

# Adoption of Mobile Payments in Brazil: Technology Readiness, Trust and Perceived Quality

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## ABSTRACT

This research investigates the influence of technology readiness on the acceptance of mobile payment services in Brazil, a growing technology within payment methods. The study analyses the relationship between constructs widely used in the literature on technology acceptance – such as perceived usefulness and perceived ease of use – and constructs related to financial services, such as trust and perceived quality. It also evaluates how technology readiness (Parasuraman, 2000) influences these constructs. The authors conducted a survey with 402 participants to test the proposed model, analyzing the data via structural equation modeling (SEM). The results showed that trust, usefulness, and perceived quality of mobile payment services directly influence mobile payment acceptance.

## KEYWORDS

technology readiness, acceptance of innovations, mobile payment, trust, perceived quality

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## 1. INTRODUCTION

Mobile payments, or m-payments, are financial services generally offered jointly by credit operators, banks, and technology companies and defined as a form of payment in which mobile devices act as intermediates for both instructions and the payment details (Xin et al., 2015).

This type of payment has received increasing global attention, both by consumers and merchants, as an alternative to using cash, checks, or credit cards, which has led to an increasing number of studies on its acceptance (Ciuchita, Mahr, Schröder, & Wetzels, 2018; Oliveira, Thomas, Baptista, & Campos, 2016). A literature review on the topic points out risks and benefits perceived by mobile payment users (Albuquerque, Diniz, & Cernev, 2016; Braido & Klein, 2016; Taylor, 2016). Current research also presents studies related to m-payments usage among low-income consumers (Hasan, Liu, Kitchen, & Rahman, 2019). Finally, other studies investigate the effect of different types of moderators on m-payments acceptance, such as (i) gender (Kalinić, Liébana-Cabanillas, Muñoz-Leiva, & Marinković, 2019); (ii) cultural aspects (Alshare & Mousa, 2014); and (iii) generations (Mun, Khalid, & Nadarajah, 2017).

This study aims to develop and test a model that investigates the influence of technology readiness on the acceptance of mobile payment services in Brazil, considering both cognitive factors and important characteristics linked to financial services that may influence the end consumer's intention to use m-payment services.

In general, m-payment systems have significantly different characteristics from previous innovations related to financial services, specifically because the digitalization of payment services reduces marginal costs and, consequently, generates economies of scale (Staykova & Damsgaard, 2015). These authors point out that competition has intensified among the leading providers of m-payment solutions (Apple Pay, from Apple, and Samsung Pay, from Samsung, are examples of large technology companies, allied with banks and retailers, involved in this dispute). Given that, this sector's challenge now consists of capturing and maintaining an ever-growing user base, reducing the average fixed cost resulting from the platforms' development and maintenance.

Several more studies conducted in emerging economies contexts, such as the Middle East (Sharma, Sharma, & Dwivedi, 2019), Africa (Lwoga & Lwoga, 2017), Southeast Asia (Cao, Dang, & Nguyen, 2016), and India (Shankar & Datta, 2018), show the relevance of studying the acceptance of m-payment technologies in Brazil as well. In the face of the growing competition between m-payment service providers, also experienced in the Brazilian scenario (Futurecom, 2017), it is expected that the search for an increased user base will also occur here. Therefore, these companies need to understand the factors that can lead consumers to use or not use an m-payment service.

In academic terms, the present study is relevant for expanding the discussions about the diffusion and acceptance of technologies by fusing readiness and technology acceptance models with constructs that reflect characteristics observed predominantly in the financial services sector. Despite the amount of research on technology acceptance applied to m-payment services (Oliveira, Thomas, Baptista, & Campos, 2016; Abrahão, Moriguchi, & Andrade, 2016; Khalilzadeh, Ozturk, & Bilgihan, 2017; Morosan & DeFranco, 2016; Bailey, Pentina, Mishra, & Mimoun, 2017; Lwoga & Lwoga, 2017; Mun, Khalid, & Nadarajah, 2017; Liébana-Cabanillas, Muñoz-Leiva, & Sánchez-Fernández, 2018; Shankar & Datta, 2018; Kalinić, Liébana-Cabanillas, Muñoz-Leiva, & Marinković, 2019), none presented a model that simultaneously analyzes technology readiness, technology acceptance, and specific characteristics prevalent in the financial services, such as trust and risk perception.

