: *Internet Banking, Website quality, Social Impact, Value price*

1. INTRODUCTION

Information Technology revolution influenced walks of life in general and the banking sector in particular where electronic banking has seen a remarkable development which considered as one of the main reasons contributed to the success and development of the business sector in general, and that what has been provided by the information and services facilities.

The online banking service or what is known as "Internet banking" is considered as one of the most prominent technical developments in the electronic banking fields providing many benefits for banks by helping offering a diverse mix of financial and banking services to its customers in an electronic interactive

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style between the service provider (the bank) and the service recipient (client). Thus, it is believed to be one of the main ways of increasing the financial transactions' market share and creates a relationship with banking customers in the long run. On other hand, it provides customers with a fast and easy service that meets their needs for financial and banking services. This service is available around the clock and from anywhere through banks sites on the Internet (Abdullah, 2008).

In Sudan, despite the fact that *Internet Banking Service* is considered as one of the major technical developments in the electronic and banking fields, however, the Sudanese banks steps towards the adoption of this service are still slow, limited and are not as it supposed to be. Moreover, the customers reliance on this service in their accounts management is still small compared to development that telecommunications and information sector has witnessed, which holds the two parties back from the benefits that could accrue to them (Darwish, 2010). Especially, if we come to know that the Internet use rate in *Sudan* in 2014 amounted to 26% of the total population according to (*Internetworldstats, 2014*) and Sudan is ranked ahead of the Arab and African nations in terms of Internet usage.

Therefore, it is worthwhile examining the factors that may contribute to increasing the demand and exercise of this service.

2. LITERATURE BACKGROUND AND RESEARCH HYPOTHESES

2.1. Literature Background

The concept of "Internet Banking": Internet Banking refers to the customer managing accounts or carrying out his/her work related to the bank via the Internet, whether at home, office or from any place and at any time he/she desires to do. Therefore, the customer can directly contact the bank's using general Internet subscription and carrying the various transactions (Msadawi, 2004), and thus providing the bank with many benefits, such as cost reduction, optimization of time, enhancing operational efficiency and quality levels (Mirage, 2004).

Many researchers such as (ALkhatib, 2011), (Babakar, 2009) and (Al-Adli, 2003) argue that *Internet Banking* is considered as one of the most prominent technological developments in the field of electronic banking business. The use of *"Internet Banking"* by customers worldwide is witnessing a rapid growing as some of the recent studies concluded that more than 19 thousand users in 24 countries around the world that 60 % of users in 24 countries essentially rely on the Internet in reviewing their bank accounts and other financial assets (IPSOS, 2012).

In the Arab world, studies suggesting that Internet banking will double the number of Arab countries to reach in some countries more than triple times by the end of the next five years, and the number of actual users of these services will increase to about 25% of the total banking Customers, compared to about 18% in prior periods, and that the demand for the use of these services among customers will increase by about five-fold by the end of the period compared to the previous periods. (The Strategy, 2013).

The reality of the Internet in Sudan: Internet services in Sudan began in 1998 as a joint venture between the Sudanese Authority for Radio and Television and the Sudanese Telecommunications Company "SUDATEL" and offered its services through telephone lines "Dial-up", that has been followed by a diversity to provide the service as of mobile phone companies providing Internet service across Intermediate-generation 2.5G technology. In 2007, the shift has been made to third-generation services, which helped to the high prevalence and intensive service along the diameter (*The communications, 2010*).

Some statistics indicate that 26% of the population in Sudan use the Internet, where the number of Internet users in Sudan in mid- 2014, about 9,307,189 user of the total population of 35,482,233 people, and thus ranked as fifth place among the 17 Arab countries and number ninth in the list of the first African countries the most widely used of the Internet, and this shows the rapid development of the Internet access in Sudan to the advanced stages (*Internetworldstats, 2014*).

Some studies such as (Yahia, 2006) noted that Administration of some banks operating in Sudan have struggled to take advantage of internet banking as a powerful tool to attract and retain new customers, and to contribute to cost reduction of providing traditional banking services. In fact, Sudan is considered as one of those countries that have the ability to integrate Internet banking in the banking system to facilitate the process of customers getting a package of integrated services via the "Internet Banking" (Magboul, 2010).

