

Perceived Ease of Use and IT Infrastructures Factors and Their Impact on the Customers' Intention to Adopt Digital Banking Services among the Algerian Banks

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Abstract

The current study investigated the factors that affect the adoption of digital banking users in Algeria. Two factors were included in the analysis, namely Perceived ease of use and IT Infrastructures. This study targeted bank customers who have bank accounts in Algerian banks, adults, and those above 18 years old. The research used a quantitative approach based on primary data collected through a survey- questionnaire. A total of 414 finalized respondents were taken further from the distributed questionnaires for data analysis and interpretation using Smart PLS 4.0 and SPSS 26.0. The research framework in this study is guided by the unified theory of acceptance and use of technology (UTAUT). The adoption of digital banking was found to be highly influenced by both criteria, namely Perceived Ease of Use and IT Infrastructures. The analysis process suggested that knowing the link between the factors that have been mentioned in the study and the adoption of digital banking services could assist banking institutions in improving their services. As a result, they would be able to re-evaluate their plans and choices concerning digital banking services, which will enable banking organisations to attract clients and decrease their operating expenses. Despite there is lots of information in previous literature regarding the theoretical factors that may affect the adoption of digital banking services, the researchers only found a small amount of empirical evidence that examined the connection between the adoption of digital banking and the variables that were discussed in this study. The study could therefore be important since it could give banking organisations the foundation and knowledge they need to change while offering a variety of solutions and services to their consumers. Additionally, it might be fascinating for other researchers to be aware of studies like the one at hand since they might think to examine the influence of these types of factors in their own research.

Keywords: Digital banking services adoption; Perceived ease of use; IT Infrastructures; UTAUT theory.

Introduction

As a facilitator of financial transactions and a contributor to economic stability, the banking industry is among the most significant in the economy. In the past, most financial transactions were conducted manually, which frequently led to lengthier transaction times, subpar service, and human errors, among other issues (Mart Hall, 2023). Technology currently plays a major role in the development and success of the services provided by the banking industry. The fast development of banking, information, and telecommunication technology has profoundly changed the structure of the whole financial system, particularly of the banking sector, by decreasing transaction expenses and reducing asymmetric information (Lishomwa & Phiri, 2020).

Due to economic growth and the customer's needs, the majority of banks around the world like Bank of America in the USA, BNP Paribas in France...etc, have updated and shifted from traditional to digital one as well as increased their banking services in order to serve a larger customer base (Wewege, L., Lee, J., & Thomsett, M.

C. 2020). In order to maintain their clients' lives at ease, convenience, and speed by enabling them to conduct financial transactions and banking services regardless of time and location (Alhaliq & Almuhirat, 2016).

In Algeria banking sector is a problem that necessitates serious action. A study done by Tidjani, (2021) noted that Algeria is ranked the lower rate for having a system digitalization. In addition to that, Sekak, (2021) a financial expert claimed that the antiquated technology infrastructures, inadequate payment options, and lack of innovation in digital banking services characterise Algeria's banking and financial sector. Despite the wide government support, digital banking services adoption is a challenging task in Algeria which is at the primary stage of adoption among customers and private businesses.

Banks in Algeria began to provide online banking to the market in 2009. Since then, it has grown in popularity. However, a few years after that the adoption of new technologies and digital services decreased significantly due to the lack of maintenance of the ATM machines as well as the damaged debit and credit cards (The Report Algeria, 2018). In 1953, the United States of America created digital banking, an online platform that enables users to access a variety of financial services. According to Retail Banker International Report, (2020), it helps banks build their customer database, increase client retention, and expand their market share.

Around the world especially the developed countries majority of banks clients of are using digital banking services. Despite the numerous advantages of digital banking for both banks and clients in some developing nations, this trend is still relatively new because these services are still not widely used in some areas, which is a cause for concern (Lishomwa & Phiri, 2020).

Although banks have previously introduced a number of digital services to broaden and speed up digital banking practises in order to promote the Algerian economic sector's development and draw in more clients to use the new digital services . However, unless consumers are willing to adopt these digital banking services, such steps will not be effective (Dorothee & Isabelle, 2021).

