



# What are the leading factors for using Spanish peer-to-peer mobile payment platform Bizum? The applied analysis of the UTAUT2 model

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## ABSTRACT

The main goal of this paper is to determine the underlying factors that drive the adoption of the Bizum mobile peer-to-peer payment system by users. It is empirically proven that factors included in the extended Unified Theory of Acceptance and Use of Technology (UTAUT2) model are precursors of the mobile payment adoption. The proposed model modifies the set of constructs by adding trust, security, and perceived risk. The sample consist of 334 Bizum platform users who are mainly young people between 18 and 22 years old. Obtained data was analyzed by a Structural Equation Modeling (SEM) through Confirmatory Factor Analysis (CFA). The results show that the strongest predictor for adopting to use Bizum mobile payment platform is habit, with 75 % of acceptance of young online banking users. But habit and social influence factors show 82.5 % of intention of use among young users. In contrary, performance expectancy, effort expectancy, facilitating conditions, price-value, hedonic motivation, trust, security, and perceived risk do not influence the intention to use this platform. Banks, financial entities, as well as banking platform developers, can benefit from the results of this study by understanding the factors that influence users to use these platforms and consequently successfully implement them.

## 1. Introduction

*Digital banking* is a widely used expression for any application of technology that aids in completing financial operations and banking transactions, in a more efficient manner than traditional banking (Sardana and Singhania, 2018). As such, an encompassing perspective for the term *financial operations* electronic-digital tools, internet banking, and mobile, are all areas within digital access. Specifically, mobile technologies evolved from analog connection to broadband and wireless to ease client access to varied services for different financial services and banking needs (Yao and Zhong, 2011). Essentially, clients that access their bank for basic everyday services (accessing tellers, paying bills, money orders, opening bank accounts, deposits, loan payments, access to bank statements and related transactions), they do so instantly, by interacting via mobile devices (cellular phone and tablets) to an omnipresent platform (Kwateng et al., 2019; Laukkanen, 2016; Baptista and Oliveira, 2015). Digital forms of payment were first introduced as an effective means to complete common *digital banking* operations (Aladwani, 2003; Leong et al., 2020). The mobile digital payments system comprises financial activities including services that require connecting

bands in mobile operating frequencies, commonly used for digital handheld assistants, cellphone technology, and, for any communication between devices sharing data in an open network (NFC) (Alkhowaiter, 2020; Patil et al., 2020); additionally, payment modalities using encrypted network, such as, e-wallet and cryptocurrency for payments alternative modes to issued currency that more recently are replacing credit and cash as more traditional payment methods. In summary, all these modes of technology used in banking operations for every day, common banking, including authorizing transactions, allow a far-reaching integration across-systems and payment platforms into financial transactions, from a *digital banking* perspective (Srivastava et al., 2010). The mobile technology for peer-to-peer (P2P) systems, payments from person-to-person, are far more flexible for trading goods and services, exchanges from providers and customers in a shared common platform at any time; namely, as services agreed between users, the channels for transferring money alternates varied technological platforms via mobile, online banking, internet banking and online-social network platforms. All these devices require mobile technology in order to complete digital online payments.

From this perspective the adoption ratio, a 3.6 % is established on the

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assumption of a growing value per transaction of 644€ globally. Also, Pricewaterhouse Cooper reported that digital-based payments reached 3 billion transactions worldwide in 2021, with an estimation for future around the number of transactions at 30 billion in digital payment transactions. On basis of the [PWC \(PriceWaterhouseCoopers\) 2022](#) report, in years 2020–2025 the percentage of electronic digital payments will grow to 82 % averaging 1.8 billion transactions; in 2025–2030, growth estimated to 61 % surpassing 1.8 billion operations. Across different areas, Asian-Pacific region will lead the adoption with a 76 % growth estimated for years 2025–2030, followed by African countries, 64 %, and European area 39 %. North-America's adoption, including USA and Canada, will grow moderately, at 35 % ([PwC \(PriceWaterhouseCoopers\), 2022](#)).

Considering that knowledge across fields in Psychology, Sociology, Information Technologies have accounted for a shift in user technology adoption from diverse theories and model frameworks in UTAUT, for the study, these premises from [Venkatesh et al. \(2003\)](#) are applied. Their model is based on a commitment to integrate, by unifying some pre-established models; since this integration allowed to account on previous models, they draw a line of continuity in acceptance of new technologies based on users' perception. By being applied in corporate understanding of technological change for organizations, the model was applied considering four main factors affecting technological integration: *Performance Expectancy*, *Effort Expectancy*, *Facilitating Conditions*, and *Social Influence*. Rooting in large acceptance and longtime popularity, by having been linked to many sectors, a second extension to this framework was developed in 2012 (UTAUT2) with three added factors: *Hedonic Motivation*, *Price/Value*, and *Habits*, as they are directly linked to consumer behavior. Extension theory took on the new variables by adjusting the model in order to evaluate the adoption-technology from the users' perspective.

