

FACTORS INFLUENCING INTENTION TO USE ELECTRONIC BANKING IN EAST ALGERIA

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Abstract

This study aims to examine the factors influencing customers' intention to use electronic banking (e-banking) in East Algeria. The proposed conceptual model is based on the Technology Acceptance Model (TAM) with its original postulates: perceived usefulness and perceived ease of use, which is extended to embrace some factors, including perceived risk, awareness, self-efficacy, social influence and resistance to change. The empirical data are collected from a questionnaire survey of 170 valid responses and analysed using the Partial Least-Squares Structural Equation Model (PLS-SEM) approach and Smart-PLS 4. The results show that behavioural intention to use e-banking is influenced directly by perceived usefulness and ease of use and indirectly impacted by self-efficacy.

Keywords: Factors influencing, Intention to use, Electronic banking.

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1. INTRODUCTION

Globalization, competition and rapid growth of IT systems have pushed banks to adopt electronic banking (e-banking) (Belbergui et al., 2020), which offers numerous ways for banks and customers to receive banking services. Whatever their location, clients may always access the service quickly, easily, and round

the clock. For banks, it offers services more affordably and with greater efficiency (Nyangosi et. al, 2009). E-banking is defined as the use of electronic means to execute banking transactions (Kurnia et al., 2010). Automated Teller Machines (ATMs), telebanking, home banking, and internet banking are examples of electronic communication methods via which banks can provide their clients with access to their accounts for business purposes and information retrieval (Siraye, 2014).

E-banking in Algeria is not something contemporary. It has gone through several stages in connection to its development. First, it was introduced in 1975 via individual bank initiatives (Lazreg & Guidouh, 2016). But its real launch was in 1995 with the creation of "Société d'Automatisation des Transactions Interbancaire et Monétique" (SATIM), a division of eight banks tasked with building the infrastructure for electronic payments, followed by the evolvment of an ATM network from 1997 to 2005 (Bellahcene & Khedim, 2016; Oxford business group, 2015). After that, e-banking began to spread across the private and public banks, where "Société Générale Algeria" (SGA) was the first bank to adopt e-banking in 2004, followed by other private banks and later by public banks, especially, CPA in 2008, BNA in 2010 and BDL in 2011 (Charef, 2017). Later, "GIE monétique" (Economic Interest Grouping of electronic banking), an organization with 19 members, including 18 banks and "Agérie post", was established in June 2014 to regulate the interbank electronic payment system, to ensure that it is compatible with the local or global electronic payment networks and to advance financial inclusion (GIE, 2024b), followed by the launch of e-payment service in October 2016 (Oxford business group, 2017) where water, energy (gas and electricity), fixed and mobile telephony providers, insurance and air transport companies and several government entities were the first large billers to have access to this system(GIE, 2024a). Finally, mobile banking was launched at the beginning of 2020 (Benmadani, 2022).

Currently, 42,865,701 transactions have been made since the introduction of online payments, and 510 web merchants are members of the internet payment system by interbank card (GIE, 2024a). Moreover, in conformity with the Statistica website, the « total transaction value in the Digital Payments market is projected to reach US\$8.45bn in 2024 and it is expected to show an annual growth rate (CAGR 2024-2028) of 9.64% resulting in a projected total amount of US\$12.21bn by 2028 » (Statistica, 2024).

Despite the significance of past e-banking initiatives in Algeria, their outcomes remain well below other developing country initiatives (Merbouti & Mestour, 2019). Indeed, Algeria's e-banking is still in its early phases of growth (Oxford Business Group, 2017; Zerhouni, 2016a), and its services are not widely used; only 16% of adults make digital payments (BNP Paribas, 2021) compared to 23% of adults across the MENA region, and 36% of adults in Emerging Markets and Developing Economies (Delort & Poupaert, 2021). Plus, internet banking is only utilized for account balance checking and money transfers from current to savings accounts, while automated banking (the use of payment cards) continues to be the most

widely used and preferred method for performing transactions (Zerhouni, 2016a). Moreover, a small percentage of customers use their local debit cards for purchases, whereas the majority use them for withdrawals, and some of them never actually pick up their cards from their banks (Zerhouni, 2016b).

In light of this matter, and in light of the few types of research that have addressed factors affecting Algerian customers' adoption of e-banking (Hacini et al., 2012; Belhacene & Khedimn 2016; Zerhouni, 2016a; Zerhouni, 2016b), undeniably, there is a need to examine these factors. This study aims to examine the factors influencing customers' intention to use electronic banking (e-banking) in East Algeria by extending the original postulates of the technology acceptance model (TAM) by incorporating the most researched and significant factors that impact e-banking adoption. Therefore, the findings of this study could help strategic planning in banks to encourage and promote customers' adoption of e-banking products and services.