Henceforth, the purpose of the current study was to improve the current situation and increase the acceptance of digital banking services by first applying the whole UTAUT model to analyse the factors that customers believed to be the cause of poor adoption. The article will also explore these problems in order to offer suitable solutions and further suggestions

Literature Review

Dependent variable

Customer intention to adopt digital banking services

A technological operating paradigm called "digital banking" enables banks and customers to communicate and transact. Instead of traditional face-to-face encounters, customers and banks can communicate with one another through electronic devices like phones, tablets, and Internet web apps. Additionally, digital banking is a cutting-edge and contemporary form of computer banking (Nguyen, T. T., Nguyen, H. T., Mai, H. T., & Tran, T. T. M. 2020). Similarly, Nguyen et al., (2018) stated that all bank operational activities are automated as part of the new financial business strategy known as "digitalization of banking services" . The Nguyen, (2020) The study focused on the variables that affect Vietnamese customers' intentions to utilise digital banking. According to the author, Vietnam's banks must strengthen information security so that customers fully understand the benefits of using digital banking services. Although Makttoof et al., (2020) study on the factors influencing a client's decision to embrace mobile banking was carried out in Iraq (an Asian Arabic country), Rehman and Shaikh, (2020) and Navavongsathian et al., (2020) investigations were done in Asian non-Arabic nations.

Perceived Ease of Use

Perceived ease-of-use is described as independent from complexity and difficulties required when using digital banking systems (Sunny & George, 2020). The ease of use of digital banking services represents one of the major factors influencing the bank customers acceptance this is according to Tam and Oliveira, (2017) research.

According to Sindhu and Srivastava, (2018) investigation on the factors influencing Indian customers' propensity to utilise mobile banking, perceived ease-of-use had a substantial influence on customers' intentions to use mobile banking. Similarly, a study done by Mohamad et al., (2023) in Malaysia revealed that perceived ease of use has a significant effect on the customers intention to use digital banking. In a Makanyeza, (2017) study of 232 bank clients in Zimbabwe, perceived ease of use had little bearing on respondents' intentions to use digital banking services. As a result of the discussions and researches above there is a inconsistent point of opinions regarding whether perceived ease of use is a significant element leading to high adoption of digital banking services or not a significant aspect. Therefore, more research is necessary because previous studies have not yet verified this factor.

H1. Perceived ease of use has a significant positive impact on has a significant positive impact on the clients Intention to Adopt Digital Banking Services.

Information Technology Infrastructures (ITI)

By emphasising notions, Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003) termed the IT infrastructures in their research as the extent to which a user anticipated that the technological and organisational infrastructures were only to increase the use of technology in various fields, such as business, the economy, sociology, etc.

Lishomwa and Phiri, (2020) conducted a study in Zambia on the key elements that influence customers' intentions to use internet banking, one of the digital banking services, by examining the attitudes of 132 corporate clients. The author discovered that the IT infrastructure's facilitating conditions are not a major factor in people choosing to use internet banking. Similar findings were made by Venkatesh et al., (2003), who discovered that IT infrastructures had a direct impact on how individuals actually behaved when it came to adoption. However, according to Lishomwa and Phiri, (2020), Anouze and Alamro, (2019) the state of the IT infrastructure is not essential for using digital banking services.

H2. IT infrastructures has a significant positive impact on has a significant positive impact on the intention to adopt digital banking services.

Conceptual Framework

The present research, which depends on a critical evaluation of the literature, seeks to understand how perceived ease of use and IT infrastructures connect to customers' intentions to use digital banking services that are provided by Algerian banks.