Additional estimates on the speed of penetration and rate of adoption in digital banking, payment platforms, and the high complexity of factors in the usage, as well as, adoption rates – from previous barriers to online banking and digital payments – will provide a focus on academic research and industry sectors alike ([Kwateng et al., 2019](#); [Merhi et al., 2019](#); [Gharaibeh et al., 2018](#); [Alalwan et al., 2018](#); [Tamilmani et al., 2019](#); [Putri, 2018](#); [Shaw and Sergueeva, 2019](#); [Soodan and Rana, 2020](#); [Purwanto and Loisa, 2020](#); [Widyanto et al., 2020](#); [Widodo et al., 2019](#); [Shaw and Sergueeva, 2019](#); [Chen et al., 2019a,b](#); [Suo et al., 2022](#); [Saura et al., 2021](#)). The present study is based on a framework for adoption in model UTAUT2 for an evaluation and consideration of determinant factors, as these relate to P2P mobile payment platforms. Therefore, social and individual constructs mediating a user's disposition into acceptance, such as, Trust, Security, and Perceived Risk, become prevalent factors in the selection of new platforms.

A vacuum in academic research relating technology usage and P2P adoption has been prevalent after the years of Global Health Emergency during Covid-19 pandemic. The framework presented in this study for anchoring Bizum, a P2P system widely used in Spain, revolves around user intention and it is aimed at reporting on an exploding technology.

The following research questions and objectives lead the study. Research questions:

- 1) What are the factors that affect behavioral intention in the process of using a mobile payment platform Bizum?
- 2) What aspects of trust, security and perceived risk can be assessed upon adopting mobile payment platform Bizum?

### 1.1. Objectives

- 1) To explore the factors included in the model UTAUT2 directly impacting user behavior around mobile payment platform Bizum.
- 2) To add rationales from the model UTAUT2 impacting user behavior around mobile payment platform Bizum.

- 3) To evaluate the model of behavioral user intention aligned with empirical data in correlation with guiding variables.
- 4) To establish a preliminary guideline, from intention to usage, for plausible advances around this area. One expected outcome arising from the review consisted in contributing to literature around the identified factors– Trust, Security, and Perceived Risk–, which have established a line of continuation for usability assigned to P2P, as an adequate model of analysis: a predicting model for evaluation in intention around digital payment systems.

After the introduction, the core analysis follows from a literature review to frame the model of assessment and its variables; a conceptual framework guided by hypothesis for adoption. The main corpus of data, process of compilation and data analysis, is provided in section three, via modeling equations. Next, the results and discussion with data show-cases. Section five is for conclusions and contributions from the study and final section, pointing at plausible future lines of research and managerial outlook.

## 2. Preliminary thesis and previews academic studies

### 2.1. P2P Mobile pay – Bizum

A P2P *Peer-to-peer digital payments* platform is a type of digital transaction that allows to transfer funds between people at two ends, by connecting to their bank account or credit card via mobile application or online ([Thompson, 2019](#); [Ramos de Luna et al., 2019](#)). Often considered as an easier method of payment, faster and convenient, it is easy to configure since the two users are registered for the purpose of obtaining an account number in order to link a bank account or credit card account with the application. It is a fast portal for the connection where transfer happens in a few seconds and few click for completing the transaction, after the user has selected a recipient, entered an amount, and submitted the payment ([Bizum, 2022](#)). For this reason, digital payments are broadly accepted and its popularity rage among friends, relatives, and colleagues ([Fuscaldo, 2019](#)). Many platforms for P2P are supported by non-financial entities, including Paypal, SquareCash, Venmo, Bizum, Apple Pay, Google Pay, etc.

Bizum is a Spanish-based entity created in 2016 after a collaborative partnership from banks in Spain, with the aim of establishing an agile system that serves both individuals, and traditional brick & mortar commerce. This payment platform allows the transfer of funds from a recipient end to users by sharing a mobile number. When a user needs to send funds, the system notifies it with a text message to verify the connection; this code is needed to complete a safe transaction via the mobile platform. Once the transfer is completed, the recipient can deposit the funds instantly. From the moment a transfer is completed, the cash amount is showing at the end's recipients account holder, and the transaction is recorded so it can be later retrieved from a Bizum data sheet. The novel financial platform is gaining traction from recent peak in access from individuals and business users into Digital payments and mobile access to platforms during the years of global pandemic outbreak, Corona-virus19. Access to Bizum in 2021 accounted for 18 million registered users, and it is expected to reach 23 million in 2022, which entails a 48.6 % of the total Spanish population. The goal for the present year (2022) is to complete 800 million transactions from individuals and to surpass the 20 million transactions for e-commerce users.