2. LITERATURE REVIEW

The adoption of e-banking with his various initiatives (ATMs, internet banking, mobile banking, etc) has been studied through the application of multiple theories and models such as the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), Innovation Diffusion Theory (IDT) (Rogers, 1983), Theory of Planned Behavior (TPB) (Ajzen, 1985), Technology Acceptance Model (TAM) (Davis, 1989; Davis et al. 1989; Venkatesh & Davis, 2000, Venkatesh & Bala, 2008), Decomposed Theory of Planned Behavior (DTPB) (Taylor & Todd, 1995) and Unified theory of user acceptance of technology (UTAUT) (Venkatesh et al., 2003). Among these presumptions, TAM is the extensively employed paradigm concerning the prediction of e-banking adoption (Cheng et al., 2006; Nasri, 2011; Wang et al., 2003). Based on the Theory of Reasoned Action (TRA), Davis (1989) developed the Technology Acceptance Model (TAM) where he argued that the "system use" is determined by the "behavioural intention to use", which in turn depends on "attitude". This attitude is determined by two beliefs, namely "perceived ease of use (PEOU)" and "perceived usefulness (PU)", which are influenced by external variables.

Further, since its introduction, numerous research have reviewed, expanded upon, criticised and investigated TAM about its internal and external consistency (Opoku and Enu-Kwesi, 2020) and a few new variables based on context have been added to TAM as antecedents, moderator and mediator variables (Anouze & Alamro, 2020). Table 1 explains the different factors that have been found to influence the intention/use of e-banking (with its various types) in some selected studies.

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TABLE 1. SUMMARY OF SOME SELECTED PREVIOUS LITERATURE EXAMINING THE INTENTION TO USE, ACCEPTANCE AND USE OF E-BANKING

| Study | Country | Dependant variable | Significant predictors |
|-----------------------------|--------------------|---------------------------|--|
| Sathy (1999) | Australia | Adoption | Security and awareness |
| Wang et al. (2003) | Taiwan | Intention | Perceived usefulness, perceived ease of use, perceived credibility and computer self-efficacy |
| Cheng et al. (2006) | Hong Kong (China) | Behavioural intention | Perceived usefulness, perceived ease of use, perceived web security and attitude |
| Lee (2008) | Taiwan | Intention | Perceived usefulness, perceived ease of use, security risk, financial risk, time risk, performance risk, perceived benefit, attitude, perceived behavioral control and subjective norm |
| Al-Somali et al. (2009) | Saudi Arabia | usage | Perceived usefulness, perceived ease of use, quality of the internet connection, awareness, social influence, computer self-efficacy, education, trust and resistance to change. |
| Al-Smadi (2012) | Jordan | Intention | Perceived usefulness, perceived ease of use, attitude, subjective norm, perceived behavioural control and uncertainty avoidance. |
| Rifai et al. (2012) | Oman | behavioural intention | Performance expectancy, effort expectancy, trust, Awareness, Output quality, Perceived playfulness and Website-design |
| Maduku (2014) | South Africa | Behavioural intention | Perceived usefulness, perceived ease of use, trust, subjective norm, awareness, quality of connectivity, perceived self-efficacy and attitude. |
| Nasri and Zarai (2014) | Tunisia | Intention | Perceived usefulness, perceived ease of use, social influence, security and privacy, and self-efficacy. |
| Taboli et al. (2016) | Iran | Intention | Perceived usefulness, perceived ease of use, perceived risk, computer self-efficacy, quality of internet and internet access. |
| Hussein and Saad (2016) | Egypt | Intention | Perceived usefulness, perceived ease of use, security, privacy, self-efficacy, resistance to change and awareness. |
| Alhassany and Faisal (2018) | Cyprus | Intention | Perceived usefulness, perceived ease of use, subjective norm, perceived risk, personal innovativeness. |
| Jerene and Sharma (2019) | Ethiopia | Intention | Perceived usefulness, perceived ease of use, perceived financial trust, subjective norm, and awareness |
| Baabdullah et al. (2019) | Saudi Arabia | Usage | Performance expectancy, price value, facilitating conditions, hedonic motivation, habit, system quality and service quality |
| Ho et al. (2020) | Taiwan and Vietnam | Intention | Perceived usefulness, compatibility, perceived risk, self-efficacy, facilitating conditions, perceived behavioural control. |
| Elhajjar and Ouaida (2020) | Lebanon | Intention | Perceived usefulness, perceived ease of use, digital literacy, resistance to change, perceived risk, subjective norms and personal innovativeness. |
| Anouze and Alamro (2020) | Jordan | Actual use | Perceived usefulness, perceived ease of use, security, awareness, reasonable price, Self-efficacy, attitude and intention |

Source: Authors' research

3. RESEARCH MODEL AND HYPOTHESES

Based on Venkatesh and Davis (1996) TAM in which attitude construct is removed from the model, this study attempts to extend this model to other factors that could influence the adoption of electronic banking in the Algerian context. Behavioural intention (BI) was selected as the dependent variable instead of actual usage because behavioural intention is more suitable than actual usage for a survey-based research design; plus e-banking is still underdeveloped in Algeria (Cheng et al., 2006). For the predictors, seven factors are identified from the literature cited in Table 1, which are perceived usefulness (PU), perceived ease of use (PEOU), perceived risk (PR), resistance to change (RT), social influence (SI), awareness of e-banking services (AW) and self-efficacy (SE).

