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Determinant factors of market acceptance of the digital banking technology in the brazilian context

Fatores determinantes da aceitação de mercado da tecnologia do banco digital no contexto brasileiro

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RESUMO

Este trabalho teve como objetivo estudar os fatores que influenciam a intenção de uso dos bancos digitais pelos potenciais consumidores no Brasil. O referencial teórico fundamenta-se no Modelo de Aceitação da Tecnologia (TAM). Muito embora já tenham sido realizados estudos semelhantes sobre este tema, em vários contextos e em outros países, este é um estudo pioneiro no contexto brasileiro, sobre este tema específico, utilizando o referido modelo. Por meio de uma abordagem descritiva e quantitativa, dados foram coletados a partir de um questionário, em uma amostra não representativa de 113 potenciais usuários. A análise dos dados foi feita através de regressão linear multivariada. Os resultados indicaram que a percepção de utilidade, a percepção de satisfação, percepção de segurança e privacidade, bem como a renda afetam positivamente a intenção de uso do banco digital e são os fatores mais significativos para a amostra estudada. Além da contribuição acadêmica para os estudos sobre aceitação de tecnologias bancárias, as conclusões contribuem para que os bancos digitais construam estratégias que agreguem valor à percepção desses fatores pelos potenciais consumidores de produtos bancários.

Palavras-chave: Aceitação de mercado; Aceitação de tecnologia; Banco digital; Marketing; Brasil.

ABSTRACT

This study aimed to evaluate factors that influence the intention of using digital banks by potential consumers in Brazil. The theoretical framework is based on the Technology Acceptance Model (TAM). Although similar studies on this subject have already been conducted, in various contexts and in other countries, this is a pioneer study on this specific topic in the Brazilian context, using the aforementioned model. By means of a descriptive and quantitative approach, data were collected using a questionnaire, in a non-representative sample of 113 potential users. Data analysis was performed using multivariate linear regression. The results indicated that the perception of utility, the perception of satisfaction, the perception of security and privacy, as well as income, positively affect the intention to use the digital bank and are the most significant factors for the studied sample. In addition to the academic contribution to studies focused on the acceptance of banking technologies, the conclusions contribute to enabling digital banks to build strategies that add value to the perception of these factors by potential consumers of banking products.

Keywords: market acceptance; marketing; technology acceptance; digital bank; Brazil.

INTRODUCTION

For many years, the financial field has benefit from the low competition due to the concentrated marked structure and to the factors linked to regulation (Claessens & Laeven, 2005; Clerides, Delis, Kokas, 2015). However, the challenges imposed by the new digital technologies have waken the need of change, both in quality (Filgueiras & D'Amorim, 2019) as well as variety of services. In this context, when technology trends and new necessities by the consumers are not identified, in time, this may result in loss of competitiveness or even extinction.

According to the new trends in the financial field regarding the use of digital technologies, new business models have appeared and banks started to face competition of newcomers in the market. Fintechs (abbreviation of

financial technology in English) have appeared as new solutions, which show an incremental or radical/disruptive innovation development of apps, processes, products or business models in the industry of financial services (Alt & Purschmann, 2012; Chuang,Liu & Kao, 2016). In Brazil, according to the Fintech lab survey, until August 2020, there were already 771 fintechs, with a growth of 28% regarding 2019 (FINTECHLAB, 2020). Such initiatives represent a threat to traditional banks, which search for strategies of modification to become closer to the fintech's model,, having the advantage of having a consolidated basis of profitable clients, but with the challenge of adapting spendable structures. Digital banks appear as a strategy from traditional banks to implant a new business model, proposing initiatives that ally digital technologies to financial services and to innovate in the client's experience (Larsson &Viitaoja, 2017; Cook, 2017; Mbama & Azepue, 2018).

In Brazil, one of the first initiatives of implanting a no-agencies bank model and with remote access occurred in 2000. According to Veiga & Oliveira (2006), the initiative was inspired by the banks Cortal from France and First Direct from England, the first Brazilian digital bank received the name Bank1.net. However, in 2004 the bank finished its activities, being incorporated by its stockholder Unibanco, which absorbed its 72 thousand clients (Business Paper, 2019).

Despite the fact that many technological changes occurred since the first Brazilian initiative of a digital bank the early years of 2000, the accessibility of the Brazilian people to banking technologies has a path to cover when compared to other countries. According to the most recent report on financial inclusion, elaborated by the World Bank (Demirguc-Kant et al, 2017), in 2017, 69% of adults in all world possessed a banking account. In high income economies, 94% of the adult population possess a banking account and, from this number, 91% perform operations in digital platforms. In development economies, 63% of adults have banking accounts and 70% of them use the account for digital operations. The Central Bank has analyzed

such open data for Brazil and has disclosed that 70% of the Brazilian population have banking accounts, low percentage, but close to the presented by the other countries that compose the BRICs, such as Russia, India and China. Only 12.9% of the Brazilian population used the internet or a cell phone to access the accounts and the percentage of people who declared having performed or received a digital payment was of 57.9%. Compared to the OCDE countries, such value was of 92.1% (Central Bank of Brazil, 2017).

The new technologies (Ross & Sebastian, 2017), consumer's behavior (Kotler; Kartajaya & Setiawan, 2017) and a more favorable regulatory condition (Banco Central Do Brasil, 2016) are part of the current context, and have contributed for the recent growth in the availability of products and financial services and adherence to the digital bank's model. However, there is still much to expand and several may be the factors which are limiting such movement. That is the reason for the importance of researching the determinants of acceptation of digital technologies by the clients in the recent context, when the use of the referred technologies is more present in people's daily life. It has become necessary to test whether there is, in fact, a higher propensity of the population to accept the digital bank and which factors are the most relevant, for the adherence of such individuals.

Therefore, the analysis of the acceptation of new technologies in the banking sector, according to the user's perspective, although this has been a much explored theme, it has become necessary, at the moment, due to the leverage of the digital relationship and consequently competitiveness between digital banks. The banking sector is one of the biggest investors in Information Technology (IT) in Brazil (Kovalczyk, 2017; Faria & Maçada, 2011) and one of the first to match its development in automation to foreign levels (Diniz, 2004), therefore, studies on the acceptation of digital technologies by clients will always have interest by part of the sector.

The most know theoretical models in the literature on the theme are TAM (Technology Acceptance Model), the UTAUT (Unified Theory of Acceptance and Use of Technology), the IDT (Innovation Diffusion Theory) and their variations.In common, such models enable to identify the main factors that determine the acceptation of new technologies (Pikkarainen et al., 2004; Im, Hong, & Kang, 2011; Hanafizadeh, Keating & Khedmatgozar, 2014; Shaikh & Karjaluoto, 2015). As explained by Bijker & Law (1992), the technologies are not altered only under internal, technological or scientific logic, but according to their evolution or changes are pressed towards new configurations due, also to historical, economic, political, psychological and sociological facts. This way, the new proposed business model by the digital bank does not only propose the non-existence of agencies, but also, the use of digital technologies which promote a different consume experience, with higher efficiency and agility in service provision, showing not only the channels for relationship with clients, but the delivery of more personalized products.

The question of research is defined, therefore, as: "Which factors are associated with the intention of using digital banks in Brazil"?

To solve such question, an exploratory study, with limited sample, in the city of Salvador, was performed, using the TAM theoretical model, in the perspective of the potential user of digital bank.

THEORETICAL FOUNDATION

The most used theoretical models on acceptation of technology are presented as follows and the option for the TAM model is justified. Based on the literature, hypothesis are derived.