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## 2. THEORETICAL BACKGROUND

### 2.1. TECHNOLOGY ACCEPTANCE

Consumer assessment of the adoption of a technological innovation generates specific reactions – positive and or negative – that lead to testing, adoption, or resisting the innovation. It is also possible that the consumer will decide to postpone the adoption decision (Bagozzi & Lee, 1999). Several factors can influence this assessment. The Theory of Rationalized Action (TRA) by Fishbein and Ajzen (1975) observes a close link between an individual's behavior and his intentions about performing such behavior. TRA can explain the cognitive process involved in an individual's decision making by assuming that he rationally uses all available information to define his intention to perform or not a behavior (Paul, Modi, & Patel, 2016).

Using TRA as a base, Davis et al. (1989) developed the Technology Acceptance Model (TAM) considering three significant factors: parsimonious design, strong theoretical basis, and stable generalization power. TAM is one of the most used models in studying the acceptance of computational and digital technologies (Yousafzai, Foxall, & Pallister, 2007).

The basic TAM model shows the influence of two cognitive factors, perceived usefulness and perceived ease of use, on the intention to use a specific technology. Although developed by Davis et al. (1989) to evaluate the intention of using text editors, the model has been used to explain the adoption of a wide array of innovations by consumers (Yousafzai et al., 2007).

Several authors (Kulviwat et al., 2007; Venkatesh et al., 2012; Morteson & Vidgen, 2016; Lai, 2017) sought to improve the explanatory potential of the TAM model, introducing other factors to the model, aiming to increase its explanatory power and evaluate other issues related to the technology adoption behavior. Other models go beyond the TAM proposal to investigate the acceptance and use of technologies, attempting to unify several previous models, such as the UTAUT (Unified Theory of Acceptance and Use of Technology) model by Venkatesh et al. (2003) and UTAUT2 (Venkatesh et al., 2012), an adaptation of UTAUT focused on consumer adoption behavior. However, due to its parsimony and great explanatory power, the TAM model has been more widely used to investigate the acceptance and intention to use technology, such as in the case of this article (Lee, Kozar, & Larsen, 2003; Merchant, 2007; Yousafzai et al., 2007).

### 2.2. TECHNOLOGY ACCEPTANCE IN FINANCIAL SERVICES

Previous studies have investigated some specific aspects of services that involve financial transactions. Hedonic factors, such as fun, appear as strong predictors of intention to use in several works, such as those by Bruner II and Kumar (2005) and Yu et al. (2005). However, trust and risk perception are also present as strong predictors of the intention to accept an innovation related to financial services (Yu et al., 2005; Oh et al., 2009; Dimitriadis & Kyrezis, 2010; Cocosila, & Trabelsi, 2016). Recently, De Kerviler, Demoulin, and Zidda (2016) identified that utilitarian, hedonic, and social benefits, as well as financial and privacy risks are critical factors in adoption, highlighting the important aspects of the shopping experience. Studies about quality perception in the context of the acceptance of innovations indicate both a direct and indirect influence of quality on the intention to use via perceived usefulness, perceived ease of use, and trust (Oh et al., 2009).

Recent studies using the TAM (Mun, Khalid, & Nadarajah, 2017; Liébana-Cabanillas, Muñoz-Leiva, & Sánchez-Fernández, 2018; Liébana-Cabanillas, Marinkovic, Luna, & Kalinic, 2018) also support previous findings pointing to perceived usefulness and perceived security as determinants of the acceptance of m-payments. Liébana-Cabanillas, Luna, and Montoro-Ríos (2017) performed a comparative study between SMS (Short Message Service) and NFC (Near Field Communication) in m-payment services that showed differences in the importance of the constructs depending on the system analyzed. Their result indicates the need to research the relationships between constructs in different scenarios.

Shankar and Datta (2018) also showed that perceived ease of use, perceived usefulness, trust, and self-efficacy have a significant positive impacts on the intention to adopt mobile payments. However, subjective norms and the degree of personal innovation did not have a substantial effect on it. The study by Mun, Khalid, Nadarajah (2017), conducted in Malaysia, found that perceived usefulness, perceived ease of use, perceived credibility, and social influence affect the intention to use m-payment. Bailey, Pentina, Mishra, and Mimoun (2017), agree with Mun, Khalid, Nadarajah (2017), showing that self-efficacy in the use of m-payments significantly affects both its perceived ease of use and its perceived usefulness. In turn, they affect the attitude, which impacts the intention to use m-payments. Privacy concerns also influence the user's attitude toward the intended use (Mun, Khalid, & Nadarajah, 2017). Kim, Park, Choi, and Yeon (2016) show that privacy concerns and information technology self-efficacy would be moderating variables in the process of adopting m-payments. The results of their research suggest that usefulness, ease of use, and credibility affect the intention to use, with self-efficacy moderating the relationship between independent and dependent variables. Another study, conducted by Gao and Waechter (2017), shows that initial trust positively affects both the perceived benefit and the perceived convenience, and these three factors together predict intention. According to the authors, the perceived convenience of m-payment systems also has a positive effect on the perceived benefit.