Despite the opportunities that can be provided by this service to the Sudanese banking system, but there is a number of challenges which will have to first be overcome; as the country lacks the appropriate technical infrastructure to support this service effectively, as there is a shortage of specialists personnel with enough technical skills to build that infrastructure, and to persuade the Sudanese client to take advantage of the features and characteristics of the service is one of the biggest challenges, especially those who are not familiar with using the Internet, and who may have difficulty in trying to deal with the service that may see it as confusing and frustrating (Magboul, 2010).

This study goes in the same line with a number of studies (Magboul, 2010), (Abdullah, 2007) and (Yahia, 2006) in arguing that the use of "Internet Banking"

in Sudan is facing many challenges as Sudan is a country plagued by decades of a Civil War that exhausted a lot of economic resources and affected the development plans.

Previous studies: Many previous studies have addressed the use of banking technologies, including “Internet Banking”. The following is a brief review of some of those studies.

Schaup *et al.*, (2006) investigate the effect of quality information and quality system on Satisfaction with the site, and the results showed that the information and system quality had a large and important role in the prediction of satisfaction with the website, and then in faith to use the site.

LI, (2008): The data were collected from experienced users of the Internet banking in Taiwan through a questionnaire distributed to a selected sample of the study. The study found that differences of individuals, Websites design and service quality directly affect the service type, interest perceived and ease of use and indirectly affect the behavior and customer satisfaction.

Alqeisi, (2009): The study examined the viability of the standardized model of Acceptance of Technology in the two countries (the United Kingdom and Jordan) with respect to Internet banking service. The study found that the excellent bank website design is one of the most important factors affecting the use of the service and does not affect the decision on the type of adoption under the terms of the voluntary use and of advanced experience.

ALBUGAMI, (2014): The study examined the impact of service quality factors, specifically website design on the continued use of customer service “Internet Banking” in Saudi Arabia by developing a form of “UTAUT2”. The study concluded that the expected performance, Web site design and security are the most important influencing factors to continue using of the service.

Alalwan, (2015): The study aimed at defining factors affecting the intention of Jordanian customers to adopt internet banking by developing UTAUT2 model and by adding perceived risk and trust factors. The study concluded that confidence, the risk perceived, effort expectancy, the expected performance, price value and; facilities available affect the intention of adoption.

GAITÁN, (2015): The study aimed to analyze the use of Internet Banking by the elderly, using the UTAUT2, it was the model analysis and the results showed that the most important factors that influenced the continued use of the service was the custom, the expected performance, Price value, expected effort, and the actual use directly affected intention and wired habit.

The Unified Theory of Acceptance and use of technology (UTAUT) and its Extension (UTAUT2)

1. *Unified Theory of Acceptance and Use of Technology (UTAUT)*: The idea of this theory comes as a response to the problem that faced by researchers in choosing between multi-models of theories used to explain the behavior of technology acceptance. The researchers used to either choosing the factors affecting the acceptance of technology from the various theories or choosing one theory on the cost of other theories which will have an effect on the contribution of other theories, so they realized the need of assembling these factors into a single system to achieve a unified vision for the study and analysis of technology acceptance by users (Al-Qeisi, 2009).

Venkatesh et al., (2003) starts revising and comparing more than 8 dominant and controlling used theories to explain the behavior of the technology acceptance. Among these theories, including *Justified Act Theory* (Fishbein & Ajzen, 1975), *The Planned Behavior Theory* (Ajzen, 1991), *Oriented Behavior Theory Analysis* (Taylor & ODD, 1985), *Technology Acceptance Model* (Davis FD, 1989), *Extension of Technology Acceptance Model* (Hu, Chau, Sheng, & am, 1999), *Innovations Publication theory* (Sun & Zhang, 2006), *Social Knowledge Theory* (Miller & Dollard, 1941), *The Catalytic Model* (Davis, Bagozzi, & Warshaw, 1992), *Triandis Model* (Triandis, 1979).