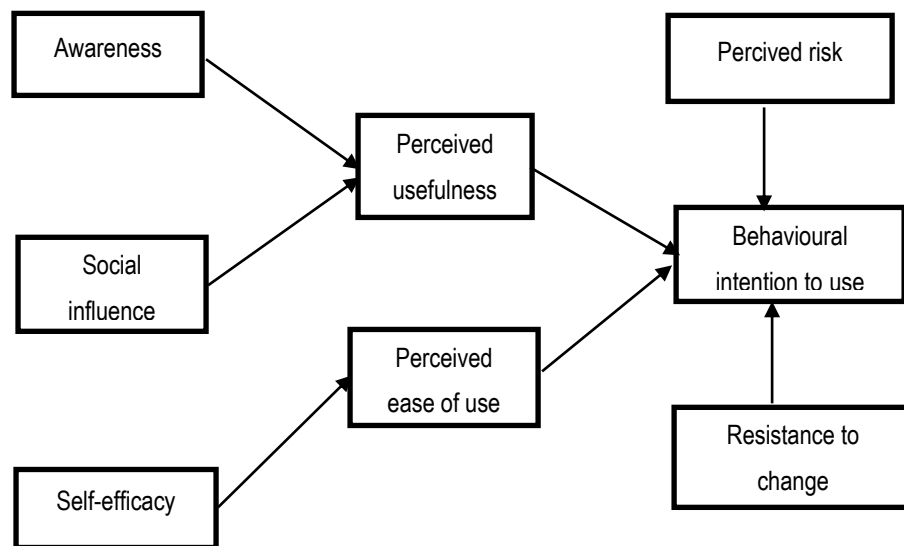


FIGURE 1. RESEARCH MODEL
 Source: Authors' research

Perceived usefulness

Perceived usefulness is defined as the extent to which a person thinks that his performance will be improved when he uses a specific system (Davis, 1989). It is a main determinant of IT systems adoption in different TAM versions (Davis, 1989; Davis et al. 1989; Venkatesh & Davis, 1996; Venkatesh & Davis, 2000; Venkatesh & Bala, 2008). The most preceding investigations have unveiled the chief effect of usefulness on behavioural intention to use e-banking (as shown in Table 1). Thus, the following hypothesis is proposed:

H1. Perceived usefulness positively and significantly influences on behavioural intention to use e-banking services.

Perceived ease of use

Ease of use is defined as the extent to which a person assumes that using a specific system would be easy (Davis, 1989). Just like perceived usefulness, perceived ease of use is composed of a strong predictor of IT systems adoption, and previous studies proved its vital effect on behavioural intention to use e-banking, either directly or indirectly, through perceived usefulness (as shown in Table 1). Therefore, the subsequent hypotheses are put forward:

H2. Ease of use positively and significantly influences the perceived usefulness of using e-banking services.

H3. Perceived ease of use positively and significantly influences behavioural intention to use e-banking services.

Perceived risk

As claimed by Lee (2009) perceived risk in e-banking is defined as the consumer's perceptions of loss when he conducts a particular online transaction. Some researchers have classified it into five dimensions or types namely performance risk, social risk, time risk, financial risk and security risk (Alhassany & Faisal, 2018; Al-Smadi, 2012).

Due to the heterogeneity, intangibility, vagueness, high uncertainty and absence of human interaction that characterize the e-banking field (Sharma et al., 2020), the perceived risk is considered as one of the factors exerting a negative influence on the adoption of e-banking (Alhassany & Faissal, 2018; Al-Smadi, 2012; Cheng et al., 2006; Elhajjar & Ouaida, 2020; Ho et al., 2020; Lee, 2008; Nasri & Zarai, 2014; Taboli, 2016). Hence, we propose the following hypothesis:

H4. Perceived risk has a negative and significant influence on behavioural intention to use e-banking services.

Resistance to change

Every innovation requires change, which in turn generates resistance equivalent to the required change (Elhajjar and Ouaida, 2019). Therefore, resistance to change can be a main handicap to the adoption of e-banking (Tandrayen-Ragoobur & Ayriga, 2011). Sathy (1999) argued that customers will not be willing to change their ways of operating and adopt new technology if they do not satisfy their particular needs. In effect, previous studies hold opposing viewpoints about how resistance to change affects the approval of e-banking. While Elhajjar and Ouaida (2019) found that this effect passes through perceived usefulness and perceived ease of use, Al-Somali (2009) and Hussein and Saad (2016) found a significant effect of

resistance to change on attitude and behavioural intention to use. Consequently, the following hypothesis can be suggested:

H5. Resistance to change negatively and significantly influences behavioural intention to use e-banking services.