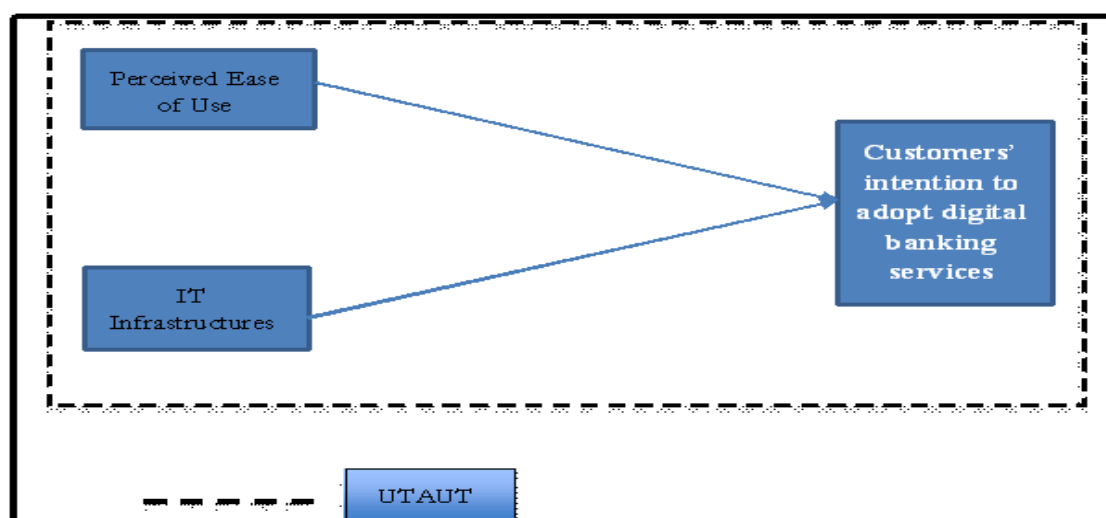


Figure 1: Conceptual Framework.

Analyses

PLS SEM and SPSS have attracted prominent scholars in the quantitative domain in the recent past (e.g., Darwish et al., 2021; Akbar et al., 2021; Wen Ni, 2020). Structural equation modeling using Smart PLS 4 as well as SPSS were used for the data analysis and interpretation. Results from this study are presented in two sections, namely the measurement model and the structural model (Chen et al., 2023).

Sampling

The Algerian banks customers were targeted using the clustered sampling approach. The data was gathered by the authors via a survey questionnaire. In the Algerian banks, 450 questionnaires were distributed; 414 respondents were considered suitable and used for the final analysis and interpretation.

Measurement Model

The measurement model assessment, which includes composite reliability, findings on loading average variance extract, variance in endogenous component, discriminant validity, and effect size, served as the starting point for the model's analyses.

Table 1 Results on Validity and Reliability Assessment.

Constructs	Loadings	CR	AVE
Customers' intention to adopt digital banking services		0.786	0.532
ITA1	0.758		
ITA2	0.753		
ITA3	0.734		
ITA4	0.715		
ITA5	0.684		
Perceived Ease of Use		0.724	0.546
PEOU1	0.703		
PEOU2	0.815		
PEOU3	0.742		
PEOU4	0.688		
IT Infrastructures		0.713	0.539
ITI1	0.688		
ITI2	0.767		
ITI3	0.758		
ITI4	0.720		

This study aimed to assess the validity and reliability of the selected components in the model's prediction, the loadings were initially evaluated. The suggested loading frequency is 0.50 (Henseler et al., 2016). According to the current research, all loads was over the optimum range shown in Table 1.

Composite reliability (CR) scores were used to evaluate reliability. A range of CR 0.70 and higher was advised by Hair Jr. et al., (2017).

In accordance with the current study, all CR values are substantially over the advised range of 0.713 to 0.786.

Additionally, the average variance extract (AVE) was evaluated to gauge the degree of variance between the variable and the indicator (Singh & Teegalapally, (2018) : Hair Jr. et al., (c2017).

As stated by (Hair Jr. et al., 2017; Singh & Teegalapally, 2018) the suggested range of AVE is 0.50 and above and CR is higher than 0.6.

The current study found AVE score ITI 0.539 to PEOU 0.546. According to the results, the research model at hand had attained appropriate reliability and convergent validity.