Theories and Models of Technology Acceptance

The acceptance of technologies is a theme that has aroused quite interest of researchers for decades, and several theories and models of

analysis have been used to identify their determinants. The most used models in researches follow three perspectives: psychological, technological and social (Hanafizadeh, Keating & Khedmatgozar, 2014). The most found in the literature on banks are: The Innovation Diffusion Theory, proposed by Everett M. Rogers in 1962; the Theory of Rational Action, introduced by Icek Ajzen and Martin Fishbein in 1975; the Theory of Planned Behavior, from author Icek Ajzen, in 1985; the Technology Acceptance Model (TAM), by Fred Davis, in the year of 1986; the Social Cognitive Theory, proposed by Albert Bandura, in 1989 and the United Theory of Acceptance and Use of Technology (UTAUT), from Venkatesh et al (2003), which deals with an effort to unite the 5previous theories.Such theories are structured under different constructs, and the authors use, in their studies, one of these specific theories of acceptance or an extension of them. Table 1 presents a brief review of some of the studies which used the aforementioned theories.

Table 1– Summary of the Theories of technology acceptance

Theory	Authors/Year	Constructs
Innovation Diffusion Theory (IDT)	Rogers (1962)	Relative advantage, compatibility
Theory of Rational Action	Fishbein e Ajzen (1975)	Attitude, subjective rule
Theory of Planned Behavior	Ajzen (1980)	Attitude, subjective rule, perceived behavioral control
Theory of Acceptance of Technology	Davis (1986)	Perceived ease of use and utility
Social-Cognitive Theory	Bandura (1989)	Human agency and self-efficiency
United Theory of Acceptance and Use of Technology	Venkatesh et al (2003)	Performance expectation, effort expectation, social influence and facilitating conditions

Source: Own elaboration from review of literature (2020)

According to the study of Hanafizadeh, Keating & Khedmatgozar (2014), four inter-related perspectives of research define the study filed of banking services in the internet: (i) banking services, which investigate and classify the several financial services offered in the internet banking environment; (ii) channels of distribution, which are dedicated to analyze the advantage of different channels of distribution, the factors that influence the strategies of each channel and the distribution in thebanking services delivery; (iii) the

perspectives of banks and bank managers, bringing the institutional point of view, which studies present the management attitudes in the acceptance of technologies such as the internet and the strategic value in the application; and (iv) the client's perspectives, which encompasses the studies dedicated to bank clients, their attitudes, motives, expectations and beliefs regarding the acceptance of technologies. It is in this last group that the present studies is inserted, aiming at bringing some contribution.

For the construction of our conceptual model, the variables of TAM were elected, since this is a highly tested model and applied in studies on technology acceptance by clients of the banking field, and influential to understand the acceptance of information systems. It is a well-established economical model, and the critics at the same time refer precisely to its strong point, which is the parsimony (Lee, Kozar & Larsen, 2003; Yiu, 2007; Pires & Costa Filho, 2008; Cruz et al, 2010), which lead some authors to include additional variables, complementing its capacity of explaining the phenomenon of technology acceptance.

Technology Acceptance Model (TAM)

The Technology Acceptance Model – TAM was formulated by Davis (1989), with the purpose of predicting the acceptance and use of new technologies of information within the organizations. In his formulation, the author argues that potential users create motivational trends immediately after being exposed to new information technologies,even before such trends result in an observable behavior. The theory is founded in two main constructs: Perceive Ease of Use (PEOU), conceptualized as the level of belief from the individual in which the system will not demand either physical or mental effort; and the Perceived Usefulness, which is the level of the belief of the individual that the system will improve one's performance at work (DAVIS, 1986). TAM has been one of the most influential models of technology acceptance (Charness & Boot, 2016). TAM serves as a very useful general

framework and it is consistent with a series of investigations on the factors that influence the intention of adults in using a new technology (Braun, 2013).

Studies have shown that the original TAM is a solid psychometric scale and explains over 47% of the variance observed in the consumer's attitudes towards the acceptance of new technologies (Thompson, Higgins & Howell, 1994; Pires & CostaFilho, 2008). The authors Benbasat & Barki (2007) highlight that TAM remains as being the most consistent theoretical reference applied in the area of technology acceptance and that the several posterior theoretical attempts have always returned to the constructs of the original model. There were several other academic studies based on the original TAM model, including studies focused on aspects of acceptance of technologies aided by the internet, as for example Davis et al. (1989) and Davis e Venkatesh (2000). This way, it is justified the choice made here, by theformulation of a conceptual model using the original TAM for the present study, over the subsequent versions presents in the literature for the following reasons: a) it is an economical model, therefore, useful for a first approach; b) it has shown to be a proper model to the size of the sample selected in this study, revealing the characteristics chosen and attending the purposes of the study; c) it has a relevant degree of explanation, justifying almost half of the alterations in the intention of using the new technology. This way, the use of the original TAM means that other contextual factors as for example, the ecosystem of innovation and also the cycle of innovation, have not been included in the analysis. (Jha & Bose, 2016).

Considering the purpose that guides the present study, the study of Pikkarainen et al (2004) provided the main references regarding constructs and measures. As advised by Bhatiasevi (2016), popular models extensively used in the past are subject to new investigations, in order to test similarities and differences of the results under the perspective of other contexts. It is what has been done in the present study.

Acceptance Determinants and Hypothesis

As follows, the determinants selected in the literature and the hypothesis to be tested are described.

Perception of Ease of Use (PEOU)

The variable Perception of Ease of Use is originated from the own TAM model itself and, according to Davis (1986), represents the level in which the individual believes that a use of a certain system does not demand great physical or mental effort. Such variable has already been widely chosen in studies on the adoption of technologies in banks, such as internet banking and mobile banking and there are many evidences in the literature that the PEOU has meaningful effect, direct orindirectly, on the acceptance by part of clients (Pikkarainen et al, 2004; Cheng, Lam & Yeung, 2006; Fernades & Awamleh, 2006; Lee, 2009; Laukkanen, 2016; George, 2018). According to Laukkanen (2016), the PEOU by the user highlights the feeling that the service provider has the ability to deliver a quality system. This way, the first hypothesis to be tested is:

H1: The perception of ease of use has positive effect in the intention of use of the digital bank.

Perception of Utility (PU)

The perceived utility is defined by Davis (1986) as the level in which an individual believes that the use of a certain system will improve the performance at work. It is a very important characteristic, which affects the diffusion of a new technology both in organization environments as well as non-organizational, which is is the case of use by clients (Kishore & Sequeira, 2016). It is worth highlighting the importance observed in previous studies on mobile banking, which observed that the perceived utility is one of the most relevant factors between the elements that explain the intention of use (Baptista & Oliveira, 2015; Ha et al, 2012). This way, it is hoped that such characteristics would raise the chances of using a digital bank, such as the way defined, therefore, by the second hypothesis:

H2: The perception of utility has a positive effect in the intention of using a digital bank.

Perception of Satisfaction

Konradt, Christophersen & Schaeffer-Kuelez (2006) identified that satisfaction is a determinant when it comes to technology acceptance, since it influences the intentions of re-buying and re-using. According to Davis, Bagozzi & Warshaw (1992), the perception of satisfaction may be defined as the level in which the activity of using a computer interface is perceived as something pleasant by itself. Pikkarainen et al (2004) identified that the Satisfaction Perception is a meaningful variable to explain the acceptance. Santouridis & Kyritsi (2014) defend that the intentions of using the internet banking could be negatively affected by a high level of satisfaction with the traditional channel (banking agencies with physical structures), but that, on the contrary, traditional banking agencies, electronic channels also constitute achannel of self-attendance based on technology, and it is more likely that the satisfaction with them may be demonstrably influenced positively by internet banking. Based on such evidences, the third hypothesis is defined:

H3: The perception of satisfaction has a positive effect in the intention of use of the digital bank by consumers.