The Unified Theory of Acceptance and Use of Technology (UTAUT)

This theory has been developed by (Venkatesh, Morris, Davis, and Davis, 2003) to measure and predict the acceptance of users of Technology in the regulatory context, the model comprises of four main factors that affect the behavioral trend to accept and use of technology, namely, expected performance, expected effort, social impacts and the facilities available. These are subject to adjustment by four variables (Gender, age, experience, and voluntarily use). (ALBUGAMI, 2014)

Extension of Unified Theory of Acceptance and Use of Technology (UTAUT2)

The proposed of (UTAUT2) has been made by (Venkatsh, 2012) to explain the acceptance and use of technology by consumers by the addition of a number of variables to the original model. These additions being price value, habit, fun incentive, as well as deleting voluntarily use variable from the theory to be more consistent with the Voluntary environment in which technology is provided in the case of consumers.

The proposed amendments to the Unified Theory of Acceptance and Use of Technology and its Extension (the study model)

For the purposes of this study, UTAUT2 has been used as a primary source for the study because of its comprehensiveness and its strong power of interpretation as

compared to other theories of Technology acceptance, as well as being the most prominent and interconnected in the field of Information Technology. External and other factors have been chosen and collected from previous studies based on literature review; the proposed model for the study is including new modifications to Unified Theory as it shows figure 1.

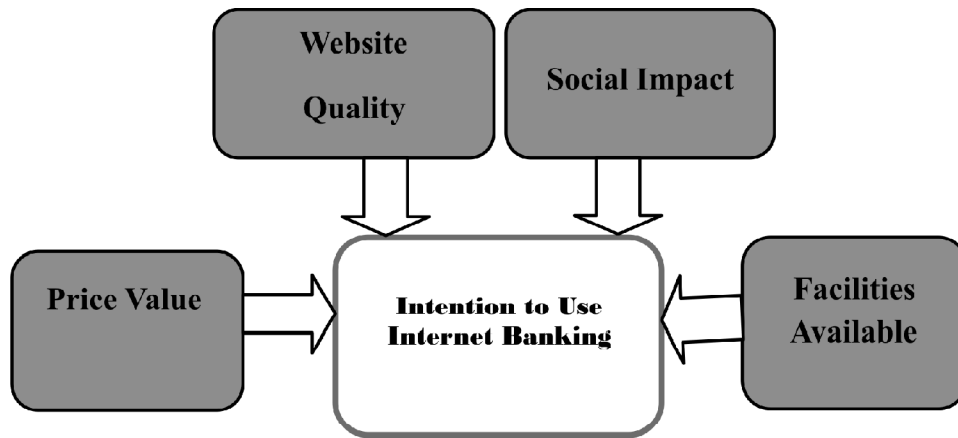


Figure 1: The Study Model

Problem Statement

This study is trying to identify the factors influencing the use of “Internet Banking” service in Sudan through examining the impact of the bank’s website quality dimensions, social impacts, the facilities available and the value use price using (UTAUT2). Therefore, following questions could be formulated:

1. Does bank’s website quality affect the intention to use Internet banking?
2. Do Social impacts affect the intention to use Internet Banking?
3. Are the facilities available affecting the Intention to use Internet banking?
4. Is price value affecting Internet banking use intention?

Significance of the study

The study is part of literature looking at the interpretation of the clients using of Internet banking through the Extension of Unified Theory of Acceptance and Use of Technology (UTAUT2) as the study considered as one of the first studies that introduce the quality of the website different dimensions variable to create an effect on the use of Internet banking in addition to the main variables in the model. Therefore, the value of this study steams from the fact that most of the previous studies focused on the problem of the degree of use and the prevalence of Internet

banking acceptance between banks and customers, bank's website quality such as design quality dimensions and omitted other elements form an integral part of quality measurement dimensions, ignored other factors that affect the use of Internet banking such as social impacts, the facilities available, and the price value.

Hypotheses and Variables definitions

Website quality: As defined by (Al-Qeisi, 2009) the Website Quality is a quality design and style that includes four basic technical dimensions of quality, quality of public content, quality of content, and the quality of the outer appearance, these dimensions already been tested in Technology Acceptance Model (TAM) by (Aladwani A., 2006). Moreover, many researchers (DeLone & McLean, 2003) & (Hoffman, 2009) (Urban et al., 2009) have confirmed that the quality of the web site include multiple dimensions, such as information quality, system quality, Security, ease of use, user satisfaction, and quality service.