### 2.2. UTAUT2

The Unified Theory of Technology Acceptance and Use UTAUT was developed in 2003 to predict user adoption of information technology in a business context ([Venkatesh et al., 2003](#)). UTAUT integrated eight previous relevant theories, which are the following: Innovation Diffusion Theory IDT ([Rogers, 1961](#)); Theory of Reasoned Action TRA ([Ajzen](#)

and Fishbein, 1980); Theory of Planned Behavior TPB (Ajzen, 1991); Social Cognitive Theory SCT (Bandura, 1986); Technology Acceptance Model TAM (Davis, 1989); Model of PC Utilization MPCU (Thompson et al., 1991); Motivational Model MM (Davis et al., 1992); C-TAM; Model Combined with TPB (Taylor and Todd, 1995).

For a systematic approach, within a model design previewing research models from UTAUT acceptance model, four main constructs are defined: performance expectation, effort expectation, social influence and facilitating conditions, which are the factors that determine technology adoption; user's behavior depends on his/her intention and on technology usage, and it impacts all four factors mentioned, PE, EE, SI, FC. The UTAUT model considers variables from bands across personal identity variables, gender, age, experience, and voluntary use to modulate the influence of the four constructs along with behavioral intention and use of technology (Venkatesh et al., 2003).

Since UTAUT arises for a context generic for organizations, Venkatesh et al. (2012) developed UTAUT2, to include three new constructs: hedonic motivation, price/value and habit, factors oriented towards the acceptance of technology within an evolved framework to key in consumers' behavior (Fig. 1).

### 2.3. Research on mobile payments and UTAUT2

Since it first appeared in 2012, research around *Theory Acceptance and Use Technology* (Venkatesh et al., 2012) has shown a proven valid method to underpin technological innovation in several areas, across field domains and contexts. Some of the advantages noted in this study are: an encompassing approach from a consumer viewpoint in the process of technology adoption, from both theoretical frameworks, UTAUT and UTAUT2; a higher prospecting power into determining outcomes for adoption, from a UTAUT2 angle to leverage sources and explanatory variables, up to a 74 %; opening views to a paradigm flexible enough to integrate constructs, which by means of an augmented insight into behavioral basis, increases the user intention predicting model (Migliore et al., 2022). These essential guidelines open a path for understanding emergent technologies from a developmental stage based on the theoretical framework. It features a model of analysis that is reliable, trusted

and greatly used. Into the context of technology systems and platforms for mobile payments, many scholars adopt this underlying framework (Liébana-Cabanillas et al., 2021; Balakrishnan and Shuib, 2021; Penney et al., 2021; Pratama and Renny, 2022; Widyanto et al., 2021, etc.).

Often scholars have cross referenced the model UTAUT2 along with other theories depending on their field of research. Tamilmmani et al. (2021) investigate their own approach for an extension theory providing an outlook into at least sixty thematic areas and find five constructs common to any differing approach, including: trust, perceived risk, self-efficacy, attitude, and personal innovation. After accessing up to 377 articles, and synthesizing a total of 25 articles, Al-Saedi and Al-Emran (2021) obtain a filter for the model common variables predicting user adoption, to highlight perceived risk and trust as the highest ranking. Based in 57 TAM/UTAUT/UTAUT2 studies that focus on mobile payment systems, Harris et al. (2019) suggest— for a renewed approach into technology adoption regarding mobile payment systems— that new opportunities are opening from a perspective that grasps personal use in countries with robust financial systems where risk perceived and trust remain prior elements before security and privacy.

Next, focusing on contexts that are filtered from studies using an ample scope for their approach to mobile P2P, Al-Okaily et al. (2022) undertake mobile payments and technology adoption in Jordan by extending UTAUT2 constructs to variables such as conscience, trust, security and privacy. From this taxing filter, the results are favoring Price-value and social influences as main factors determining use of mobile for payments, as well as performance expectations, conscience, and trust. Some other variables added to the tandem in Widodo, are perceived risk and trust (Widodo et al., 2019). For these authors, habit is more prevalent than intent in a behavioral user approach to adoption in Indonesia, and, social influences, performance expectation, hedonic motivation, and perceived risk will not affect user intention significantly.