Oliveira, Thomas, Baptista, and Campos (2016) found that compatibility, perceived security of technology, performance expectations, innovation, and social influence have significant direct and indirect effects on mobile payment adoption and the intention of recommending such services. These effects occur primarily in social networks and other social media and corroborate the study conducted in Africa by Lwoga and Lwoga (2017). Morosan and DeFranco (2016) found that performance expectations were the central predictor of intentions, while hedonic motivations, habits, and social influences have relatively minor effects on the intention to use m-payments. The study by Khalilzadeh, Ozturk, and Bilgihan (2017) based on the use of m-payments in restaurants, points to attitude, security, and risk, as having a more substantial impact on customers' behavioral intentions, while also having direct and indirect effects on other constructs such as expectation of effort, expectation of hedonic and utilitarian performance, attitude, and intention. Abrahão, Moriguchi, and Andrade (2016) showed that the expected performance, expected effort, social influence, and perceived risk explained 76% of the behavioral intention to adopt mobile payments.

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### 2.3. TECHNOLOGY READINESS (TR)

Technology readiness (TR) can be defined as the level of individual propensity to adopt and use new technologies to fulfill particular goals in professional and personal life (Parasuraman, 2000). Parasuraman (2000) presents four dimensions that allow identifying the technological readiness of each individual. They present two dimensions as enablers of readiness, optimism and innovativeness, and another two dimensions, discomfort and insecurity, as inhibitors.

Technology readiness has a strong influence on constructs that represent consumer responses to services, such as perception of quality, satisfaction, and loyalty (Liljander et al., 2006). Technology readiness presents itself as an antecedent of several factors responsible for technology acceptance, such as perceived usefulness and perceived ease of use (Lin et al., 2007). Shin and Lee (2014) found that the four sub-dimensions of technology readiness (innovation, optimism, discomfort, and insecurity) significantly impact perceived ease of use. They also indicate that two NFC mobile payments' technological characteristics (responsiveness and intelligence) also substantially affect perceived usefulness. However, even according to Shin and Lee (2014), only perceived usefulness significantly affects the intended use, while perceived ease of use indirectly affects the intended use through perceived usefulness. Finally, technology readiness can also influence the intention to trust or not in a particular product or service (Elliott et al., 2013). Therefore, we propose the following hypotheses:

- **H1a:** Technology readiness has a direct and positive effect on the perceived ease of use of technologies applied to a m-payment service.
- **H1b:** Technology readiness has a direct and positive effect on the perceived usefulness of technologies applied to a m-payment service.
- **H1c:** Technology readiness has a direct and positive effect on the perceived quality of technologies applied to a m-payment service.
- **H1d:** Technology readiness has a direct and positive effect on confidence in a m-payment service.

### 2.4. PERCEIVED EASE OF USE (PEU)

The perception of ease of use indicates the level at which the individual believes that using new technology does not require physical or mental efforts (Davis, 1989). Despite being part of most technology acceptance models, the influence of ease of use is not the subject of consensus. After analyzing several studies that used the TAM model, Yousafzai et al. (2007) pointed that, on the one hand, many studies prove the significant influence of ease of use on usefulness on the attitude towards use. On the other hand, Yousafzai et al. (2007) also pointed out that many studies show that such relationships may not be statistically significant.

The multiple contexts where the influence of perceived ease of use was evaluated may justify this lack of consensus. According to Hess et al. (2014), the importance of its effects varies according to the studied technology's purpose. Considered one of the most influential constructs in utilitarian contexts, as is the case of m-payment, intrinsic motivations may reduce or increase ease of use's effects. This construct has been used in several recent studies, confirming the hypotheses that ease of use is an antecedent of perceived attitude and usefulness (for example, Bailey, Pentina, Mishra, & Mimoun, 2017; Mun, Khalid, & Nadarajah, 2017; Shankar & Datta, 2018). Thus, for this research, we propose the following hypotheses:

- **H2a:** The perception of ease of use has a direct and positive effect on the attitude towards the use of technologies applied to a m-payment service.
- **H2b:** The perception of ease of use has a direct and positive effect on the perceived usefulness of technologies applied to a m-payment service.