Social impacts: A social impact is the degree to which the individual realizes the importance of others and believed that he/ she should use the new system to satisfy them (Okonkwo, 2012).

Facilities available: facilities available is the degree to which an individual can be able to believe that the existence of regulatory infrastructure and technology have been found to support the use of the system (Venkatesh & et al, 2003)

Price value: price value refers to comparing the perceived benefit of the use of technology with their cost (Dodds *et al.*, 1991)

Therefore, this study is trying to examine the following hypothesis:

H1. There is a positive impact of bank's website quality on the Intention of using Internet banking

H2. There is a positive correlation between social impacts and the intention to use Internet banking.

H3. There is a positive effect of the facilities available on the intention to use Internet banking.

H4. There is a positive relationship between the price value and the intention to use Internet banking.

Methodology: Data for this study was collected by distributing the survey manually to assess the extent to which the participants (Sudanese banks clients) are aware of the research variables with a benchmark study about Consumer Switching from Traditional banking to Internet Banking Channels. The results were analyzed using multiple linear regression tests.

Sample: The number of valid questionnaires for analysis was 387. This was completed by the Sudanese banks clients in three banks that offering Internet banking service, namely, (Faisal Islamic Bank, Nile Bank for Trading and Development, Omdurman National Bank. 71.6% of the study sample was male and 28.4% female, Approximately, 35.1% of respondents' age ranged from 30 - 40. The annual income level is larger than 15,000 Sudanese pounds with 29.5 %. More than half of the respondents are a bachelor's degree holders with 52.2 %, indicating that young male with high-income and bachelor 's degree are the most widely used Internet banking, which goes in the same line with relevant studies such as (Jayawardhena & Foley, 2000).

Instrument Development

The design of the questionnaire comprises of identification containing the personal information of the study sample, as well as questions divided into four major pillars - Bank website quality (Technical quality, general quality content, morphological characteristics quality), elements of social impacts, Social facilities dimensions and price value. On the survey instrument, the 5-point likert-type scale is used to measure survey questions, ranging from 1 (strongly agree) to 5 (strongly disagree). See table (1).

Table 1
The Distribution of a Measure of Likert Quintet

<i>Level</i>	<i>Degree conferred</i>	<i>Weighted average</i>
Strongly Agree	1	From 1.00-1.79
Agree	2	From 1.80-2.59
Neutral	3	From 2.60-3.39
Don't Agree	4	From 3.40-4.19
Strongly Don't Agree	5	From 4.20-5.00

Source: The results of the statistical analysis of the questionnaire in 2015

ANALYSIS OF DATA

This study has used multiple linear regression analysis to test research model. The model is composed of four independent variables (Perceived Website quality, Perceived Social impact, Perceived Facilities available and; Perceived Price value) and one dependent variable (Customers intention towards Internet Banking). The research aims to determine the extent to which respondents' perception of research variables (independent variables) affects their intentions to adopt Internet Banking (dependent variable).

Tool Validity & Reliability

1. **Tool Measurement (Validity):** For tool validity, the questionnaire has been reviewed by a group of Academicians and experts with specialized knowledge, their views on the clarity and comprehensiveness have been considered before finalizing it.
2. **Tool’s reliability:** To ensure the reliability of the measuring tool, Cronbach’s Alpha equation has been used for the extraction of reliability coefficient, which indicates the extent of consistency and correlation phrases, it has reached the parameter value for the whole questionnaire 94.7%, and that is considered acceptable as it overcome the approved figure of proportion (70%) and above as by (Hair, 2006).

Data analysis

With regard to study variables data, from each of the questionnaire phrases averages are calculated for each variable on the basis of which stand on the directions of the respondents regarding the variables of the study, table (2) shows the descriptive statistics for study variables:

Table 2
Descriptive statistics for study variables

<i>Variable</i>	<i>Median</i>	<i>Standard Deviation</i>	<i>Result</i>
Website quality	1.65	0.944	Strongly Agree
Social impacts	2.53	1.168	Agree
Facilities Available	1.9	1.037	Agree
Price Value	1.33	0.623	Strongly Agree
Intention to use	1.36	0.631	Strongly Agree

Source: The results of the statistical analysis of the questionnaire in 2015

Hypothesis Testing

The Pearson correlation coefficient (R) has been used to analyze and measure the correlations between each independent variable of the study contained in the hypotheses and the dependent variable. *The coefficient of determination* (R²) has also been used to measure the percentage change in the dependent variable explained by the change in the independent variable. Each of the study hypotheses explains the relationship between the intention to use Internet banking, and one of the variables that affect that intention. These hypothesis have been designed in such a way that can be tested for statistical significance using the relevant data analysis software package SPSS. Table (3) shows Matrix Correlations of the study variables.