Perception of Security and Privacy

Electronic commerce operations involve a risk perception, and mobile banking is also within this context (Malaquias & Hwang, 2016). Risk perception was considered the main barrier of acceptance of mobile banking in China (Laforet & Li, 2005) and in several countries belonging to the European Community (Fonseca, 2014). The potential users of mobile banking services will effectively use them when they believe that they will come to a conclusion: security of their transactions; they hope for a better protection of their personal and financial information by part of the bank, when using those channels (Bhatiasevi, 2016). Clients have preoccupations with security and privacy, that's why they hope that mobile technologies become reliable and

that their banks can develop them safely (Zhou, 2012; Hanafizadeh Et Al, 2014). Therefore, the fourth hypothesis defined in the study is:

H4: The perception of security and privacy has a positive effect in the intention of use of the digital bank by consumers.

Social-demographic variables

Several studies on the acceptance of technological services have included demographic variables on their analysis, complementing the capacity to explain traditional models, when analyzing the impacts of such variables on the technological and behavioral constructs (Harrison; Rainer, 1992; Laukkanen 2016; Cruz et al, 2009; Malaquias & Hwang, 2019). In common, such studies highlighted that individual more prone in adopting new technologies tend to be younger, have higher income, be from masculine gender and have higher level of instruction than those who are not so susceptible to adopting the technology (Darian, 1987; Venkatraman, 1991; Karjalouto, Mattila & Pento, 2002).

Family income was pointed out in previous studies with positive effect on the acceptance of banking services on the internet (Karjalouto, Mattila & Pento, 2002; Mauter, 2005). The studies of Meuter (2005) suggest that the income increase may also increase the possibilities of access to more updated devices (computers and mobile devices, for example) and provide motivations for economy in time and practicality in the relationship with the bank.

Therefore, it was focused on the income and, to better understand the influence of such characteristic on the acceptance of the digital bank, the fifth hypothesis is established:

H5: Higher family income clients have higher intention of using a digital bank.

Regarding age, the results indicate that older consumers have higher resistance in adopting new technologies (Harrison & Rainer, 2012).

Mohammadi (2015) identified that young people may be less resistant in adopting new technologies, such as mobile banking, due to the fact that they perceive lower risk levels in the referred modality. Venkatesh et al.(2003) and Wang, Wu & Wang (2009) stated that young people tend to develop higher trust levels in mobile banking services than older interviewees. According to Mattila et al. (2003), older clients present a perception of difficulty significantly higher in the use of computers and a higher level of insecurity perceived when compared with other clients. Based on such evidences, the sixth hypothesis to be tested is described as follows:

H6: Age has a negative effect in the intention of using the digital bank.

This way, from the definition of the group of hypothesis, formed based on the explored literature, it was aimed to test and to know, among them, which the most significant and representative are, to explain the acceptance of technology in digital banks.

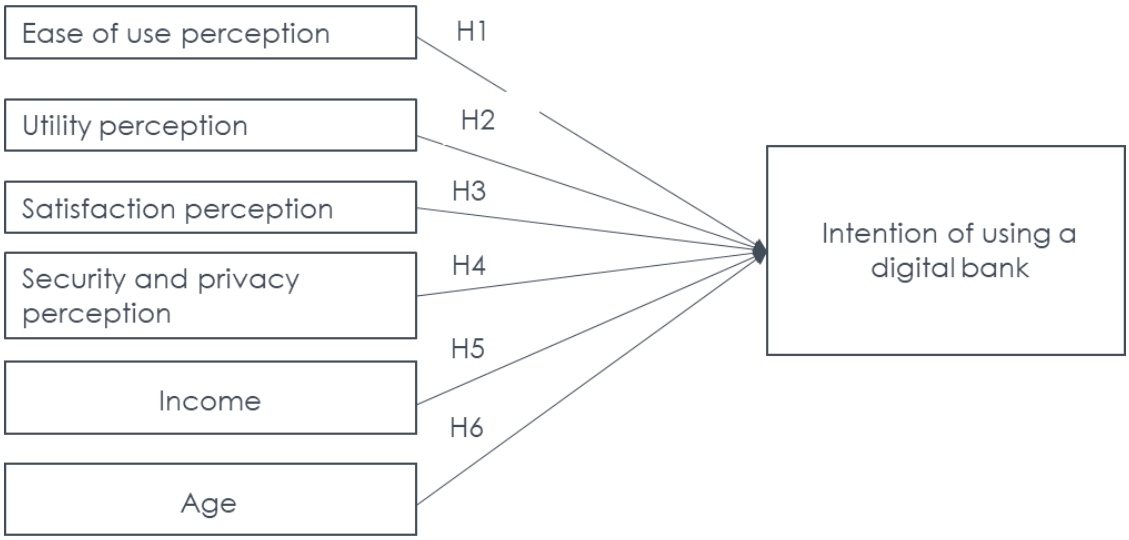
METHODOLOGICAL PROCEDURES

This study is, by nature, quantitative, once the hypothesis were tested through statistical techniques. Regarding its procedures, it is classified as empiric and descriptive, since it was aimed to knowing more about a phenomenon, in case, the factors which influence the decision of using digital banks, and the elements of interpretation of such phenomenon (Malhotra, 2012). Digital banks are delimited, for research purposes, such as banks that work online. This means that practically everything that the client needs may be done virtually – from opening an account, to attendance, to payment of monthly bills. This way, are not included traditional banks which offer mobile banking and internet banking services (Carvalho, 2020).

From the review of the literature, four explainable variables were selected, in addition to two demographic control variables. The variables Perception of Ease of Use and Perception of Utility belong to the original TAM.

The variables Perception of Satisfaction and the Perception of Safety and Privacy were included for being highly disclosed in the literature and are considered relevant. The inclusion of the demographic variables Age and Family Income is justified also by the use in the literature and addition of the explainable potential of the model, according to what is exposed in Figure 1.

Figure 1.Conceptual Model of Analysis



Source: adapted from Pikkarainen et al (2004)

As instrument of data gathering, it was decided to adopt the questionnaire developed by Pikkarainen et al (2004), for being a highly tested instrument and validated by factorial analysis. The questionnaire employs a five-point Likert scale, to code the answers, and the intervals vary from 1 (highly disagree) to 5 (totally agree). Age was measured in years and the family income was declared in reais. According to the procedure of the author, the four factors related to the intention of use were treated as independent variables and grouped in scales. Multi-varied statistical

techniques are necessary for studies that aimed at explaining complex problems (Hair et al., 2016).

Pre-tests and semantic validation of the translated instrument were performed, with the participation of three PhD in Business Manegement. The original scale was translated to Portuguese and re-translated to English,aiming at detecting inconsistencies. The pre-test and the semantic validation aimed at verifying the understanding of the questions, the meaning of the constructs, and the time of answer by part of the three participants. Small adjusts were performed.