## 2.5. PERCEIVED USEFULNESS (PU)

Perceived usefulness indicates the individual's level of belief that using new technology will improve his performance in specific activities (Davis, 1989). Perceived usefulness presents itself as a critical determinant for the acceptance of technologies and, frequently, appears as a strong influencer of attitude (Shaikh & Karjaluoto, 2015; Yousafzai et al., 2007). Dahlberg et al. (2015) indicate that usefulness and ease of use are the most used constructs in research on the adoption of financial services via cellphones, which is not surprising, given that the TAM model has already been mentioned more than 2,400 times in several studies (Hess et al., 2014). Based on this, we present the following hypothesis:

- **H3:** The perception of usefulness has a direct and positive effect on the attitude towards the use of technologies applied to a m-payment service.

## 2.6. PERCEIVED QUALITY (PQ)

Parasuraman et al. (1988) define the perceived quality of a service as the consumer's judgment of the overall excellence of the service, in the form of an attitude resulting from the comparison between expectations and performance. Regarding the dimensions that make up the perception of quality, Brady and Cronin Jr. (2001) suggest that research should present three to ten different dimensions. This study will adopt the definition of Shih (2004), which defines the perception of quality in three dimensions: (1) perceived quality of information, (2) perceived quality of the system itself, and (3) perceived quality of service.

The perceived quality of information assesses the effect of using information sources when consumers and firms exchange and share information during transactions in virtual stores. The perceived quality of the system, in turn, concerns perceptions about the characteristics of the information system itself. Finally, the perceived quality of service follows along the same theoretical lines proposed by Parasuraman et al. (1988) but contextualized to websites' use (Shih, 2004). However, one can infer that, in the case of m-payments, this construct can influence the attitude in the same way as in virtual stores, m-banking, and websites. De Kerviler, Demoulin, and Zidda (2016) also point to the importance of the shopping experience in perceiving the quality of services. Thus, we propose the following hypothesis:

- **H4:** The perception of quality has a direct and positive effect on the attitude towards the use of technologies applied to a m-payment service.

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## 2.7. TRUST (TRU)

The use of constructs related to the perception of trust is justified in evaluating service adoption because the absence of prior testing impairs the quality of service assessment for the potential adopter. As observed in the innovation acceptance literature, be it regarding online shopping, internet banking, mobile commerce, or m-payments, among others, aspects related to trust tend to significantly influence the intention to use services related to financial transactions. In this sense, trust definitions are twofold. One places trust as the belief in a person's ability (or a company's) to perform a specific task. The other puts it as an expectation that a promise is trustworthy (Dimitriadis, & Kyrezis, 2010).

Some recent studies relate trust to the intention to use (Cocosila, & Trabelsi, 2016; De Kerviler, Demoulin, & Zidda, 2016; Shankar, & Datta, 2018). The study by Gao and Waechter (2017) points to the importance of initial trust, which positively affects, in turn, the perceived benefit and convenience, with the three factors together predicting the intended use. In turn, Hampshire (2017) shows that, despite concerns regarding risk and confidence in mobile payments, individuals tend to ignore these concerns in scenarios in which clear benefits for this form of payment are perceived. Also, the perception of trust positively influences the perception of usefulness, mitigating the negative influence that perceived risk has on the latter.

Given that trust is an antecedent of attitude (Dimitriadis, & Kyrezis, 2010; Cocosila, & Trabelsi, 2016; De Kerviler, Demoulin, & Zidda, 2016; Hampshire, 2017; Chen, & Li, 2017; Shankar, & Datta, 2018), we propose the following hypothesis:

- **H5:** Trust has a direct and positive effect on the attitude towards adopting technologies applied to a m-payment service.