Awareness

Previous researchers have reported that the lack of customer awareness of the advantages of e-banking is a main handicap of its adoption (Al-Somali et al., 2009; Maduku, 2014; Sathy, 1999). Therefore, building this awareness is principal for any intention to use e-banking (Anouze & Alamro, 2019). Several studies have found strong support for their hypothesis about the influence of awareness on perceived usefulness (Al-Somali et al., 2009; Anouze & Alamo, 2020; Hussein & Saad, 2016; Maduku, 2014; Sathy, 1999). As a result, the ensuing hypothesis is advocated:

H6. Awareness has a positive and significant influence on perceived usefulness to use e-banking services.

Social influence

Social influence refers to the extent to which a person is aware that others think he should use the new system. It is employed as a direct determinant of behavioural intention as a subjective norm, social factors and image in different theories and models (Venkatesh et al., 2003). To shed light on empirical studies, there is no agreement on how social influence or subjective norms affect the adoption of e-banking. While Jerene and Sharma (2019) found that subjective norm affect behavioural intention to use e-banking either directly or indirectly through perceived usefulness or perceived ease of use, some researchers such as Alhassany and Faisal (2018), Al-Somali et al. (2009) and Nasri and Zarai (2014) have proved that perceived usefulness mediates the effect of the social or subjective norm on e-banking adoption. On this account, we present this hypothesis:

H7. Social influence positively and significantly influences perceived usefulness to use e-banking services.

Self-Efficacy

Self-efficacy is defined as the level of confidence in the ability of a person to do something as required (Maduku, 2014). As stated by previous studies, self-efficacy affects behavioral intention to use e-banking, either directly (Taboli et al., 2016) or indirectly through perceived ease of use (Wang et al., 2003; Al-Somali et al., 2009; Maduku, 2014; Nasri & Zarai, 2014; Aladaileh et al., 2016). Thus, we can propose this hypothesis:

H8. Self-efficacy positively and significantly influences perceived ease of use of e-banking services.

4. METHODOLOGY

To test the proposed hypotheses of this study, a survey was conducted. The instrument of this research was a self-administered questionnaire that was translated into the Arabic language. The survey questionnaire is divided into two parts. The first section is about the demographic profile of the respondents and the preferred methods of performing banking transactions. The second section comprises the measurement items of factors that can affect the intention to use e-banking. Indeed, these measurement items were adopted from several studies, namely (Cheng et al., 2006; Al-Somali, 2009; Lee, 2009; Al-Jabri, 2015; Anouze & Alamro, 2019) and each item was measured on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

The population of this study is the East Algerian commercial banks' customers (users and non-users of e-banking). For aim of the collecting the needed information, and taking into account the vastness of Algeria's geographical area, 210 questionnaires were distributed to a convenience sample through personal interviews in four provinces (wilayat) located in the northeast of the country. The final sample consists of 170 completed and valid questionnaires. The valid response rate is 81.0%.

5. RESULTS

5.1. Respondents' characteristics

Table 2 shows that (57.5%) of respondents are males, and (37.3) are aged between 30 and 39 years old. The majority of the respondents (79.5%) are highly educated, and they are employees of the public sector (71.2%), yet (63.0%) are low-income (DZD -60000 or USD -438 a month). Most of the participants prefer branches (39.3%) and ATMs (30.9%) channels to perform e-banking transactions.

TABLE 2. DESCRIPTIVE STATISTICS OF RESPONDENT CHARACTERISTICS

| Respondent characteristics | Number of respondents (n=170) | Percentage (%) |
|-------------------------------|-------------------------------|----------------|
| Gender | | |
| Male | 96 | 57.5 |
| Female | 71 | 42.5 |
| Age | | |
| Less than 30 years | 33 | 20.5 |
| 30-39 | 60 | 37.3 |
| 40-49 | 45 | 28.0 |
| 50 years and more | 23 | 14.3 |
| Education | | |
| High secondary school or less | 34 | 20.5 |
| Undergraduate | 112 | 67.5 |
| Postgraduate | 20 | 12.0 |
| Monthly income (DZD) | | |
| Less than 20000 | 8 | 4.8 |

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| | | |
|---|-----|------|
| 20000 to less than 40000 | 44 | 26.7 |
| 40000 to less than 60000 | 52 | 31.5 |
| 60000 to less than 80000 | 24 | 14.5 |
| 80000 to less than 10000 | 24 | 14.5 |
| 10000 and above | 13 | 7.9 |
| Occupation | | |
| Public sector | 121 | 71.2 |
| Private sector | 32 | 18.8 |
| Self-employed | 13 | 7.6 |
| unemployed | 4 | 2.4 |
| Preferred methods of performing banking transactions | | |
| Visit bank | 103 | 39.3 |
| ATMs | 81 | 30.9 |
| Internet banking | 40 | 15.4 |
| Mobile banking | 38 | 14.3 |

Source: Authors' research

To assess the proposed model, the partial Partial Least-Squares Structural Equation Model (PLS-SEM) technique was adopted and SmartPLS 4 was used. The reason for using this technique in our study is the ability of the PLS-SEM method to estimate complex and predictive models (Hair et al., 2019).