Data were gathered to enable the performance of a regression analysis, testing the proposed hypothesis. The purpose of the data gathering was to observe the statistical relations between the independent variables and determinants in the intention of use of a Digital Bank. Although the items of the instrument are classified through a Likert scale, which is categorical, the factors that compose the independent variables, with the exception of income and age, are arithmetic mean numbers, continual variables, demanding the use of non-logistic linear ordered regressions (Gelman e Hill, 2007). The samples was defined by the researchers who selected the participants according to their accessibility (Vergara, 2013). It is important to highlight that the chosen approach for the sample had the purpose to increase the explanatory power of the conclusions and, therefore, a regression analysis was used with a proper sample and not a case study, which is not favorable to generalization (Yin, 2011). In addition, the presence of enough variation in the sample (direct consequence of a higher number of respondents from several origins) is essential to increase the validity of the regression results, once that variables that present little variation should be excluded, within the gathered sample (Neter et al., 1996). Therefore, a broader range of individuals is preferred for a determined sample size. Of course that a bigger samples is always more desirable, but the scope of this study precluded the acquisition of a higher number of participants, which is in itself one of its limitations.

Table 2 describe the variables inserted in the questionnaire, associated to its correspondents constructs to the analysis model.

Table 2: Constructsfrom the model and their variables

Construct	Variable	Source
Intention of using a digital bank	In case I have access to a digital bank, I intent to use it.	Venkatesh e Davis, 2000
	I intend to increase the use of a digital bank in the future, adopting it.	Adapted from Venkatesh e Davis, 2000
Ease of use perceived	To learn how to use a digital bank would be easy	Davis,1989; Pikkarainen et al, 2004
	I think it would be easy to do whatever I want through the digital bank.	
	My interaction with the digital bank would be clear and understandable for me.	
	I think that the digital bank would be flexible to my	
	It will be easy for me to develop skills when using the digital bank.	
	In general, I think it would be easy to use the	
Utility perceived	Using the digital bank would allow me to use the banking services more quickly.	Davis,1989; Pikkarainen et al, 2004
	Using the digital bank for my banking services would increase my productivity at work and on a	
	Using the digital bank would increase my efficiency in using banking services, avoiding	
	Using the digital bank would make the use of banking services, by myself, easier.	
	In general, digital bank would be useful for me to use banking services.	
Satisfaction perceived	Using the digital bank would be pleasant.	Pikkarainen et al, 2004
	Using the digital bank would be positive.	
Security and privacy perceived	Using the digital bank would be financially secure.	Pikkarainen et al, 2004
	I trust the ability of the digital bank in protecting my privacy.	
	I trust the technology that the digital bank uses.	
	I trust the digital bank the same way I trust a	
	I am not worried with the security of the digital bank.	
Income	Estimate your monthly gross family income.	Pikkarainen et al, 2004
Age	I am X years old.	Pikkarainen et al, 2004

Source: Own elaboration from the review of literature (2020)

The potential perceptions from digital banking clients were measured through a survey of an intentional and non-probabilistic sample, from the city of Salvador, in March 2019, with the application of 113 questionnaires, which were completed by the respondents, in the presence of one of the researchers, in three different locations: in a group of business post-graduation students at UFBA, in a group of business graduation students at

UFBA and with clients at a Consumer Attendance Service (CAS), located in a downtown shopping center. This way, people who have access to internet were reached and also people who do not access the tool. It was aimed asample with big variation in terms of demographic characteristics (age, income and education). The presence of researchers during the interviews aimed at avoiding inconsistencies or randomness in the answers of the questions at the board.

The interviewees were selected in the sample by convenience, that according to Hair et al (2016), involves the selection of elements from the sample that become more available and that might offer the needed information. Individuals who had already adopted a digital banking tool were dismissed, and the instrument was applied only to people who had not used the tool yet (potential clients).

For the size of the sample (113 individuals), the orientation provided by Bentler (1995) was followed by non-probabilistic samples, which suggests that the sample has at least five times the number of measured free parameters. The size of the sample also follow the rule of Green (1991),, which suggests a sample of size equals to 50 + 8K, where K is the number of independent variables.

Data obtained from the application of the questionnaires were tabled and the procedures of statistical treatments were performed through the software SPSS V22. There was only 1.46% of missing data in the sample, which is a relatively low value. Answers marked "I don't know" and missing data were treated according to the treatment advised by Hair et al (2016). Therefore, missing values were substituted by a mean value. According to Hair et al (2016), such approach allows minimizing the reduction of the variability of data, in case of another simpler treatment were used.

In the analysis of the results, the multi-colinearity test (VIF) was performed, which consists of the main assumption to be verified in the validation of linear regressions (Hair et al, 2016).

ANALYSIS AND DISCUSSION OF THE RESULTS

This section presents the results of the research and the discussion.

The values of the internal consistence from the questionnaire,Cronbach's Alpha, were quite satisfactory and are exhibited in Table 3.

Table 3. Reliability Statistics

Construct	Cronbach's Alpha
Intention of use	0.92
Perceived Utility	0.95
Ease in Use	0.97
Perceived Satisfaction	0.98
Perceived Security and Privacy	0.89

Source: Own elaboration from research data, 2021

In Table 4, it can be seen that the greater part of researched individuals are between 20 to 39 years old, representing over 70% of the sample, which is characterized by a group of young respondents. 5.3% of the total are over 60 years old.

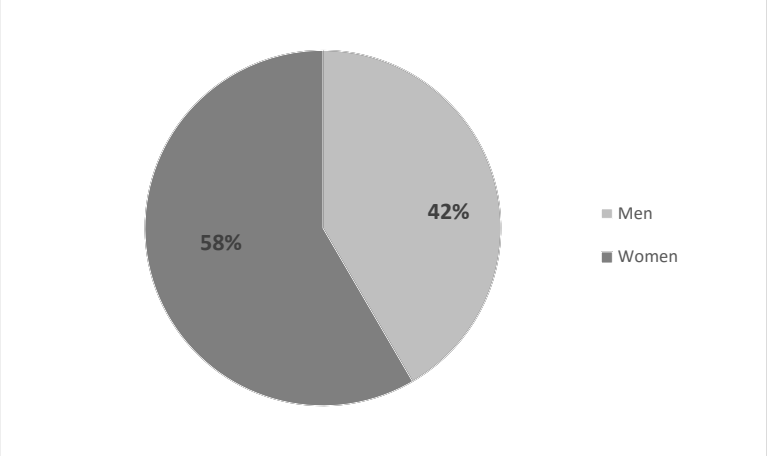
Table 4. Description of the sample by age, in years

Age range	n	%
Younger than 20	6	5,3
20 to 29	59	52,2
30 to 39	22	19,5
40 to 49	12	10,6
50 to 59	8	7,1
Above 60	6	5,3
Total	**113**	**100**

Source: Own elaboration from research data, 2020

The percentage of men was of 42% and of women was of 58%. In total, there were 47 men and 66 women interviewed (Figure 2).

Figure 2. Percentage of the sample by gender



Source: Own elaboration from the data of the research, 2020

The family income varied from R$ 350,00 to R$ 70.000,00, being a mean income of R$ 6.235,95. Such income variation has also contributed to test its influence on the intention of use and the high mean value found may be associated to post-graduate interviewees present in the sample, representing a group with higher education and probably with higher family income. However, it is possible to observe that most part of the interviewees has family income below R$ 5.000,00, representing 62.8 % of the researched. A summary of the data may be seen in Table 5.