More recently, some of the variables activated from these critical UTAUT/UTAUT2 studies are included along many of the scholarly research approaches being undertook to present day: trust (Penney et al., 2021; Pratama and Renny, 2022; Widyanto et al., 2021), security (Chauhan et al., 2022; Pratama and Renny, 2022; Widyanto et al., 2021)

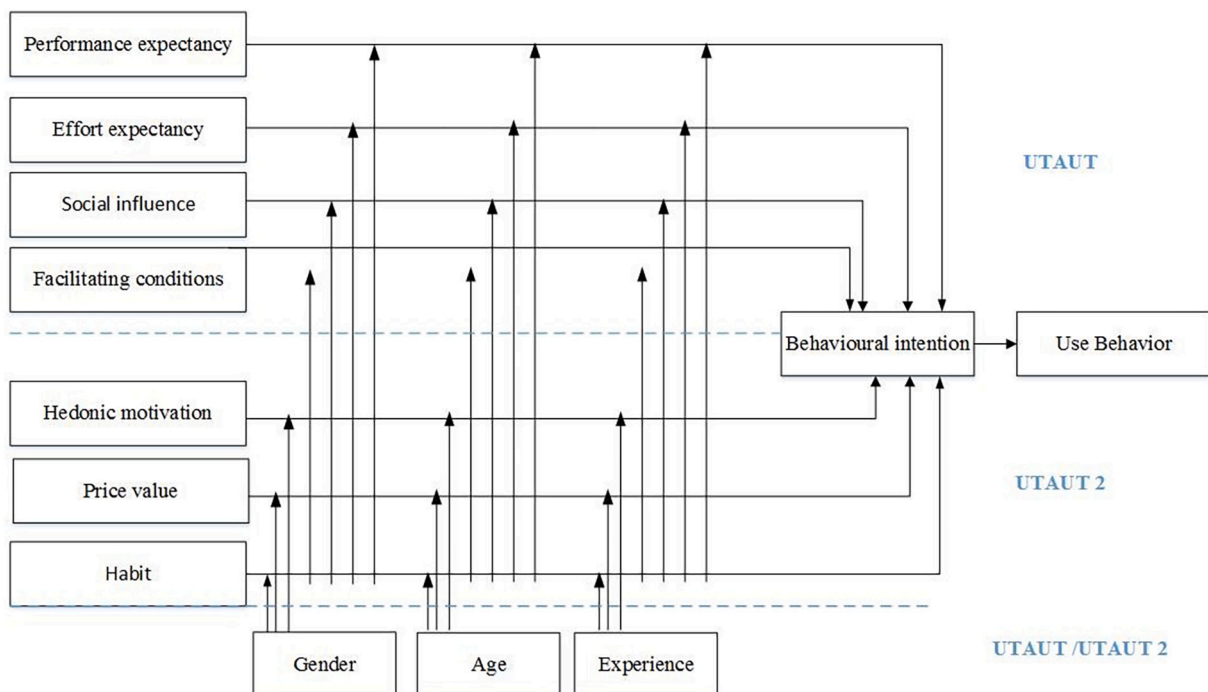


Fig. 1. Extending Theory Acceptance and Use Technology (UTAUT2). Source: Adapted Venkatesh et al. (2012).

and perceived risk (Penney et al., 2021; Chauhan et al., 2022; Pratama and Renny, 2022; Widyanto et al., 2021).

## 2.4. SEM structural equations modeling

SEM model is based in Variances (VB-SEM), originating from a prevalent theory on dependency relations. It is conceptualized from a systematic integration of relationships to justify a given range of phenomenon that, in turn, provides an explanation for differentiating variables that are acting vs factors and variables that result from a dependent link. The aim of the explanation model is the theory; the framework for a theoretical justification starts from the assumption by which SEM's is confirming its guidelines and rationale for the sake of providing a theoretical framework, above the confirmation of empirical results. A researcher examining relations and variants from a theoretical viewpoint to proof its validity from a conceptual standpoint (Hair, 2009). As a result, SEP provided a background, a conceptual framework for contrasting theoretical grounds against facts (empirical data sets) (Haenlein and Kaplan, 2004). This provides versatility of approaches for research areas coming from Social Studies, Education, Behavioral Sciences, in order to approach a causal chain supported by this theory (Gefen et al., 2000; Haenlein and Kaplan, 2004; Statsoft, 2013). The final recommendation to support any analysis on market penetration arising from SEM tools is to rely on a consistent theoretical standpoint (Hair et al., 2014).

## 2.5. Thesis: guidelines for the analysis

Based on the previous section, pointing at relevant literature on the topic, the present study brings light further on our objective: to aim research and analysis in the proposed areas under three variables, trust, security and perceived risk, all of these variables departing from current models as part of UTAUT2 framework.