5.2. Measurement model

The assessment of the measurement model includes indicator loading, internal consistency reliability, convergent validity and discriminant validity (Hair et al., 2019). The results are represented in Tables 3, 4, 5 and 6.

As shown in Table 3 the factor loadings for all the reflective items are higher than the recommended value of 0.70 (Hair et al., 2019). Internal consistency reliability is assessed using Cronbach's alpha (α) and Composite Reliability (CR) (Hair and Alamer, 2022). The Cronbach's alpha and composite reliability also exceeded the recommended level of 0.7 (Hair et al., 2019). The convergent validity is assessed by the Average Variance Extracted (AVE) which describes the degree to which items on a particular construct have a strong positive correlation and share a lot of variances (Hair & Alamer, 2022). Similarly, AVEs were greater than 0.5, as Fornell and Larcker (1981) and Chin (1998) recommended.

TABLE 3. CONSTRUCT VALIDITY, INDICATOR RELIABILITY AND CONVERGENT VALIDITY

| Constructs | Items | Loading | Cronbachs alpha (α) | CR | AVE |
|-----------------------------------|-------|---------|------------------------------|-------|-------|
| Awareness (AW) | AW1 | 0.915 | 0.929 | 0.955 | 0.875 |
| | AW2 | 0.943 | | | |
| | AW3 | 0.949 | | | |
| Behavioural Intention to use (BI) | INT1 | 0.891 | 0.887 | 0.930 | 0.816 |
| | INT2 | 0.938 | | | |
| | INT3 | 0.879 | | | |

| | | | | | |
|------------------------------|-------|-------|-------|-------|-------|
| Perceived ease of use (PEOU) | PEOU1 | 0.819 | 0.836 | 0.891 | 0.671 |
| | PEOU2 | 0.759 | | | |
| | PEOU3 | 0.827 | | | |
| | PEOU4 | 0.869 | | | |
| Perceived risk (PR) | PR1 | 0.914 | 0.940 | 0.957 | 0.848 |
| | PR2 | 0.927 | | | |
| | PR3 | 0.939 | | | |
| | PR4 | 0.902 | | | |
| Perceived utility (PU) | PU1 | 0.796 | 0.877 | 0.916 | 0.732 |
| | PU2 | 0.896 | | | |
| | PU3 | 0.857 | | | |
| | PU4 | 0.869 | | | |
| Resistance to change (RC) | RC1 | 0.752 | 0.807 | 0.873 | 0.634 |
| | RC2 | 0.763 | | | |
| | RC3 | 0.850 | | | |
| | RC4 | 0.816 | | | |
| Self-efficacy (SE) | SE1 | 0.880 | 0.840 | 0.903 | 0.757 |
| | SE2 | 0.852 | | | |
| | SE3 | 0.878 | | | |
| Social influence (SI) | SI1 | 0.936 | 0.919 | 0.947 | 0.857 |
| | SI2 | 0.895 | | | |
| | SI3 | 0.945 | | | |

Source: Authors' research

Discriminant validity determines the degree to which a construct is empirically different from other constructs in the path model, both in terms of how strongly it correlates with other constructs and in terms of how clearly the indicators represent only this one construct (Sarstedt et al., 2014). It was examined via three measures, distinctively, the root of the AVE, the cross-loading matrix and the heterotrait-monotrait ratio of correlations (HTMT). The first one is the Fornell–Larcker criterion (1981), in which the square root of the AVE (diagonal value) for each variable should be greater than the correlation of latent variables (Lertsakornsiri et al., 2022). The second one consists of examining the cross-loadings. It is less accurate than the first. An indicator variable should, as a general rule, have a larger loading on its own construct than on any other construct present in the structural model (Sarstedt et al., 2014). Finally, the HTMT ratio measures how well a construct explains the variance in its own indicators in comparison to other constructs' variance (Hair & Alamer, 2022). The results of Table 4 indicate that the square roots of the AVEs for all the constructs are greater than the inter-construct correlations, as recommended by Fornell and Larcker (1981).

TABLE 4. SQUARE ROOT OF THE AVE

| | AW | BI | PEOU | PR | PU | RC | SE | SI |
|------|--------------|--------------|--------------|--------------|----|----|----|----|
| AW | 0.936 | | | | | | | |
| BI | 0.230 | 0.903 | | | | | | |
| PEOU | 0.233 | 0.423 | 0.819 | | | | | |
| PR | 0.245 | 0.287 | 0.271 | 0.921 | | | | |

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| | | | | | | | | |
|----|-------|-------|-------|-------|--------------|--------------|--------------|--------------|
| PU | 0.213 | 0.514 | 0.365 | 0.256 | 0.855 | | | |
| RC | 0.245 | 0.434 | 0.423 | 0.304 | 0.326 | 0.796 | | |
| SE | 0.316 | 0.377 | 0.635 | 0.350 | 0.404 | 0.424 | 0.870 | |
| SI | 0.213 | 0.244 | 0.122 | 0.117 | 0.219 | 0.341 | 0.080 | 0.926 |

Source: Authors' research

Then, all the loadings are greater than the correspondent cross-loadings as shown in table 5.