Table 5. Description of the sample by income

Family Income	n	%
Less than R$ 1.000,00	15	13,3
From R$ 1.000,00 to R$ 2.999,00	33	29,2
From R$ 3.000,00 to R$ 4.999,00	23	20,4
From R$ 5.000,00 to R$ 9.999,00	22	19,5
From R$ 10.000,00 to R$ 19.999,99	12	10,6
Above R$ 20.000,00	8	7,1
Total	**113**	**100**

Source: Own elaboration from the data of the research, 2020

Table 6 shows evidence regarding mean evaluations for each selected construct. The ease of use received mean of 4,0009, with standard deviation of 1,33403, in a scale from 1 to 5, in which 5 means that the interviewee fully agrees with the statement. This shows that the potential users from the digital bank perceive as relatively easy the use of such banking innovation, which could be related to the incorporation of new technologies in their daily lives, as the frequent use of the mobile phone for communication or the operationalization of banking apps, used by traditional bank clients.

Table 6. Mean variation and standard deviation from constructs

Variable	Mean	Standard deviation
Intention of use	3,8527	1,33403
Perceived utility	3,8904	1,08733
Facility of use	4,0009	1,15465
Perceived satisfaction	3,9955	1,24731
Security and privacy	2,9406	1,03909
Age	32,0973	13,08486
Income	6235,955	9255,3279
n=113		

Source: Own elaboration from data of the research, 2020

Still regarding Table 6, it can be noticed that security and privacy received mean of 2,9406, with standard deviation with 1,03909, becoming closer to the proposition "totally disagree" rather than "fully agree". The

intention of use presented mean of 3,8527 and standard deviation of 1,33403 (relatively high), presenting relatively high variation as for agreement and disagreement with the statements. Such item states the pretension in using a digital bank in the future and the mean number tends to an agreement. The utility perceived had mean of 3,8904, and a standard deviation of 1,08733, which reveals a higher tendency to agree with such statements on the identification of the digital bank's utility for the researched. This way, there a tendency, in mean numbers, of the respondents to identify the digital bank as useful and their banking activities in the future daily lives. The perceived satisfaction had mean of 3,9955 with standard deviation of 1,24731. Such value is closer to the agreement with the statement on the perception that, in the opportunity of using adigital bank, it would provide satisfaction in the use, in a more pleasant and positive experience. The analysis of the regression may bring more evidence for the evaluation of such results.

The statistical technique of multiple linear regression was used with the purpose of verifying the utility of perceived independent constructs and security and privacy, as well as whether variables age and income had had significant influence on the dependent construct intention of use. The results are presented as follows.

The general measures of fitting, presented in Table 7, indicate that the proposed model presents a rather good fit of data from the sample, considering the values of alfa and co-linearity diagnosis predicted in the literature (Hair, 2017). The coefficient of adjusted determination (R2) presented a value of 0,583, showing that the regression has an explanation power of 58.3%. F tests shows the existence of an association between intention of use and group of explanation factors from the model of regression.

Regarding the chosen parameter in the model it was verified that from the seven factors selected, two did not presented significant values (t test), not being able to obtain conclusion on the proposed observations in the

study. The factors ease in use and age did not show meaningful correlation with the intention of use with minimum certainty of 95% (p -value below 0.05), as recommended by the literature (Hair, 2017). therefore, it was not possible to confirm the hypothesis related to these two factors.

Despite the high number of evidence in the literature on the relevance and effect of "perceived ease in use" on the "intention of using internet banking and mobile banking" (Pikkarainen et al, 2004; Cheng, Lam & Yeung, 2006; Fernades & Awamleh, 2006; Lee, 2009; Laukkanen, 2016; George, 2018), such correlation did not present significance for the present study. However, such result coincide with the results found in studies of Malaquias e Hwang (2019) on acceptance of mobile banking in Brazil and in the USA, the work of Baptista & Oliveira (2015) on the acceptance of mobile banking in African countries and Oliveira et al. (2014) in Portugal, in which the factor perceived ease in use also did not have significant effect on the dependent factor intention of use. Baptista & Oliveira (2015) state that the high level of use of cell phones in Portugal might have influenced the low significanceof "perceived ease of use", demanding little effort for the acceptance of mobile banking. It can be understood that the higher diffusion of mobile banking use in Brazil and a possible higher adhesion of the interviewees to this service provided by their banks has also influenced in the perception of the potential users on a possible facility in the use of a digital bank. Despite this fact, Malaquias & Hwang (2019) defend that the construct ease of use may seem to be the most important factor for the acceptance of such technology. This way, based on the presented results, it was not possible to confirm hypothesis 1, which stated that "the perception ease of use has a positive effect on the intention of using a digital bank".

The lack of significance of the variable age for the sample of this study is also similar to what the study of Malaquias & Hwang (2019) found. The authors justify the absence of a significant relation between age and the dependent variable with the fact that the sample was composed mainly by

relatively young participants, once the research was performed only with graduation students. Such justification may be also valid to explain the lack of significance of this variable for the sample of the present study, since, despite the attempt to obtain dispersion in the age of the interviewees, there was higher concentration of young participants (more than half of the researched were at most 29 years old). Therefore, considering the presented results, it was not possible to confirm hypothesis 6, which stated that "age has a negative effect on the intention of use of the digital bank".

Table 7 indicates that, for the researched sample, the constructs with perceived utility (standard coefficient of 0.271); perceived satisfaction (standard coefficient 0.318); security and privacy (standard coefficient 0.253); and income variable (standard coefficient 0.116) have statistically significant impact on the intention of use of the digital bank.

Table 7. Estimated model

Model	Standard coefficient	t	P-value	Co-linearity statistics	
	Beta			Tolerance	VIF***
(Constant)	1,079	1,509	0,134		
Perceived utility	0,271	2,553	0,012*	0,331	3,022
Ease of use perceived	0,035	0,221	0,826	0,147	6,794
Satisfaction perceived	0,318	1,972	0,050*	0,144	6,956
Security Privacy	0,253	2,449	0,016*	0,350	2,854
Age	-0,105	-1,152	0,252	0,448	2,230
Income*	0,116	1,676	0,097**	0,773	1,293

R2= 0.583 F test from the regression model F= 18.370 with level of trust a = 0.000
*Significant for a< 0.05
**Significant for a< 0.1
***All VIF values (MULTI-COLINEARITY DIAGNOSIS) were below 10, indicating that there are no problems with the sample (Hair, 2017).

Source: Own elaborationfrom data of the research, 2020

The perceived utility, which measures the level that the individual believes that the use of a certain system will improve one's performance at work (Davis, 1986), was considered a relevant construct for the intention of use of a digital bank, just as shown by the studies of Baptista & Oliveira (2015), Malaquias & Hwang (2019), Santouridis & Kyritsi (2014) and Pinkkarainen et al (2004) for technologies of mobile banking and internet banking. Hypothesis 2, of which "the utility perception has a positive effect on the intention of using a digital bank" could be confirmed, according to the assumptions established in the literature. It can be deducted that the perception of the respondents that the digital bank may be useful in daily lives to improve the chances of use or the possibility of a greater use of the service in the future. Such evidence signs that, when developing publicity, managers of digital banks should highlight the utility of services to their potential clients.

The perception of satisfaction was also considered a significant construct to explain the acceptance of digital banks. According to Davis, Bagozzi & Warshaw (1992), the perception of satisfaction relates to the level in which the activity of using a computer is perceived itself as pleasant. The result found for the sample of this study is similar to the studies of Pikkarainen et al (2004) and Santouridis & Kyritsi(2014). This way, it was possible to confirm hypothesis 3, which defended, based on the literature, that "the perception of satisfaction has a positive effect on the intention of using a digital bank".