It can be seen from table (3) that the relationship between variables is a positive and strong as the correlation ranged between 0.815 - 0.859, also notes that the correlation between the two variables (the price value) and (intention to use) a very strong force where the correlation was 0.942.

Table 3
Matrix Correlations

		<i>Website quality</i>	<i>Social impact</i>	<i>Facilities Available</i>	<i>Price value</i>	<i>Intention To use</i>
Website quality	Pearson Correlation	1				
Social impact	Pearson Correlation	.815**	1			
Facilities available	Pearson Correlation	.935**	.843**	1		
Price Value	Pearson Correlation	.842**	.839**	.843**	1	
Intention to use	Pearson Correlation	.837**	.859**	.831**	.942**	1

** . Correlation is significant at the 0.01 level (2-tailed).

Source: The results of the statistical analysis of the questionnaire in 2015

Table 4
Model Summary
Model Summary

<i>Model</i>	<i>R</i>	<i>R²</i>	<i>Adjusted R²</i>	<i>Std. Error of the Estimate</i>
1	.952 ^a	.906	.905	.195

a. Predictors: (Constant), website quality, social impact, facilities available; and price value.

Source: The results of the statistical analysis of the questionnaire in 2015

Table (4) shows the Model Summary.

It can be seen from table (4) above, the value of the correlation coefficient was ($R = 0.952$), a high value indicating a strong correlation between the independent variables (website quality, social impact, facilities available; and price) and the dependent variable (the intention of use),

The Coefficient of determination ($R^2 = 0.906$) indicating that the independent variables have the ability to explain 90.6 % of the change in the dependent variable (the intention to use Internet banking). See table (5).

Table (5) shows that the probability value is equal to zero, which is lower than the level of significance of 1%, the coefficient of determination (R^2) has also been

used to measure the percentage change in the dependent variable which explained the change in the independent variable and the table (6) explains these results: see table (6).

Table 5
ANOVA^a

<i>Model</i>		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
1	Regression	139.116	4	34.779	915.514	.000 ^b
	Residual	14.512	382	.038		
	Total	153.628	386			

a. Dependent Variable: Intention to use

b. Predictors: (Constant), website quality, social impact, facilities available; and price value.

Source: The results of the statistical analysis of the questionnaire in 2015

Table 6
Coefficients

<i>Model</i>		<i>Unstandardized</i>		<i>Standardized</i>	<i>T</i>	<i>Sig.</i>
		<i>Coefficients</i>		<i>Coefficients</i>		
		<i>B</i>	<i>Std. Error</i>	<i>Beta</i>		
1	(Constant)	.040	.025		1.575	.116
	Website Quality	.088	.031	.131	2.830	.005
	Social Impact	.120	.018	.222	6.797	.000
	Facilities Available	-.048	.029	-.081	-1.658	.098
	Price Value	.722	.034	.714	21.220	.000

a. Dependent Variable: Intention to use

Source: The results of the statistical analysis of the questionnaire in 2015

The table (6) shows that the relationship between (the Bank website quality) and (the intention to use) positive relationship as the value of regression coefficient (B = .088) indicating that an increase in one unit in (Bank website quality) leads to proportional change in the level of (intention to use) by (0.088) of each individual unit, means the website quality has a strong impact on the intention to use. The results of the statistical analysis refers to the acceptance of H1 (*There is a positive impact of bank's website quality on the Intention of using Internet banking*) as the probability value (P = 0.005 < 0.01). This result confirms the findings of the previous studies, such as (Ahn, 2007), (Al-Qeisi, 2009), (ALBUGAMI, 2014).