### 2.5.1. Performance Expectancy → Behavioral Intention

What is the *Performance Expectancy* (PE)? This key metric indicates the individual perception previous to using a new system to assess the degree in which work performance will be improved (Venkatesh et al., 2003). In the context of banking system, the degree of expectation in the improvement of online internet banking tools for an additional benefit as part of banking operations (Raza et al., 2019). These benefits include an added comfort to effectuate payments, a more immediate response and efficient service for the overall service provided by mobile and online banking (Khan et al., 2022; Zhou et al., 2010). For this reason, authors that consider PE for its impact arising from the intent of behavior, weighed this factor higher (Baptista and Oliveira, 2015; Basri, 2018). In fact, when PE applied to mobile payments specifically, the adoption rate is higher as directly linked to the functionality of the services for the transaction (Gupta and Arora, 2017; Hongxia et al., 2011; Yu, 2012; Chong, 2013; Yang, 2010). Considering some of these findings, the thesis that is being pursued from the analysis, follows, a first guideline:

**H1.** : PE positively and directly influences user's intention of using Bizum P2P system.

### 2.5.2. Effort Expectancy → Behavioral Intention

What is *Effort expectancy* (EE)? In the context of any system, this key metric provides a grade to the easiness of use; for an easier usability associated with online banking, there is a higher probability of adoption from clients in their regular banking transactions (Venkatesh et al., 2003). There is a positive impact associated with a grade of EE that results in the intent from a behavioral standpoint on the part of users, who may be considering mobile banking (Giovanis et al., 2019; Gupta et al., 2019; Iqbal et al., 2022;). Following with a previous line of adoption of new services in mobile payments, on one hand, some

authors see this expectation from a positive light towards mobile payment system adoption (Alalwan et al., 2017; Abu-Taieh et al., 2022; Shaikh et al., 2021), while others see it as one key dominant factor for adoption (Bailey et al., 2017; Kadim and Sunardi, 2022; Tan et al., 2014; Wulandari, 2017). Therefore, based on this, the following hypothesis is proposed:

**H2.** : EE positively and directly influences user's intention for using Bizum P2P system.

### 2.5.3. Social Influence → Behavioral Intention

*Social Influence* (SI) includes the perception from an individual around social network value arising from the connection to other individuals that can be influenced for adoption of a new system (Venkatesh et al., 2003). The information and stimulate set around a circle of people that are influencing clients, contributes to the sense of a role defined as contributing towards understanding and knowledge of their use of internet banking and mobile payments (Alalwan et al., 2016). Several studies presented this thesis on SI as directly linked with behavioral intention to adopt services as part of online & mobile banking; as such, social influence defines intention and usability of the new system (Bhatiasevi, 2016; Tan and Lau, 2016; Kishore and Sequeira, 2016; Mahfuz et al., 2016). In addition, there are analysis that are pointing at SI as the most significant factor impacting usage in mobile and online banking (Alalwan et al., 2016; Fedorko et al., 2021; Yu, 2012). As such analysis is streamlined with literature around adoption for online & mobile, it follows that SI favorably conditions the adoption of new services and technology. (Marpaung et al., 2021; Migliore et al., 2022; Suo et al., 2022; Nur and Panggabean, 2021). Therefore, based on this, the following hypothesis is proposed:

**H3.** : SI positively and directly influences user's intention for using Bizum P2P system.

### 2.5.4. Facilitating Conditions → Behavioral Intention

*Facilitating Conditions* (FC) account for the set of expectations that an individual has on a given technical and organizational structure to back up the system use (Venkatesh et al., 2003). In the existing literature on mobile banking, FC represent individual perceptions on existing infrastructure, both, form a technical and organizational standpoint, in order to validate the mobile banking system (Albashrawi et al., 2017). Considering that mobile banking services rely on resources availability, as well as know-how and a number of set parameters in the structural system, arranging conditions have influence on a person's decision to use mobile banking (Afshan and Sharif, 2016; Thaker et al., 2021; Wu et al., 2021). In the mobile payments' ecosystem, FC are taking into a mix of significant value for the consideration into adoption of mobile payment from the consumer side (Baptista and Oliveira, 2015; Chauhan et al., 2022; Teo et al., 2015). Therefore, based on this, the following hypothesis is proposed:

**H4.** : FC positively and directly influences user's intention for using Bizum P2P system.

### 2.5.5. Price/Value → Behavioral Intention

*Price/Value* (PV) revolves around the perception on the consumer side relative to the benefits perceived as technology application in connection to cost of use (Venkatesh et al., 2012). This pre-conception grows from the underlying consumer belief that technology has a high cost (Luarn and Lin, 2005). As part of the final price, subscription fee, device cost and Internet user fees, add to the overall application (Wei et al., 2021) The price/value, in the context of studies on mobile payment systems, includes perceived price, a prior estimation on value, as a negative influence initially impacting adoption (Bhatiasevi and Yoo-petch, 2015; Giovanis et al., 2019; Gupta et al., 2019; Wu et al., 2021). Therefore, based on this, the following hypothesis is proposed:

**H5.** : PV negatively and directly influences user's intention for using Bizum

P2P system.