Hypothesis 4 on the construct perception of security and privacy was also accepted, confirming that "the perception of security and privacy has a positive effect on the intention of using a digital bank". Associated to the risk perception and to the trust that the user has on the technology, it was possible to consider such construct as significant, which corroborated to what is found in the literature (Malaquias & Hwang, 2016; Laforet & Li, 2005; Fonseca, 2014). Risk perception was the most relevant factor in the study of Cruz et al (2010) for the acceptance of mobile banking in its sample for Brazil, the main barrier formobile banking acceptance in China (Laforet & Li, 2005)

and in several countries belonging to the European Community (Fonseca, 2014). Therefore, it is important that potential users of digital banks realize that their data are secure and protected and their banking information are free from virtual threats. Higher perception of security and privacy improve the intention of use of a digital bank. This indicates that digital banks which aim at attracting clients should consider strengthening their security systems against invasions and disclosure their investments in technologies of data protection to their share holders and clients. This should also be an explored factor in the confection of publicity campaigns and social media, to ensure the perception that their systems are secure.

As for demographic variables, only hypothesis 5, "clients with higher family income have a higher intention of use of digital banks" was statistically significant and relevant for the model, although this has been confirmed with a less degree of certainty, with alpha< 0.1. The inclusion of such variable has brought complementary to the explainable capacity of the model and has contributed to the evidence found in the literature (Darian, 1987; Venkatraman, 1991; Karjalouto, Mattila & Pento, 2002). As pointed out in several previous studies on the acceptance of internet banking (Karjalouto, Mattila & Pento, 2002; Mauter, 2005), a higher income is associated to the use of the bank by the internet and through mobile banking. As defended by Meuter (2005), the income increase may improve access opportunities to more updated devices (computers and mobile devices, for example) and provide motivation to time-saving and practicality in the relationship with thebank, which can justify a higher intention of use by higher income individuals. This way, hypothesis 5, which defended that "higher family income clients have a higher intention of using a digital bank" was confirmed. Such result may be used by banks through a higher attention to the high income public, offering unique technological services, presenting the digital bank as a segmented model, associated to the previously presented factors.

Table 8 presents a summary of the obtained results and a comparison with the results of previously quoted articles.

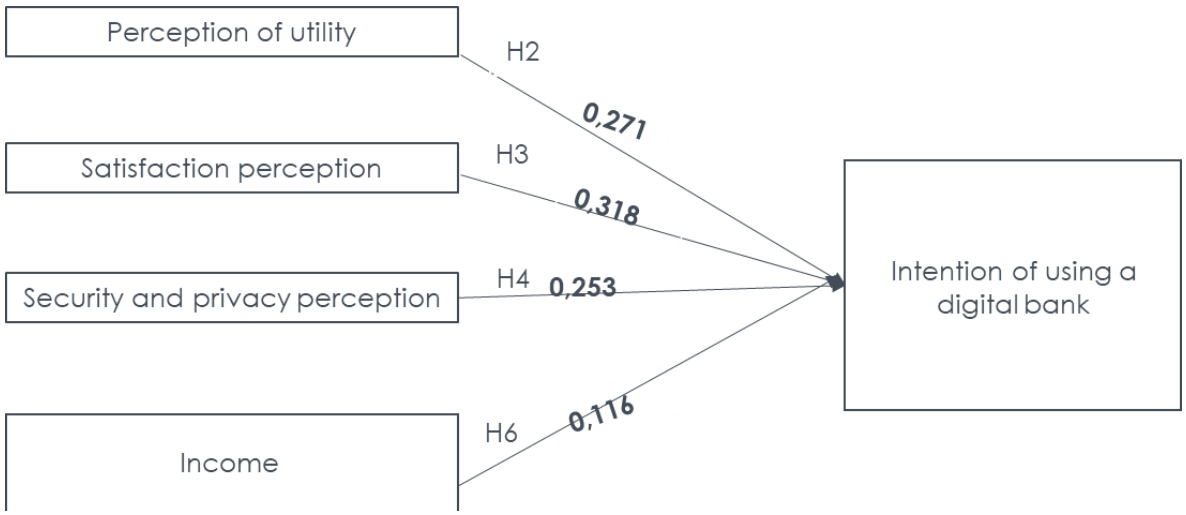
Table 8. Summary of the results from the tested hypothesis

Variable	Hypothesis	Confirm the hypothesis	Do not confirm the hypothesis	Result found in the study
Perception of Ease of Use (PEOU)	H1: The perception of ease of use has positive effect in the intention of use of the digital bank.	Pikkarainen et al, 2004; Cheng, Lam & Yeung, 2006; Fernades & Awamleh, 2006; Lee, 2009; Laukkanen, 2016; George, 2018.	Malaquias & Hwang, 2019; Baptista & Oliveira, 2015; Oliveira et al., 2014.	Hypothesis not confirmed
Perception of Utility (PU)	H2: The perception of utility has a positive effect in the intention of using a digital bank.	Kishore & Sequeira, 2016; Baptista & Oliveira, 2015; Ha et al, 2012.	-	Hypothesis confirmed
Satisfaction perception	H3: The perception of satisfaction has a positive effect in the intention of use of the digital bank by consumers.	Konradt, Christophersen & Schaeffer-Kuelez, 2006; Pikkarainen et al, 2004; Santouridis e Kyritsi, 2014.	-	Hypothesis confirmed
Security and privacy perception	H4: The perception of security and privacy has a positive effect in the intention of use of the digital bank by consumers.	Laforet & Li, 2005; Fonseca, 2014; Bhatiasevi, 2016.	-	Hypothesis confirmed
Social-demographic variables	H5: Higher family income clients have higher intention of using a digital bank.	Karjalouto, Mattila & Pento, 2002; Mauter, 2005.	-	Hypothesis confirmed
	H6: Age has a negative effect in the intention of using the digital bank.	Harrison & Rainer, 2012; Wang, Wu & Wang, 2009; Mohammadi, 2015.	Malaquias & Hwang, 2019.	Hypothesis not confirmed

Source: Own elaboration from the data of the research, 2020

Figure 3 presents the final structured model from the estimation of the parameters and the result of the tested hypothesis, related to the dependent variable intention of use of digital banks with the constructs and independent variables considered statistically significant in the regression estimation.

Figure 3. Empiric model resultant from the research



Source: Own elaboration from data of the research, 2020

CONCLUSIONS

The study aimed, in a pioneer way, at studying the determinants factors in the acceptance of technology of digital banks by potential consumers in Brazil according to the TAM model, adding new explainable and demographic variables, taken from the literature on the theme. The current context of digital technology use was considered relevant as a contributing factor for the change of habits by consumers and for an expectation of a higher acceptance, in comparison with the first technology experience implanted in the years 2000 in Brazil. An empiric evaluation with 113 individuals was performed in the city of Salvador (BA), through the application of a questionnaire constructed by the conceptual analysis model developed by the authors of this study. The results, here gathered, and its analysis have contributed to the Brazilian literature, which is relatively scarce, focused on the use and acceptance of digital technologies, and especially the technologies aided by the internet, in developing countries. As it was shown in table 8, the study partially confirms some of the conclusions of similar studies performed in the Brazilian context and in other countries (Baptista & Oliveira, 2015; Malaquias & Hwang, 2019; Santouridis & Kyritsi, 2014; Pinkkarainen et al., 2004; Malaquias & Hwang, 2016; Laforet & Li, 2005; Fonseca, 2014; Cruz et al, 2010; Laforet & Li, 2005; Karjalouto, Mattila & Pento, 2002; Mauter, 2005).