Measurement model assessment

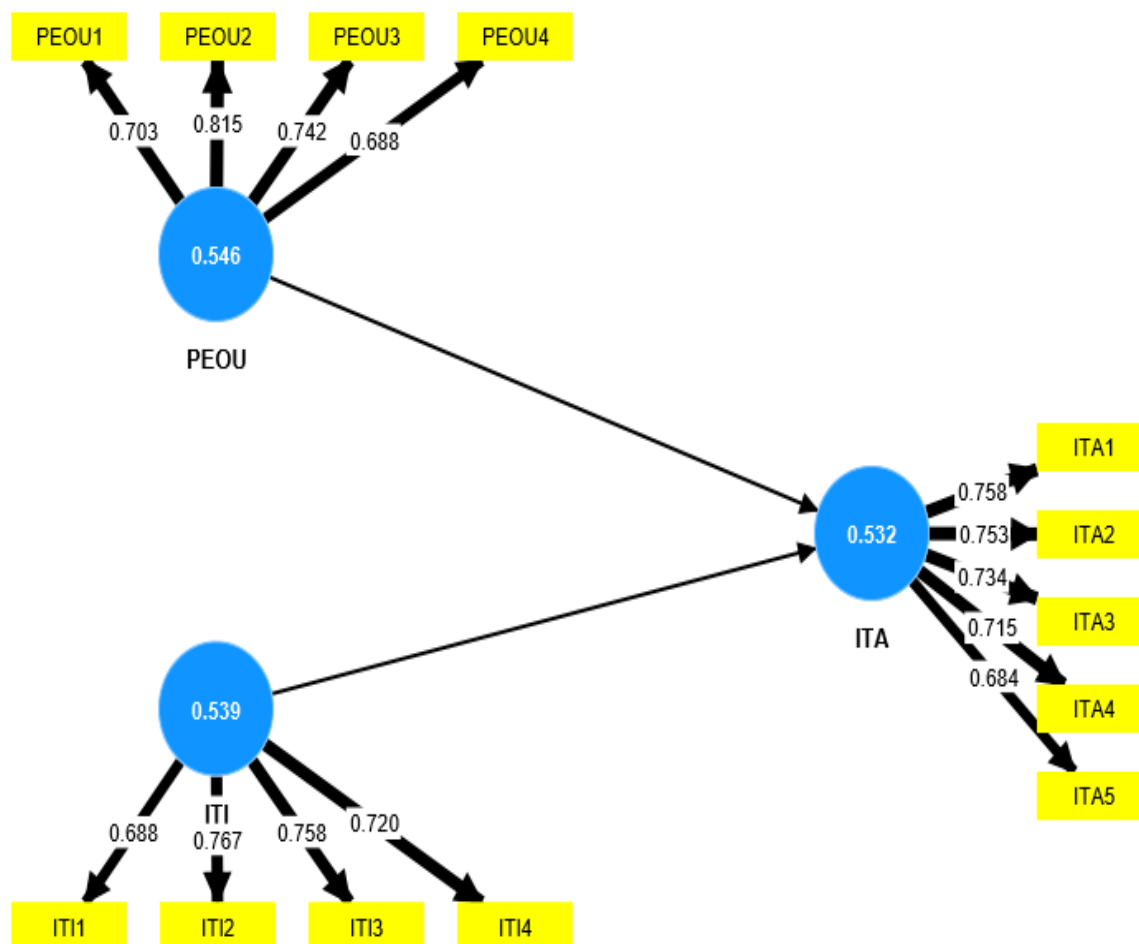


Figure 2: Measurement model

Table 2 shows that all the statements satisfied the criterion of meeting the 0.7 threshold and thus confirms the questionnaire reliability.

Table 2 Cronbach's Alpha Reliability Test Dimension name	Number of statements after factor analysis	Cronbach's Alpha
N=414		
Customers' intention to adopt digital banking services.	5	0.781
Perceived Ease of Use.	4	0.723
IT Infrastructures.	4	0.715