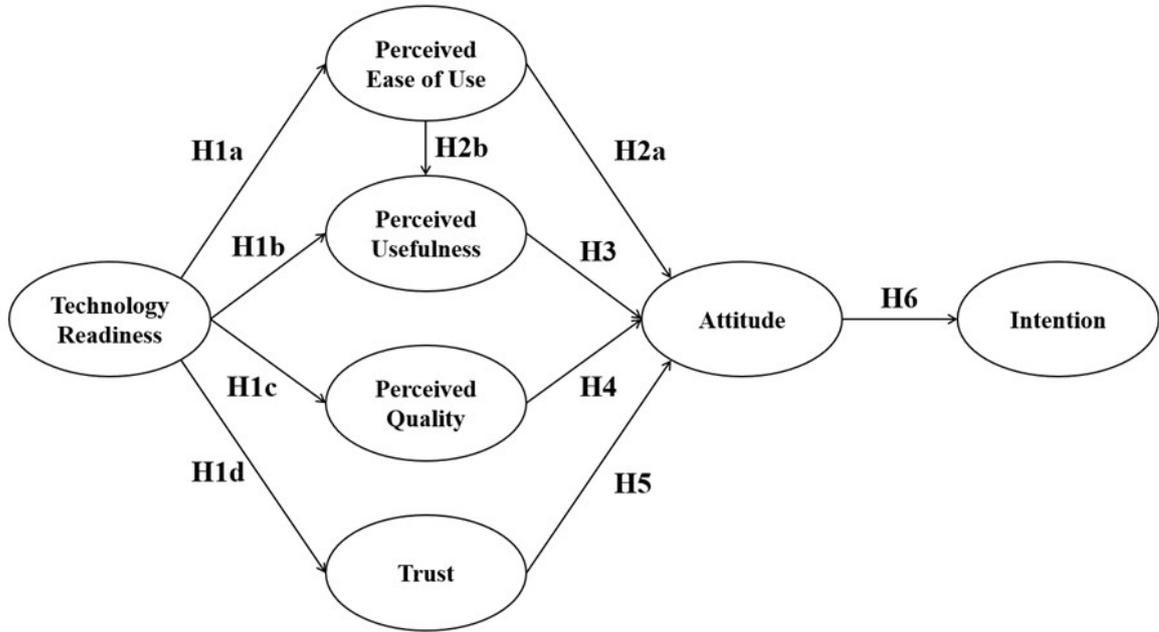
## 2.8. ATTITUDE TOWARDS USE (ATT) AND INTENTION TO USE (INT)

Fishbein and Ajzen (1975) describe attitude as one's positive or negative feeling in response to the stimulus provoked by some object, action, or event. Its role within technology acceptance models is not the subject of consensus. In search of parsimony, some researchers choose to disregard the construct, such as Davis et al. (1989) for the TAM model itself. However, many other models that sought to expand the original TAM's explanatory potential ended up reinserting the attitude construct in their models, obtaining significant results (Kulviwat et al., 2007; Ferreira et al., 2014).

Fishbein and Ajzen (1975) define intention to use as the subjective probability that an individual will exhibit a particular behavior. In this sense, Davis et al. (1989) inserted the intention to use construct in the TAM model to predict the future use of the text editor technology after a short contact of the respondents with the technology. Likewise, several studies investigated the future use of technologies with respondents who had no previous experience with them, validating the use of the intention to use constructs instead of evaluating the actual use of the technology (Kulviwat et al., 2007; Yousafzai et al., 2007; Venkatesh et al., 2012). Other studies also confirm this relationship between attitude and intention to use (Mortenson, & Vidgen, 2016; Lai, 2017). Thus, we propose the following hypothesis:

- **H6:** The attitude towards use has a direct and positive effect on the intention to use technologies applied to an m-payment service.

Figure 1 describes the proposed model, as well as the research hypotheses.



*Figure 1.* Proposed Model for Mobile Payments Readiness and Acceptance.  
*Source:* Prepared by the authors.

### 3. METHOD

The hypotheses test used data collected in a cross-sectional survey (Parasuraman et al., 2006). The survey used a non-probabilistic convenience sampling of the population of interest and snowballing techniques to distribute the questionnaire. This design is prevalent in technology acceptance studies among consumers (Kulviwat et al., 2007). The authors sent invitations containing a link to access the questionnaire using email, social networks, and instant messaging applications. Initially, respondents watched a video presentation of m-payment services and their main attributes. After watching the video, the respondents could answer the questionnaire, which was available from March to April of 2016. The data were treated using the statistical softwares SPSS and AMOS and analyzed via Structural Equation Modeling (SEM).

**3.1. OPERATIONALIZATION OF VARIABLES**

The questionnaire consisted of scales already prepared and tested by the literature (Table 1). The scales referring to the Intention of Adoption, Attitude, Perceived Ease of Use, and Perceived Usefulness constructs already had adequate translation into Portuguese (Ferreira et al., 2014). The other constructs were translated by experts into Portuguese and then translated back into English (back-translation) to verify the translation’s accuracy (Sperber, 2004). After carrying out a pre-test, the final data collection instrument presented 38 items measured by five-point Likert scales.