### 2.5.6. Habits → Behavioral Intention

Social norms are *Habits* (HB) measured as part of the individual drive to follow behaviors, habits ingrained in learning tasks (Venkatesh et al., 2012). From an Information Systems angle, the underlying prediction proves that this habit has a significant impact in emotional link to real use. Considering that there is a previous know-how of the product, these intrinsic learned facts become habit (Johora and May, 2015). Information and product knowledge in order to follow up with an expected behavior, in turn, increased its perceived value (Cheng et al., 2009). In the context of mobile systems, habit represents a tangible determining factor towards usage (Zhang et al., 2018). According with studies on mobile payment adoption the trend is to underlie habit and social norm as positive factors (Handayanto and Ambarwati, 2022; Hasyim, 2022; Pasaribu and Rabbani, 2022; Zain and Susanto, 2022). Therefore, based on this, the following hypothesis is proposed:

**H6.** : *HB positively and directly influences user's intention for using Bizum P2P system.*

### 2.5.7. Hedonic Motivation → Behavioral Intention

*Hedonic Motivation* (HM) is understood as the pleasure or reward derived for technology use (Venkatesh et al., 2012). Specifically, in the context of mobile banking this degree of pleasurable feeling in users derives from mobile banking use. Mobile banking showcases a modern technology in relation to lifestyles and actual value of the people portraying this edge to consumers (Gan et al., 2006; Celik, 2008; Lin and Hsieh, 2011; Riffai et al., 2012). From this angle, factoring in users' feelings such as pleasure, cheerfulness, and happiness when using technology, the attached behavior supports its utility and added perceived value (Cheng et al., 2006; Turel et al., 2007). In mobile payments, HM will impact use of the technology, thus being accounted as factor in adoption (Sharif and Raza, 2017; Hwang and Kim, 2007; Akhlaq and Ahmed, 2013; Zain and Susanto, 2022), since a user's perceptions on technology are not linked to anxiety, worriedness or pre-occupations, which, also, have an impact for the risks perceived in the use of mobile payment services (Alalwan et al., 2018); HM has a direct impact on the use of mobile payments (Koenig-Lewis et al., 2015) and will significantly impact user intention in mobile payments (Alalwan et al., 2018; Hasyim, 2022; Handayanto and Ambarwati, 2022). Therefore, based on this, the following hypothesis is proposed:

**H7.** : *HM positively and directly influences user's intention for using Bizum P2P system.*

### 2.5.8. Trust → Behavioral Intention

*Trust* (TR) is a subjective believe for a part taking stand on requirements and obligations. In the area pertaining financial transactions when users are more exposed to risk arising from uncertainty and lack of control, trust is of great relevance (Lu et al., 2011; Zhou, 2013; Slade et al., 2015, 2015b; Ben Arfi et al., 2021). From this onset of perceived risk factors, trust is also a defining factor for success affecting a new system of information (Alalwan et al., 2016; Pham and Ho, 2014). In base with standing literature, perceived trust confirmed its relevance as a main factor positively influencing the adoption in electronic payments (Chong et al., 2012; Daştan and Gürler, 2016; Giovannini et al., 2015; Nelloh et al., 2019; Tossy, 2014; Williams et al., 2015; Changchit et al., 2020). Additional bibliography outlined trust as the most influential factor interacting with behavioral intention for usage in mobile payments (Penney et al., 2021; Sankaran and Chakraborty, 2021). Therefore, based on this, the following hypothesis is proposed:

**H8.** : *TR positively and directly influences user's intention for using Bizum P2P system.*

### 2.5.9. Perceived Security → Behavioral Intention

*Perceived Security* (PS) is the perception that user upholds in front of a potential risk when completing banking operations; the degree of security that a client user assesses in selecting a secure payment mode (Khalilzadeh et al., 2017). Security is an important factor within methods of payment either in mobile banking or online banking, with a significant impact affecting behavioral intention (Aladwani, 2001; Parasuraman et al., 2005; Shen et al., 2010; Yoon, 2010). Several authors have shown that security associated with a mobile device payment mode has a positive impact from first drives in behavioral motivations to adopt mobile banking (Merhi et al., 2019; Akhter et al., 2020). Security level as perceived by consumer, will attract more consumer interest towards adoption (Alaeddin et al., 2018). In base with research conducive to security of information encryption, (Alshare and Mousa, 2014; Oliveira et al., 2014; Widyanto et al., 2021; Arfi et al., 2021) and safety in data privacy (Morosan and DeFranco, 2016; Ribeiro-Navarrete et al., 2021) both, security and safety have a positive impact in user mobile payments. Therefore, based on this, the following hypothesis is proposed:

**H9.** : *Security positively and directly influences user's intention for using Bizum P2P system.*

### 2.5.10. Perceived Risk → Behavioral Intention

*Perceived Risk* (PR) defines as potential lost in result-oriented search upon implementation of a new technology (Lee and Song, 2013). It is the clients' perception around security and reliability in institutional networks, such as, guarantees, policy framework and regulatory environment for mobile payments (Zhou, 2011). Security is weighted a relevant factor for the protection of clients because of uncertainty and risks inherent, to create a feeling of trust among client-users of mobile payment (Xin et al., 2015). Users will bring added security to platforms aligned with continued utilization (McKnight et al., 2002; Kim et al., 2010). In the context of mobile payments, perceived risk will arise as critical factor negatively impacting adoption for this payment mode (Pheeraphuttharakoon, 2015; Purwanto et al., 2020; Merhi et al., 2020; Slade et al., 2015). Therefore, based on this, the following hypothesis is proposed:

**H10.** : *PR negatively and directly influences user's intention for using Bizum P2P.*

Following all previous bases and guidelines for a user's intent analysis, as shown from UTAUT2 model, the independent variables being considered for this study's adoption analysis, PE, EE, SI, PM, FC, CV, Trust, Security and Perceived Risk, are mediating factors, as opposed to behavioral motivators (Fig. 2) acting upon user intent, which are linked to dependable variables.

## 3. Methodology

In the Methodology section, a standard norm for analysis, collection of data, and scope, are presented.

### 3.1. Plan-design for data

Based on a two-part questionnaire, first for demographic information and data use disclosure, aligned with eight items; second, it includes matters related to factors measuring the supported concepts, prorated in 38 items of inquiry around ten base-assumptions. The questionnaire is adapted from the context of P2P Bizum system aligned with the analysis tool introduced by Venkatesh et al. (2012) for seven of the UTAUT 2 concepts. Three remaining concepts of analysis are adapted from relevant questions that are main for the purpose of this study. The question rated in a scale from 1 to 5, "totally disagree" to "totally agree", from Likert scale, is preferred for avoiding cognitive bias around 5-point question, as well as minimizing confusion for the surveyed. The five-point standard is recommended for yielding higher quality metrics

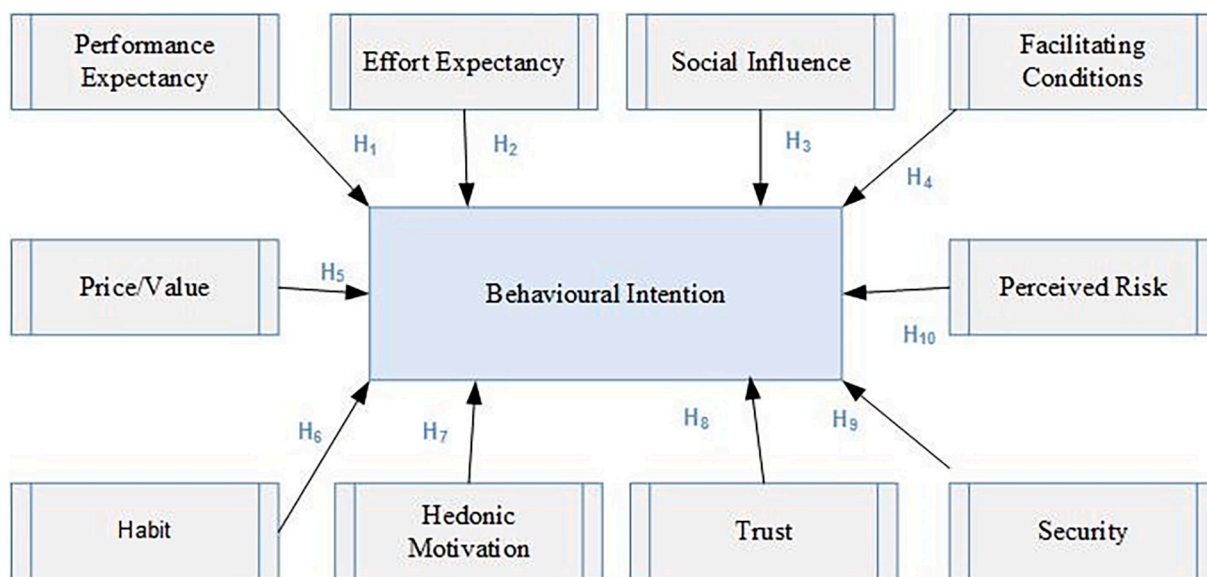


Fig. 2. Proposed model for analysis. Source: authors, 2022.

(Revilla et al., 2014; Babakus and Mangold, 1992). The number of items for surveying and variables taken into consideration are displayed in Table 1.

3.2. Data collection

Empirical data obtained after the distribution of the questionnaire, was collected from the online Google tool, and in-person via QR code, during the period of January to March 2022. The number of total entries was 334 filled replies. The modality of survey selected was non-probabilistic, for an adequate mode of recollection for the purpose of the survey. The presentation of the analysis, in Table 2, displays the frequency of user demographic band to represent across segments and features average users from the mobile and online banking realms.