Table (6) also shows that the relationship between the (Social impacts) and (Intention to use) is an extrusive relationship. Also the regression coefficient value (B = .120) indicating that any increase in one unit in the (social impacts) leads to proportional change in the level of (the intention of Use) by (0.120) of each

individual unit, means that the (social impacts) have a strong influence on (the intention of use). The results of the statistical analysis refers to the acceptance of H2 (*There is a positive correlation between social impacts and the intention to use Internet banking*) as total probability value ($P = 0.000 < 0.01$), and this is contrary to (Venkatesh & *et al.*, 2003) when formulated the theory that the social impact is negligible in voluntary community and become more important in the mandatory use and at the early stages of the experiment.

This result is also inconsistent with several results Studies in Internet banking such as (Al-Qeisi, 2009), (Okonkwo, 2012), (Riffai, *et al.* (2012), (Martins, 2014), (Albugami, 2014); and (Gaitan, 2015). However, this result is consistent with the findings of the many studies have confirmed the positive impact of the social effects on the intention to use Internet banking, such as (Foon, 2011), (Lee S., 2010) °(AbuShanab, 2009) ° (Yeow, 2008).

Table (6) also shows that the relationship between (Facilities available) and (intention to use) is an inverse relationship as the regression coefficient value suggests ($B = -.048$) indicating that any increase in (facilities available) with one unit leads to an adverse change in the level of (intention to use) by (-.048) of each individual unit, suggesting that (facilities available) have an opposite effect in the (intention to use). The result of the statistical analysis is to reject H3 (the existence of a positive effect for Facilities available in the intention to use Internet Banking). This means that customer possession of the hardware necessary to use the service, the speed and Internet connection sustainability, assistance provided to customers and government encouragement in using the service do not affect the decision to use the Internet banking in Sudan. This is consistent with the findings of the theory (Venkatesh, 2003) that the impact of the facilities available to be strong in the mandatory work environment. As for the services provided to customers there is no effect on intention to use by the facilities available, especially in light of the availability website quality. This result is also consistent with (Al-Qeisi, 2009), (Yuen, *et al.*, 2010), (Chong, 2013), (Martins, *et al.*, 2014), (GAITÁN, 2015) and it varies with findings of (Yeow, 2008); (Abu-Shanab, 2009). Table (6) also shows that the relationship between (the price value) and (intention to use) is a extrusive correlation as the regression coefficient value suggests ($B = .722$) indicating that an increase in one unit in (price value) leads to proportional change in the level of (intention to use) by (0.722) of each individual unit, means the price value has a strong impact on the intention to use. The result of the statistical analysis refers to the acceptance of H4 (the existence of a positive impact of price value in the intention to use Internet Banking). That is due to the low cost of Internet connection and the bank fees on the service to help customers using it. This result is consistent with the findings of the Extension's Unified Theory (Venkatesh *et al.*, 2012) and

other several studies including (GAITÁN, 2015), (ALBUGAMI, 2014); (Lee et.al, 2010).

CONCLUSION

This study used multiple regression analysis method to test the study hypotheses. The study concluded that the regression analysis model which includes all the independent variables explain (90.6%) of the change in the intention of use (specifically 0.906 coefficient) with a (99%) degree of confidence, and the level of statistical significance of (0.000) decimal. The study also concluded that the proposed model in this study is offering more power indicators than the basic model **UTAUT** by (Venkatesh et al, 2003), which explains (57%) of the variance in intention to use (**$R^2= 0.57$**), and provides more powerful indicators than **UTAUT2** model which explains (62%) of the variance in intention to use (**$R^2= 0.62$**) (Venkatesh, Thong, and Xu, 2012). Therefore, this indicates that the proposed model significantly contributes to understanding factors influencing the use of Internet banking in Sudan. On the other hand, this study is considered as more powerful in the interpretation of change and variation in intention to use as compared to other relevant studies, such as (ALBUGAMI, 2014), which explained (**73%**) of the variance in intention of use in **Saudi society** and (Martins, Oliveira, and PopovĐc, 2014), which explained (**60%**) of the variance in intention to use, and (Foon, 2011), which explained (**56.6%**) of the variance in intention to use, study (Al-Qeisi, 2009) which explained (**50%**) of the variation in the use of Internet banking.

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