Table 3 Demographic profile

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	276	66.7	66.7	66.7
	Female	138	33.3	33.3	100.0
	Total	414	100.0	100.0	
Workingsector					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Government employee	85	20.5	20.5	20.5
	Company employee	135	32.6	32.6	53.1
	Self-employment	101	24.4	24.4	77.5
	Liberal professions	33	8.0	8.0	85.5
	Retiree	56	13.5	13.5	99.0
	Other	4	1.0	1.0	100.0
	Total	414	100.0	100.0	
Age					
		Frequency	Percent	Valid Percent	
Valid	18 – 20 years old	37	8.9	8.9	
	21 – 30 years old	256	61.8	61.8	
	31 –60 years old	121	29.2	29.2	
	Total	414	100.0	100.0	

Referring to table 3, the majority of respondents is among male respondents which equal to 276 (66.7%) while the minority respondents are among female with 138 (33.3%). Together, both gender added up to a total of 414 respondents. In this study, six working sectors have been selected which are Government employee, Company employee, Self-employment, Liberal professions, Retiree and other. In table 3, the results indicated that most of the respondents regarding the working sector are Company employee with a total of 135 (32.6%) respondents. Followed by a Self-employment with 101 (24.4 %) respondents. In addition, it is reported that respondents of Government employee are 85 (20.5%) and Retiree are 56 (13.5%) respondents, furthermore, the results stated that respondents of Liberal professions are 33 (8 %) respondents. Lastly is the other working sectors which are 4 (1 %) respondents.

Table 3's findings indicate that, out of a total of 414, 256 (61.8%) respondents almost the bulk of study participants are respondents who are between the ages of 21 and 30. The following age category of respondents is those

between the ages of 31 and 60, which includes 121 (29.2%) respondents. 37 respondents (8.9%) out of the total respondents are between the ages of 18 and 20. The next step in the data analysis process was to conduct a correlation test. This test measures degree of association between each pair of variables (Schober & Schwarte, 2018). The appropriate test is the Pearson Correlation Analysis which produced the correlation matrix shown in Table 5

Table 5 Pearson Correlation Analysis of the Model's Variables

Correlations				
		ITA	PEOU	ITI
ITA	Pearson Correlation	1	.747**	.638**
	Sig. (2-tailed)		.000	.000
	N	414	414	414
PEOU	Pearson Correlation	.747**	1	.637**
	Sig. (2-tailed)	.000		.000
	N	414	414	414
ITI	Pearson Correlation	.638**	.637**	1
	Sig. (2-tailed)	.000	.000	
	N	414	414	414

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

Regression Analysis

Assessment of Structural model

Following the correlation analysis, the hypotheses which were stated in this research were tested by regression analysis. This tested the hypothesized influences of the independent variables on the dependent variables.

Based on a p-value of less than 0.05, all suggested hypotheses were approved. The association between PEOU, ITI, and customers' intention of adopting digital banking services has been hypothesised to be favourable and important. According to the findings, the hypotheses were accepted. The current study also discovered a strong positive connection between PEOU and ITA (=0.583, t value= 13.205, p-value = 0.000). Similar assumptions between ITI and ITA were also found to be significant and positive, and were accepted (=0.196, t value=4.346, p-value = 0.000).

Table 1 Results of the regression (model without sociodemographic variables).

Structural model					
Statement	Beta	Std	T-value	P-value	Decision
PEOU□ITA	.583	.044	13.205	.000	Accepted
ITI□ITA	.196	.045	4.346	.000	Accepted

Dependent Variable: ITA.