**Table 1**  
*Scales used to define the constructs in the research model*

Construct	Items	Source
Technology Readiness	16	Parasuraman & Colby (2014)
Perceived Ease of Use	5	Kulviwat et al. (2007)
Perceived Usefulness	5	Kulviwat et al. (2007)
Perceived Quality	3	Oh et al. (2009)
Trust	3	Malaquias & Hwang (2016)
Attitude towards use	3	Lee (2005)
Intention to Use	3	Khalifa & Shen (2008)

*Source:* Prepared by the authors.

**3.2. SAMPLING AND DATA COLLECTION PROCEDURES**

Given that the target population involves consumers of mobile payment methods , we sought to access a more qualified population with possible access to such services. Thus, the researchers, who are professors in higher education institutions, used their institutions to access such respondents. The use of this kind of sample, young people with a high level of education, is ordinary in studies on high-tech products and services adoption (Ferreira et al., 2014; Dahlberg et al., 2015; Shaikh, & Karjaluo, 2015).

Therefore, a sample of 452 respondents was obtained, with 50 questionnaires eliminated due to missing data, leaving 402 valid questionnaires. Two hundred and ninety respondents (72%) declared living in Minas Gerais, 92 (23%) in Rio de Janeiro, and 20 (5%) in other states. Regarding education, 65% of respondents declared to be undergraduates, 11% recent graduates, 18% were taking some postgraduate course, while 6% reported having graduated recently in a postgraduate course. All questionnaires were self-administered.

**4. RESULTS**

**4.1. COMMON METHOD VARIANCE TEST**

Common Method Variance (CMV) could present problems in this study, considering that all items, dependent and independent variables, were opinions collected from the same informants. Therefore, we used the Harman factor test, following Podsakoff and Organ’s (1986) suggestion, to examine the extent to which this bias was present in the collected data. The principal component analysis indicated the presence of seven factors with an eigenvalue greater than 1. None of them

able to explain more than 38.09% of the total variation. CMV was also tested by the Common Latent Factor method, as described by Podsakoff et al. (2003). This test showed that, when including a latent variable that reflected a common method bias, the correspondent variance was only 5.3% of the total. These results collectively indicate that the common method variance does not seem to be an issue for the collected data (Podsakoff, & Organ, 1986; Podsakoff et al., 2003).

#### 4.2. MEASUREMENT MODEL

The measurement model estimation and evaluation used Confirmatory Factor Analysis (CFA), while the hypothesis test used Structural Equation Modeling (SEM). The final measurement model, after refinement, presented fit indexes considered good (Hu, & Bentler, 1999), with a  $\chi^2$  of 2.074, a RMSEA of 0.052, a SRMR of 0.060, a CFI of 0.934, an IFI of 0.935 and a TLI of 0.926. Together, the final indices suggest a satisfactory adjustment of the data to the proposed model.

The measurement model evaluated the face, nomological, convergent, and discriminant validities of the employed scales. A careful review of the items, originating from scales present in the literature, translated and pre-tested before applying the questionnaire, helped establish face validity. In turn, the study of the correlation matrix between constructs indicated nomological validity since all correlations showed significant values in the direction indicated by the literature. The values for AVEs (Average Variance Extracted) for each construct were between 0.56 and 0.86, pointing to satisfactory convergent validity. Considering the minimum levels of reliability pointed out by Fornell and Larcker (1981), all scales used in the data collection instrument could be regarded as adequate, presenting values between 0.78 and 0.95 for Cronbach's  $\alpha$ , and between 0.81 and 0.95 for Composite Reliability. Regarding discriminant validity, all shared variances were inferior to the AVEs of the measured constructs.

#### 4.3. STRUCTURAL MODEL

The general adjustment indexes for the structural model presented values that demonstrate the goodness of fit of the model ( $\chi^2 = 2.159$ ; SRMR = 0.063; CFI = 0.927; TLI = 0.921; IFI = 0.928; RMSEA = 0.054), pointing to a good adjust between the model and the collected data.

Once we verified the structural model fit to the data, our next step consisted of checking the estimated coefficients for the relationships between the constructs (Table 2 and Figure 2) and each one's significance.

The results indicate that nine out of the ten proposed hypotheses presented significant effects. The exception being hypothesis H2a, which suggested the influence of the perceived ease of use on the attitude. In this case, the effect of ease of use on the attitude was only indirect, through the perceived usefulness. The proposed model explained about 67% of the variance of the intention to use and 74% of the attitude towards use.