From the management point of view, the results found point to the relevant factors to be inserted in publicity and marketing campaigns that search for approximation with the Brazilian consumer market in this scope.

As most relevant, for the researched sample, were considered the constructs perceived utility, perceived satisfaction, and security and privacy, in addition to the variable income, impacting the intention of use of a potential client of banking products. Such evidence reinforce previous observations found in the literature.

Despite the satisfactory results of the research, since a considerable number of its hypothesis have been confirmed, some limitations should be pointed out. The research was dedicated to measure the sample in a non-probabilistic form and by convenience. Therefore, it was a small bias sample. This way, it is not possible to generalize the obtained results in this study. Another limitation is that the raise of data of the research has focused on the region of Salvador, which also limits the possibility of generalization for the country, since it is not possible to consider Salvador a representative enough location regarding habits and culture at national level. The third limitation is the size and diversity of the sample. Despite the attempt of searching for data diversity, performing the research at different locations, it was not possible to obtain a quite diverse sample, which would allow to capture different perceptions (by age, for example). Future studies which aim at exploring the theme may be dedicated to explore such limitations, expanding the study at national level and performing the gathering of data through a probabilistic sample, enabling the generalization of the results. It is important to highlight that the great majority of empiric studies on the acceptance of banking technologies is not based on a random probabilistic sample. Among the selected literature for the hypothesis definition, only the studies of Laforet & Li (2005) and Cheng, Lam & Yeung (2006) performed studies with random selection of the participants.

It is worth highlighting that although the study presents the above mentioned limitations, its methodology may be reapplied contexts apart from the referred limitations, bringing more academic and management contributions on the factors that influence the intention of use of digital banks.

REFERENCES

Alt, R.,, Puschmann, T. (2012). The rise of customer-oriented banking - electronic markets are paving the way for change in the financial industry. *Electronic Markets*, 22(4), 203-2015. https://doi.org/10.1007/s12525-012-0106-2

Banco Central Do Brasil (2016*). Resolução n°4.480 de 25 de abril de 2016*. Sisbacen. Seção 1, p. 3.

Banco Central Do Brasil (2017). *Global Findex – O Brasil na comparação internacional.* Disponível em: <https://www.bcb.gov.br/Nor/relcidfin/docs/art4_comparacao_internacional.pdf> Acesso em 27 out 2020.

Baptista, G., Oliveira, T. (2015). Understanding mobile banking: The unified theory of acceptance and use of technology combined with cultural moderators. *Computers in Human Behavior*, v. 50, p. 418-430. https://doi.org/10.1016/j.chb.2015.04.024

Bentler, P. M. (1995). *EQS structural equations program manual*. Encino, CA: Multivariate software.

Bhatiasevi, V. (2016). An extended UTAUT model to explain the adoption of mobile banking. *Information Development*, v. 32, n. 4, p. 799-814. : https://doi.org/10.1177/0266666915570764

Bijker, W. E., Law, J. (eds.) (1992). *Shaping Technology/Building Society: Studies in Sociotechnical Change*. Cambridge, Massachusetts: MIT Press, p. 75-104.

Braun, M. T. (2013). Obstacles to social networking website use among older adults. *Computers in human behavior*, 29(3), 673-680. https://doi.org/10.1016/j.chb.2012.12.004

Carvalho, A. P. A. F. (2020). Dos Bancos Tradicionais aos Digitais: quais riscos corporativos os bancos brasileiros enfrentam ao investirem em Fintechs?. *Caderno Virtual*, 1(46).

Charness, N., Boot, W. R. (2016). *Technology, gaming, and social networking*. In Handbook of the Psychology of Aging (pp. 389-407). Academic Press.

Cheng, T. E., Lam, D. Y., & Yeung, A. C. (2006). Adoption of internet banking: an empirical study in Hong Kong. *Decision support systems*, 42(3), 1558-1572. https://doi.org/10.1016/j.dss.2006.01.002

Chuang, L. M., Liu, C. C., Kao, H. K. (2016). The adoption of fintech service: TAM perspective. *International Journal of Management and Administrative Sciences*, 3(7), 1-15.

Claessens, S., Laeven, L. (2005). Financial dependence, banking sector competition, and economic growth. *Journal of the European Economic Association,* v. 3, n. 1, p. 179-207. https://doi.org/10.1162/1542476053295322

Clerides, S., Delis, M. D., Kokas, S. (2015). A new data set on competition in national banking markets. *Financial Markets, Institutions & Instruments*, v. 24, n. 2-3, p. 267-311. https://doi.org/10.1111/fmii.12030

Cruz, P., Neto, L. B. F., Munoz-Gallego, P., & Laukkanen, T. (2010). Mobile banking rollout in emerging markets: evidence from Brazil. *The International Journal of bank marketing*, 28(5), 342-371. https://doi.org/10.1108/02652321011064881

Cook, S. (2017) Selfie banking: is it a reality?. *Biometric Technology Today*, v. 2017, n. 3, p.9-11. https://doi.org/10.1016/S0969-4765(17)30056-5

Davis, F.D. (1986*). A Technology acceptance model for empirically testing new end-user information systems: Theory and results*. MA, USA: Massachussetts Institute of Technology. .

Davis, F. D. (1989). Perceived usufulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, Minneapolis (MN), v.13, n.3, p.319-339. https://doi.org/10.2307/249008

Davis, F.D., Bagozzi, R.P., Warshaw, P.R.(1992). Extrinsic and intrinsic motivation to use computers in the workplace, *Journal of Applied Social Psychology*, Vol. 22 No. 14, pp. 1111-32. https://doi.org/10.1111/j.1559-1816.1992.tb00945.x

Demirguc-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2017). *The Global Findex Database: Measuring Financial Inclusion and the Fintech Revolution*. World Bank Group. International Bank for Reconstruction and Development/The World Bank, Washington DC.

Diniz, E. H. (2004) Cinco décadas de automação. *GV-executivo*, [S.l.], v. 3, n. 3, p. 55-60. https://doi.org/10.12660/gvexec.v3n3.2004.34691

Faria, A. F., Maçada, A. C. G. (2011). Impacto dos investimentos em TI no resultado operacional dos bancos brasileiros. *RAE-Revista de Administração de Empresas*, 51(5), 440-457.

Filgueiras, A. R. F. & DAmorim, R. S. (2019). Percepção da Qualidade em Serviços: Associação com o Modelo de Excelência em Gestão-MEG. Marketing & Tourism Review, 4(1). https://doi.org/10.29149/mtr.v4i1.4786

FINTECHLAB (2020). *Edição 2020 do Radar FintechLab detecta 270 novas fintechs em um ano*. Disponível em: <http://fintechlab.com.br/index.php/2020/08/25/edicao-2020-do-radar-fintechlab-detecta-270-novas-fintechs-em-um-ano/> Acesso em: 29 out 2020

Fonseca, J. R.S. (2014). E-banking culture: A comparison of EU 27 countries and Portuguese case in the EU 27 retail banking context, *Journal of*

Retailing and Consumer Services, Vol. 21, p 708-716. https://doi.org/10.1016/j.jretconser.2014.05.006

Gelman, A. and Hill, J. (2007), *Data Analysis Using Regression and Multilevel/Hierarchical Models,* Cambridge University Press, New York, NY.

George, A. (2018). Perceptions of Internet banking users—a structural equation modelling (SEM) approach. *IIMB Management Review*, v. 30, n. 4, p. 357-368. https://doi.org/10.1016/j.iimb.2018.05.007

Green, S.B. (1991). How many subjects does it take to do a regression analysis, *Multivariate Behavioral Research*, Vol. 26 No. 3, pp. 499-510. https://doi.org/10.1207/s15327906mbr2603_7

Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications.