TABLE 5. CROSS-LOADING MATRIX

| | AW | BI | PEOU | PR | PU | RC | SE | SI |
|-------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| aw1 | 0.915 | 0.192 | 0.218 | 0.235 | 0.156 | 0.234 | 0.272 | 0.214 |
| aw2 | 0.943 | 0.211 | 0.215 | 0.226 | 0.212 | 0.222 | 0.302 | 0.190 |
| aw3 | 0.949 | 0.235 | 0.222 | 0.230 | 0.218 | 0.233 | 0.310 | 0.200 |
| BI 1 | 0.250 | 0.891 | 0.389 | 0.278 | 0.508 | 0.381 | 0.414 | 0.238 |
| BI 2 | 0.160 | 0.938 | 0.361 | 0.242 | 0.431 | 0.403 | 0.334 | 0.208 |
| BI 3 | 0.206 | 0.879 | 0.394 | 0.255 | 0.448 | 0.392 | 0.268 | 0.214 |
| peou1 | 0.186 | 0.301 | 0.819 | 0.231 | 0.296 | 0.314 | 0.466 | 0.082 |
| peou2 | 0.253 | 0.374 | 0.759 | 0.291 | 0.363 | 0.325 | 0.516 | 0.149 |
| peou3 | 0.100 | 0.378 | 0.827 | 0.135 | 0.200 | 0.340 | 0.486 | 0.062 |
| peou4 | 0.211 | 0.330 | 0.869 | 0.220 | 0.322 | 0.401 | 0.598 | 0.101 |
| pr1 | 0.229 | 0.305 | 0.213 | 0.914 | 0.253 | 0.262 | 0.309 | 0.097 |
| pr2 | 0.235 | 0.262 | 0.294 | 0.927 | 0.179 | 0.267 | 0.321 | 0.103 |
| pr3 | 0.226 | 0.225 | 0.253 | 0.939 | 0.204 | 0.328 | 0.364 | 0.103 |
| pr4 | 0.212 | 0.251 | 0.242 | 0.902 | 0.302 | 0.269 | 0.301 | 0.128 |
| pu1 | 0.175 | 0.392 | 0.361 | 0.261 | 0.796 | 0.320 | 0.407 | 0.174 |
| pu2 | 0.236 | 0.437 | 0.308 | 0.215 | 0.896 | 0.301 | 0.380 | 0.247 |
| pu3 | 0.189 | 0.459 | 0.254 | 0.194 | 0.857 | 0.233 | 0.294 | 0.142 |
| pu4 | 0.129 | 0.468 | 0.325 | 0.206 | 0.869 | 0.263 | 0.302 | 0.184 |
| rc1 | 0.234 | 0.306 | 0.337 | 0.127 | 0.159 | 0.752 | 0.329 | 0.234 |
| rc2 | 0.168 | 0.312 | 0.284 | 0.185 | 0.364 | 0.763 | 0.307 | 0.230 |
| rc3 | 0.222 | 0.405 | 0.339 | 0.307 | 0.339 | 0.850 | 0.348 | 0.356 |
| rc4 | 0.156 | 0.347 | 0.387 | 0.321 | 0.167 | 0.816 | 0.367 | 0.248 |
| se1 | 0.326 | 0.321 | 0.590 | 0.325 | 0.484 | 0.400 | 0.880 | 0.115 |
| se2 | 0.273 | 0.277 | 0.493 | 0.309 | 0.268 | 0.334 | 0.852 | 0.050 |
| se3 | 0.225 | 0.381 | 0.567 | 0.279 | 0.288 | 0.369 | 0.878 | 0.040 |
| si1 | 0.191 | 0.234 | 0.140 | 0.087 | 0.201 | 0.347 | 0.114 | 0.936 |
| si2 | 0.179 | 0.168 | 0.059 | 0.139 | 0.139 | 0.261 | 0.011 | 0.895 |
| si3 | 0.215 | 0.256 | 0.124 | 0.109 | 0.244 | 0.324 | 0.079 | 0.945 |

Source: Authors' research

Furthermore, as shown in Table 6, all the HTMT values are lower than the required threshold value of 0.90 by Henseler et al. (2015) indicating that discriminant validity is valid for this study. Thus, the reflective constructs were empirically established to be valid and reliable.