**Table 2**  
Standardized estimated coefficients for the model

Hypothesis tested	Coefficient	p-value
H1a: Technology Readiness → Perceived Ease of Use	0.599	< 0.001
H1b: Technology Readiness → Perceived Usefulness	0.672	< 0.001
H1c: Technology Readiness → Perceived Quality	0.939	< 0.001
H1d: Technology Readiness → Trust	0.761	< 0.001
H2a: Perceived Ease of Use → Attitude	-0.031	0.495
H2b: Perceived Ease of Use → Perceived Usefulness	0.227	< 0.001
H3: Perceived Usefulness → Attitude	0.419	< 0.001
H4: Perceived Quality → Attitude	0.223	0.001
H5: Trust → Attitude	0.349	< 0.001
H6: Attitude → Intention	0.824	< 0.001

Source: Prepared by the authors.

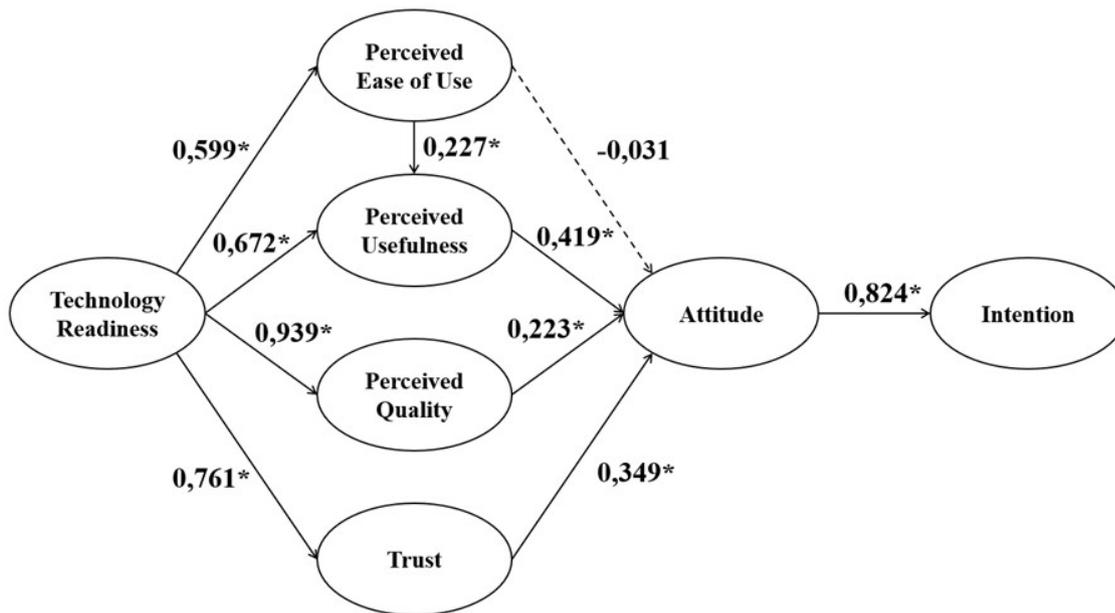


Figure 2. Standardized coefficients and significance (\* indicates  $p < 0.001$ ).

The effect of technology readiness on perceived quality (0.93) was the relationship presenting the strongest effect in the whole model. This result allowed us to infer that the predisposition for the use of technologies can make consumers of financial services more easily able to perceive the quality presented by the referred services, confirming the suggestion of Zeithaml et al. (2002). This result is consistent with the results previously found in the literature (Elliott et al., 2013; Liljander et al., 2006; Lin et al., 2007; Lin & Hsieh, 2007; Shin & Lee, 2014).

This research also showed a relationship not yet explicitly identified in the literature: the influence of technology readiness (0.76) on trust. This hypothesis, proposed based on Dimitriadis and Kyrezis (2010), confirms that the individual's predisposition towards new technologies, in general, influences the individual's perception of the credibility of an innovation linked to

financial services. Financial service providers can use this result and develop different ways to promote their services' reliability, considering different market segments stratified based on the predisposition towards technology.

As for the constructs related to the acceptance of mobile payment technologies, other recent studies used models such as UTAUT (Oliveira, Thomas, Baptista, & Campos, 2016; Abrahão, Moriguchi, & Andrade, 2016; Khalilzadeh, Ozturk, & Bilgihan, 2017), UTAUT2 (Morosan & DeFranco, 2016) and TAM (for example Bailey, Pentina, Mishra, & Mimoun, 2017; Lwoga & Lwoga, 2017; Mun, Khalid, & Nadarajah, 2017; Liébana-Cabanillas, Muñoz-Leiva, & Sánchez-Fernández, 2018; Shankar & Datta, 2018; Kalinić, Liébana-Cabanillas, Muñoz-Leiva, & Marinković, 2019), combined with constructs related to the diffusion of innovations, the degree of personal innovation, perceived risk, security, trust, expectation of hedonic and utilitarian performance, self-efficacy, subjective norms, and social influence.