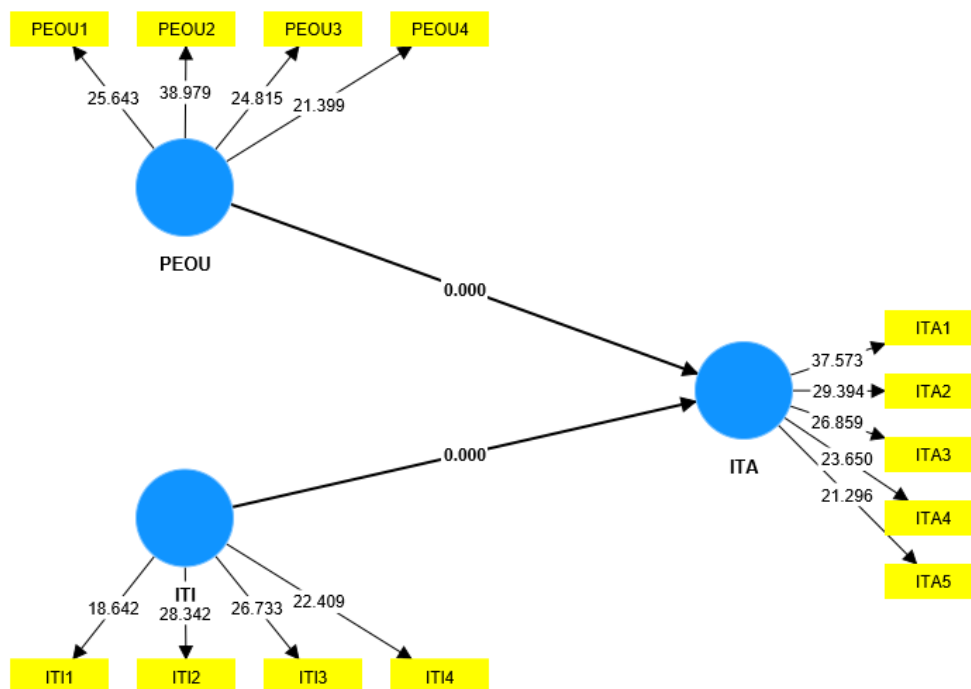


Figure 3: Structural model

Discussion

The goal of this research was to evaluate a framework that would fill several significant scholarly gaps. According to the current study, perceived ease of use and IT infrastructure have a major impact on customers' intentions to adopt digital banking services in Algeria.

Both theoretical and empirical conclusions are drawn from the current research. From a theoretical standpoint, it may be claimed that the study makes a significant contribution to the body of writing on the banking industry. The study clarifies the variables that may affect consumers' intentions to adopt digital banking services.

It introduces two significant determinants perceived ease of use and IT infrastructures. Regarding the empirical consequences of the research, it is helpful in giving banks and governments enough direction on how to enhance banking services by introducing mobile banking, credit, and debit card services. The study clarifies that if the services are easy to use also there are variety of IT infrastructures including the availability of ATM machines and the affordable internet the clients intention to adopt digital banking services will be higher. This paper also elaborates on the contribution of digital banking services in achieving higher customers intention to adopt this new technology. The impact of perceived ease of use and IT infrastructure on customers' intentions to adopt digital services is becoming more potent in banks.

Conclusion

These days, banks are working on developing digital banking services for clients so that they may be more adaptable to satisfy their needs. This study was to examine the factors that affect the adoption of digital banking services. These factors had a significant impact on the adoption of digital banking. A theoretical framework was created to describe the relationship between two independent variables (perceived ease of use and IT infrastructures), dependent variable (customers intention to adopt digital banking services). These significant relationships were examined in research a using quantitative method to test the hypothesis. A quantitative method via a questionnaire was distributed through different face to face to the customers in Algerian banks and ages 18 years and older. There were no limitations on gender and the working sector. This research depended on the clustered sampling method; it was the most suitable for sampling in this study. Data collected in this research took place through the first quarter of 2023. A total of 414 respondents were collected using questionnaire-survey.

Correlation tests showed a significant positive relationship for two independent variables that have been proposed in the theoretical framework: perceived ease of use and IT infrastructures.

Researchers can respond to any research inquiries, based to study findings. This study is anticipated to fill a gap in the literature and bring value and knowledge to it. Previous research were able to describe how consumers in various nations viewed and accepted new technology. The factors influencing the adoption of digital banking services in Algerian banks have been the subject of much less studies. Thus, the study provides a fundamental framework upon which bankers, policymakers, marketers, and software engineers must collaborate in order to increase the adoption of digital banking services.

Limitations and Scope for Future Research

Even though the study has shown remarkable results, there are certain crucial aspects that future researchers should take into account. First, the current study used a quantitative methodology; hence, future studies may take a qualitative or mixed-method approach for higher generalizability of the results. Future research in other areas is also encouraged in order to better understand the impact of perceived ease of use and IT infrastructures on the customers' intention to adopt digital banking services.



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