TABLE 6. HETERO-TRAIT-MONOTRAIT RATIO OF CORRELATIONS (HTMT)

| | AW | BI | PEOU | PR | PU | RC | SE | SI |
|------|-------|-------|-------|-------|-------|-------|-------|----|
| AW | | | | | | | | |
| BI | 0.249 | | | | | | | |
| PEOU | 0.260 | 0.490 | | | | | | |
| PR | 0.263 | 0.309 | 0.303 | | | | | |
| PU | 0.232 | 0.581 | 0.421 | 0.281 | | | | |
| RC | 0.284 | 0.509 | 0.513 | 0.341 | 0.384 | | | |
| SE | 0.355 | 0.432 | 0.748 | 0.395 | 0.465 | 0.513 | | |
| SI | 0.229 | 0.261 | 0.133 | 0.130 | 0.233 | 0.382 | 0.090 | |

Source: Authors' research

5.3. Structural model

Multicollinearity

To ensure that regression is not biased, collinearity must be examined (Hair et al., 2019). The results of VIF values are summarized in Table 7. The results show that VIF values are lower than threshold 3 (Hair et al., 2019) indicating the absence of a multicollinearity problem.

TABLE 7. VARIANCE INFLATION FACTOR (VIF) VALUES

| | BI | PEOU | PU |
|------|-------|-------|-------|
| AW | | | 1.098 |
| BI | | | |
| PEOU | 1.331 | | 1.064 |
| PR | 1.154 | | |
| PU | 1.227 | | |
| RC | 1.318 | | |
| SE | | 1.000 | |
| SI | | | 1.054 |

Source: Authors' research

Hypotheses testing

To test the structural model and hypotheses, the path analysis and significance of path coefficients were examined. Bootstrapping was performed on 5000 resamples, as suggested by Hair et al. (2017). Table 8 demonstrates the PLS estimation results.

The results of Table IX show that behavioural intention to use e-banking is significantly influenced by perceived usefulness ($\beta = 0.357; P < 0.01$) and perceived ease of use ($\beta = 0.179; P < 0.05$), thereby supporting H1 and H2, respectively. Similarly, resistance to change have a significant positive influence (contrary to the expectations) on behavioural intention to use ($\beta = 0.217; P < 0.01$). However, perceived risk ($\beta = 0.081; P = 0.212$) does not influence significantly behavioural intention to use. As a consequence, H4 and H6 are not supporting. Perceived ease of use ($\beta = 0.321; P < 0.01$) has a significant influence on perceived usefulness, thus H3 is supported, while awareness ($\beta = 0.1047; P = 0.241$) and social influence ($\beta = 0.158; P = 0.074$) do not appreciably influence perceived usefulness; therefore H6 and H7 are not supported. Finally, self-efficacy is a strong predictor ($\beta = 0.635; P < 0.01$) of perceived ease of use; thereby, supporting H8.

TABLE 8. HYPOTHESIS TESTING RESULTS

| Hypothesis | Path | Coefficient path β | t-statistics | P value | Decision |
|------------|------------|--------------------------|--------------|---------|---------------|
| H1 | PU -> BI | 0.357 | 4.684 | 0.000 | Supported |
| H2 | PEOU -> PU | 0.321 | 4.449 | 0.000 | Supported |
| H3 | PEOU -> BI | 0.179 | 2.218 | 0.027 | Supported |
| H4 | PR -> BI | 0.081 | 1.294 | 0.196 | Not Supported |
| H5 | RC -> BI | 0.217 | 2.999 | 0.003 | Not supported |
| H6 | AW -> PU | 0.104 | 1.174 | 0.241 | Not supported |
| H7 | SI -> PU | 0.158 | 1.789 | 0.074 | Not supported |
| H8 | SE -> PEOU | 0.635 | 11.146 | 0.000 | Supported |

Source: Authors' research

With a focus on appraising the quality of the structural model, the coefficient of determination (R^2), effect size (f^2), and predictive significance (Q^2) were calculated. The conclusions are reported in Table 9.

The R^2 measures the explained variance in each of the endogenous constructs (Hair et al., 2019). Table 9 manifests a moderate level of predictive power for perceived ease of use and intention to use e-banking variables with 0.403 and 0.377 R^2 values respectively and a weak predictive power for perceived usefulness with an R^2 value equal to 0.174 (Hair et al., 2019).

The effect size (f^2) is assessed according to Cohen's (1988) measures, where a value of 0.02 is considered small, 0.15 medium and 0.35 large effect of size. Table 9 shows that only two hypotheses H8 and H1 have a large and medium effect with (0.676) and (0.167) values respectively; while the rest of the hypotheses have either a small or very small effect.

To obtain predictive relevance values (Q^2) of the endogenous constructs, the blindfolding procedure is used. As a rule of thumb, Q^2 values higher than 0, 0.25 and 0.50 represent a small, medium and large predictive relevance of the model (Hair et al., 2019). Table 9 reveals a medium predictive relevance of behavioural intention to use e-banking and perceived ease of use and small predictive relevance of

perceived usefulness. Thus, confirming the predictive relevance among endogenous variables in the model.