In the case of our study, perceived usefulness presented the largest effect on attitude (0.419). This result is consistent with several previous studies, which indicate that cognitive factors are responsible for most of the variance in attitude towards the acceptance and use of technologies (King & He, 2006; Shaikh & Karjaluo, 2015; Mun, Khalid, & Nadarajah, 2017; Liébana-Cabanillas, Muñoz-Leiva, & Sánchez-Fernández, 2018; Liébana-Cabanillas, Marinkovic, Luna, & Kalinic, 2018).

However, perceived ease of use had only an indirect effect on technology acceptance through the perception of usefulness. The way the respondents interacted with the object of this study may explain this result. In early 2016, consumers in Brazil knew little about m-payment services, and respondents learned about the technology through our explanatory video. Thus, the absence of direct contact with the real service may have interfered with the respondents' perception of its use. Also, Venkatesh (1999) indicates that perceived ease of use tends to present better results when hedonic motivations are present, which may have contributed to this unexpected result since financial services have a predominantly utilitarian context.

## 5. FINAL CONSIDERATIONS

This research's main contributions are proposing an original model that advances knowledge about the individual's readiness to use technology and showing something new: the influence of technology readiness on trust (0.76). This result allows us to infer that the model proposed here, based on TAM, can contribute significantly to the literature on the adoption of m-payments for several reasons. First, as the study's main contribution, the research highlights the influence of technology readiness on trust in financial services. Such an effect, both direct and positive, indicates that individuals with a greater predisposition to the use of technologies tend to trust these more. This result has both academic implications (in contributing to the study of the antecedents of trust) and managerial implications (in providing subsidies to define strategies related to the security of this type of service).

Second, the research shows that individual predisposition regarding the use of technologies in general (readiness for the technology) plays a critical role in m-payment adoption. Technology predisposition influences not only the perception of a service's usefulness but also of its quality. In this sense, the impact of technology readiness on perceived quality is relevant to the literature. It shows that individual characteristics linked to technologies, in general, can interfere with the individual's perception of service quality.

Finally, as a managerial implication, the results allow some suggestions for the business environment. The assessment of the technology readiness presented by consumers can lead

companies to better guide the promotion of specific attributes of their services, depending on the desired target audience, allowing them to improve their positioning and market segmentation strategies. Suppose the target audience includes individuals with reduced technology readiness. The company should reinforce attributes related to usefulness and ease of use of the service to stimulate this audience's purchasing decisions. Now, suppose the target audience includes people with high technology readiness. In this case, the company must develop promotional strategies that focus on creating customer trust and highlighting quality, as technology readiness strongly affects such attributes. People highly predisposed to new technologies tend to understand a service's usefulness. The company's communications may then focus on trust and quality perceptions of the service to be provided. This target audience will pay greater attention to this type of information when deciding whether to use a new service.

One of the limitations of this research is that the respondents may not have had yet direct access to a mobile payment service since we collected the data in early 2016. Such limitation may have impaired cognitive and affective assessments of m-payment, being perhaps one of the reasons that led to the non-identification of any influence of the perceived ease of use on attitude. Due to this probable lack of direct contact with the service, a suggestion for future research would have this model tested in a population similar to the one used here, evaluating some widely accessible mobile payment services in the country. Thus, it would be possible to verify the relationships observed in this research, further expanding the understanding of the factors that lead to the adoption of innovations in the financial services sector.

Another limitation of the research concerns the sample, since it used a group of students in higher education whose characteristics are relatively homogeneous. Given the convenience sample of students with a high level of education, further studies should seek to extend the research to other groups, aiming to increase the degree of generalization of the results. Furthermore, replicating this study in more current technological contexts of m-payment will be crucial. As pointed out in the Method section, research involving technologies often employs samples of highly educated individuals, especially those involving mobile devices. On the one hand, for this audience, it makes a lot of sense to have technology readiness related to trust (young people with high schooling). However, this does not mean that the behavior won't repeat itself in other groups (non-students).

As another suggestion for future studies, comparing the findings from before and after the COVID-19 epidemic could provide new information since mobile payment methods have become more popular over the years and particularly required during the pandemic period.

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**CONFLICTS OF INTEREST**

The authors declare that there is no conflict of interest.