Hair, J. (2005). *Fundamentos de métodos de pesquisa em administração*. Bookman Companhia 5 Ed.

Hanafizadeh, P., Keating, B.W., Khedmatgozar, H. R. (2014). A systematic review of Internet banking adoption. *Telematics and informatics*, v. 31, n. 3, p. 492-510. https://doi.org/10.1016/j.tele.2013.04.003

Hernandez, J. M. D. C., & Mazzon, J. A. (2008). Um estudo empírico dos determinantes da adoção de internet banking entre não usuários brasileiros. *Revista de Administração Contemporânea,* 12(SPE), 9-39. https://doi.org/10.1590/S1415-65552008000500002

Im, I., Hong, S., & Kang, M. S. (2011). An international comparison of technology adoption: Testing the UTAUT model. *Information & management,* 48(1), 1-8. https://doi.org/10.1016/j.im.2010.09.001

Jha, A. K., Bose, I. (2016). Innovation research in information systems: A commentary on contemporary trends and issues. *Information & Management*, 53(3), 297-306. https://doi.org/10.1016/j.im.2015.10.007

Jornal de Negócios (2019): *Unibanco_ acaba_com_ operacoes do banco1net.* Disponível em: < https:// www.jornaldenegocios.pt/empresas/detalhe/unibanco_ acaba_com_ operacoes_ do_banco1net > Acesso em: 6 dez 2019.

Karjaluoto, H., Mattila, M. and Pento, T. (2002). Factors underlying attitude formation towards online banking in Finland. International Journal of Banking Marketing, Vol. 20 No. 6, pp. 261-72. https://doi.org/10.1108/02652320210446724

Kovalczyk, N. (2017). Retorno sobre Investimento em TI com ênfase em ERP. *Revista Interdisciplinar de Tecnologias e Educação*, 3(1).

Konradt, U., Christophersen, T., Schaeffer-Kuelz, U. (2006). Predicting user satisfaction, strain and system usage of employee self-services. International *Journal of Human-Computer Studies*, v. 64, n. 11, p. 1141-1153. https://doi.org/10.1016/j.ijhcs.2006.07.001

Kotler, P., Kartajaya, H., Setiawan, I. (2017). *Marketing 4.0: do tradicional ao digital.*Rio de janeiro: Sextante.

Laforet, S., Li, X. (2005). Consumers Attitudes to Online and Mobile Banking in China. International Journal of Bank Marketing, 23, 362-380. https://doi.org/10.1108/02652320510629250

Larsson, A., Viitaoja, Y. (2017). Building customer loyalty in digital banking: A study of bank staff's perspectives on the challenges of digital CRM and loyalty. *International Journal of Bank Marketing*, v. 35, n. 6, p. 858-877. https://https://doi.org/10.1108/IJBM-08-2016-0112

Laukkanen, T. (2016). Consumer adoption versus rejection decisions in seemingly similar service innovations: The case of the Internet and mobile banking. *Journal of Business Research*, v. 69, n. 7, p. 2432-2439. https://doi.org/10.1016/j.jbusres.2016.01.013

Lee, M. C. (2009). Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit. *Electronic commerce research and applications*, 8(3), 130-141. https://doi.org/10.1016/j.elerap.2008.11.006

Lee, Y., Kozar, K.A., Larsen, K.R (2003). The technology acceptance model: Past, present, and future. *Communications of the Association for Information Systems*, Vol. 12 p. 752-780. Https://doi.org/10.17705/1CAIS.01250

Malaquias, R. F., Hwang, Y. (2016). An empirical study on trust in mobile banking: A developing country perspective. *Computers in Human Behavior*, v. 54, p. 453-461. https://doi.org/10.1016/j.chb.2015.08.039

Malaquias, R. F., Hwang, Y.(2019) Mobile banking use: A comparative study with Brazilian and U.S. participants, *International Journal of Information Management*, Vol. 44, p. 132-140. https://doi.org/10.1016/j.ijinfomgt.2018.10.004

Malhotra, N. (2012). *Pesquisa de Marketing: uma orientação aplicada*. 6 ed. Porto alegre: Bookman.

Mbama, C. I., Ezepue, P. O. (2018) Digital banking, customer experience and bank financial performance: UK customers' perceptions. International *Journal of Bank Marketing*, v. 36, n. 2, p. 230-255. https://doi.org/10.1108/IJBM-11-2016-0181

Neter, J., Kutner, M.H., Nachtsheim, C.J. and Wasserman, W. (1996), *Applied Linear Statistical Models*, Irwin, Chicago.

Oliveira, T., Faria, M., Thomas, M. A., & Popovič, A. (2014). Extending the understanding of mobile banking adoption: When UTAUT meets TTF and ITM. *International journal of information management*, 34(5), 689-703. https://doi.org/10.1016/j.ijinfomgt.2014.06.004

Pikkarainen, T., Pikkarainen, K., Karjaluoto, H., Pahnila, S. (2004). Consumer acceptance of online banking: an extension of the technology acceptance

model. *Internet research*, 14 (3) (2004), pp. 224-235. https://doi.org/10.1108/10662240410542652

Pires, P. J., Da Costa Filho, B. A. (2008). Fatores do índice de prontidão à tecnologia (TRI) como elementos diferenciadores entre usuários e não usuários de internet banking e como antecedentes do modelo de aceitação de tecnologia (TAM*)*. *Revista de Administração Contemporânea*, v. 12, n. 2, p. 429-4. https://doi.org/10.1590/S1415-65552008000200007

Ross, J., Beath, C., Sebastian, I. (2017) *Digital ≠ Digital*. Research Briefing, vol. XVII, no. 10. MIT Sloan Center for Information Systems Research, Cambridge, MA .

Santouridis, I., Kyritsi, M. (2014). Investigating the determinants of Internet banking adoption in Greece. *Procedia Economics and Finance*, v. 9, p. 501-510. https://doi.org/10.1016/S2212-5671(14)00051-3

Shaikh, A. A., Karjaluoto, H. (2015). Mobile banking adoption: A literature review. *Telematics and Informatics*, v. 32, n. 1, p. 129-142. https://doi.org/10.1016/j.tele.2014.05.003

Veiga, L.H. C., Oliveira, A. (2006). Diferenciação Horizontal e Poder de Mercado: Os Efeitos do E-Banking sobre as Tarifas Bancárias. *Revista EconomiA*. V.7, 365-393.

Venkatesh, V., Morris, M. G., Davis, G. B., Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478. https://doi.org/10.2307/30036540

Venkatesh, V., Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, v. 46, n. 2, p. 186-204. https://doi.org/10.1287/mnsc.46.2.186.11926

Vergara, S.C. (2013), *Métodos De Pesquisa Em Administração*, Atlas, São Paulo.

Wang, Y.S., Wu, M.C., Wang, H.Y. (2009). Investigating the determinants and age and gender differences in the acceptance of mobile learning. British *journal of educational technology*, v. 40, n. 1, p. 92-118. https://doi.org/10.1111/j.1467-8535.2007.00809.x

Yin, R.K. (2011), *Applications of Case Study Research*, Sage, Washington, DC.

Yiu, C.S., Grant, K., Edgar, D. (2007). Factors affecting the adoption of Internet Banking in Hong Kong—implications for the banking sector. *International journal of information management*, v. 27, n. 5, p. 336-351. https://doi.org/10.1016/j.ijinfomgt.2007.03.002