TABLE 9. R², Q² AND F² VALUES

| Path | Constructs | R ² | Q ² | f ² | Decision |
|------|------------|----------------|----------------|----------------|------------|
| | BI | 0.377 | 0.289 | | |
| | PEOU | 0.403 | 0.252 | | |
| | PU | 0.174 | 0.110 | | |
| H1 | PU -> BI | | | 0.167 | Medium |
| H2 | PEOU -> PU | | | 0.117 | Small |
| H3 | PEOU -> BI | | | 0.039 | Small |
| H4 | PR -> BI | | | 0.009 | Very Small |
| H5 | RC -> BI | | | 0.057 | Small |
| H6 | AW -> PU | | | 0.012 | Very small |
| H7 | SI -> PU | | | 0.029 | Small |
| H8 | SE -> PEOU | | | 0.676 | Large |

Note : f² : 0.02, small ; 0.15, medium ; 0.35, large

Source: Authors' research

6. DISCUSSION

The results of this study indicated a significant effect of perceived usefulness and perceived ease of use on behavioural intention to use e-banking and a significant effect of perceived ease of use on perceived usefulness. Moreover, it is found that perceived usefulness has more impact on behavioural intention to use than perceived ease of use. These results provide support for the original TAM findings with Davis (1989) and the majority of previous studies. Furthermore, this study showed that self-efficacy is a strong predictor of perceived ease of use. This result is in agreement with the findings provided by Venkatesh and Davis (1996) in which they confirmed the impact of computer self-efficacy on individual's perception of a particular system's ease of use. Plus, previous studies confirm this result (e.g., Al-Somali et al., 2009; Anouze & Alamro, 2020; Hussein & Saad, 2016; Maduku, 2014; Nasri & Zarai, 2014; Taboli et al., 2016; Ho et al., 2020; Wang et al., 2003). This is explained by the fact that if Algerian bank customers perceive that they have good experience with the technology, they can perform e-banking transactions easily.

Pertaining to perceived risk, it was found that it had an insignificant influence on behavioural intention to use e-banking. This result contradicts the findings of previous studies (Alhassany & Faissal, 2018; Elhajjar & Ouaida, 2020; Ho et al., 2020; Hussein & Saad (2016); Lee, 2008; Nasri & Zarai, 2014; Taboli et al, 2016), but it agrees with Gao and Owolabi (2008) and Lichtenstein and Williamson (2006) findings where they attributed it to customers' adaptation and acceptance of risks, so this may also apply to the Algerian bank customers. In other words, this result can imply that Algerian bank customers are not concerned about the safety of e-banking services because to perform their transactions they use the primitive forms of

e-banking technology such as ATMs (as shown in the descriptive statistics in Table 2) which are relatively safe compared to any other e-banking forms like internet banking or mobile banking or to perform relatively safe operations like account balance checking and money transfers from current to savings accounts (as indicated in the introduction above). In addition, it was found that resistance to change, contrary to expectations, had a positive and significant influence on the intention to use e-banking. This result is in line with the perceived risk result because bank customers will resist using e-banking only when they perceive it risky (Elhajjar & Ouaida, 2020). This means that as long as Algerian bank customers do not perceive that e-banking services are risky, they will not resist using them.

Findings showed also that social influence had no significant effect on perceived usefulness. This finding, although, is not consistent with the findings of previous studies (e.g., Al-Somali et al., 2009; Al-Smadi, 2012), it confirms the findings of Baabdullah et al. (2019), Riffai et al. (2012) and the suggestion of Venkatesh et al. (2003), which states that social influence is not significant in a voluntary context. Finally, it was found that awareness did not, significantly, influence the perceived usefulness. Although this result is in disagreement with the majority of previous studies, some studies have noticed the non-significant impact of awareness on perceived usefulness such as Elhajjar and Ouaida (2019). This can be explained by Algerian bank customers having not yet reached a level of awareness that makes them convinced of its usefulness due to the lack of awareness campaigns by the banks.

7. CONCLUSION

This study used an extended TAM model with two extra variables: perceived risk and resistance to change and three external variables: social influence, awareness and self-efficacy. Based on the statistical analysis and the results of the study, we have concluded that perceived usefulness is the most significant factor that exerts a direct influence on behavioural intention to use e-banking followed by ease of use, and self-efficacy is the most factor that affects indirectly this behavioural through ease of use and usefulness factors.

Undeniably, this study has significant theoretical contributions. It confirms the power of the TAM model with its two constructs PU and PEOU and self-efficacy as antecedents of PEOU to predict the adoption of e-banking in a developing country such as Algeria. On the practical side, the findings of the study can guide strategic planning in banks to encourage and promote e-banking in Algeria. Bank managers should focus on the beneficial use of e-banking, especially Internet and mobile banking, and the e-banking services should be designed and provided in a way that makes it easy to use and uncomplicated.

Furthermore, banks should enhance customers' self-efficacy to perform different e-banking transactions via education and training.

However, this study, such as any study, suffers from some limitations. Firstly, it was carried out in only one region in Algeria. Secondly, this study fully focused on the customers' perspective. Finally, this study did not examine the differences in adoption behaviours among various customer groups (users and non-users).

Therefore, further studies with a larger representative of all regions, exploring other factors and models that are suitable for the Algerian e-banking context, taking into account the banks' perspective and examining the differences in adoption behaviours between users and non-users of e-banking are suggested.

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