3.3. Scope of the sample

One key aspect to consider from a SEM point of view is the scope of the sample; there is not a conclusive standard for a preferred analysis, nor a specific number of responses expected from SEM (Kline, 2011). From a dissimilar standard around variable criteria, some data analysts prefer a minimum entry of 200 cases (Catena Martínez et al., 2003; Hair et al., 2014; Stevens, 2009), while, from parameters standpoint, filtered around concepts/items, the preferred standard is at 100 cases for models

Table 1 Exhibit: variables for analysis.

id	Constructs	Items	Source
1	Performance expectancy	4	Venkatesh et al., 2003
2	Effort expectancy	4	
3	Social influence	4	
4	Facilitating conditions	4	Venkatesh et al., 2012
6	Price/value	3	
7	Habit	3	
8	Trust	4	Lee and Song, 2013; Gefen et al., 2003; Beldad et al., 2010; Hanif and Lallie, 2021.
9	Perceived security	3	Wang et al., 2019; Hanif and Lallie, 2021; Cocosila and Trabelsi, 2016
10	Perceived risk	3	Featherman and Pavlou, 2003

Source: authors, 2022.

Table 2 Surveys: feature profile.

Variable		Frequency	Percentage
Gender	Female	108	64.7 %
	Male	196	35.5 %
Age	Prior to 1965	6	2.0 %
	1965–1979	14	4.6 %
	1980–1999	85	28.0 %
	After 2000	199	65.5 %
Level of education	Elementary School	1	0.3 %
	Higher Secondary School	2	0.7 %
	Bachelor	110	36.2 %
Use Bank Online	High Education	191	62.8 %
	Yes	301	99.0 %
Frequency use bank online	No	3	1.0 %
	0	13	4.3 %
	1–10	184	60.5 %
	11–20	78	25.7 %
Use Bizum System	Over 21 ×	29	9.5 %
	Yes	304	100.0 %
	Frequency use Bizum System	0	4.9 %
System	1–10	169	55.6 %
	11–20	86	28.3 %
	over 21 ×	29	11.23 %
Use of Bizum as only option	Yes	130	42.8 %
	No	174	57.2 %

Source: authors, 2022.

with 5 or fewer items, with each of them containing three indicators and affinity levelers over 0.60 (Hair et al., 2014). Some authors stick to a 5 cases per parameter for an adequate sample in AFC (Worthington and Whittaker, 2006). In the case per variable scenario, the expectation is for the sum of all variables included plus the total itemized concepts. From this consistent with the base approach, an adequate sample will present 8 cases for the total items, variables observed and latent ones (Catena Martínez et al., 2003). Additionally, the preference is for 15 cases per item or included variable to obtain a wide representation (Hair et al., 2014). For the present analysis, which follows David Sopper standard, this questionnaire had 40 items observed, 10 latent concepts for parameters, a 0.25 grade of scope and statistics with a potential 0.8 leveler for a 0.05 probability, requiring an entry survey with at least 290 responses.

### 3.4. Data analysis

#### 3.4.1. Modeling analysis: framework

For technological specific system/user-base adoption analysis, and with the aim of reviewing its suitability in base to the presented framework, as recommended by Anderson and Gerbing (1988), the study is laid in two phases: first, review of the model for data-analysis, and second, assessment of the structural model. From this twofold analysis, after a first filter is applied to data, the results will be accounted according to a modeling-filter, to be validated under SEM.

#### 3.4.2. Introduction: data analysis

The first step towards filtering data, is a demographic approach from a social angle, activating intention and usage, and transferring raw information from the excel sheet to the selected platform, IBM SPSS Statistics 27. By processing the identified variables, the filtering data process during digitation, will purge extreme and abnormal values, while validating previously selected constructs for rating. Out of this preliminary process, 28 responses are left out for lack of relevance/opinion towards 2P2 Bizum payment system. At this stage, not any lacking, uncompromised or abnormal values are to be found. This univariate leveling process of cleaning and filtering data applied under the Kolmogorov test, in order to lay a distribution for the bottom-line, allowed to apply a leveler between a data set against a proposed framework. With a significant overall value under 0.05 points to an abnormal distribution; over 0.05 puts values into the normality threshold. From this standard test, the present data set obtained for the 2P2 Bizum analysis, did not reach the significant 0.05 value, a threshold for considering any data set.

#### 3.4.3. Introduction: filtering modeling

This model for filtering data was assessed via an internal reliability analysis method, convergence validity and discriminatory validity. The Confirmatory Factor Analysis (CFA) was performed with the AMOS 27, a platform that introduced an index in the order of rights adjustment, which, had not been performed will not allow to modify the model for filtering for best extraction model.

**3.4.3.1. Psychometric basis and data validation.** For the psychometric basis and data validation, a standard base need to be shown. For this, previous to an analysis in the estimation of models, the Mardia average is calculated; this presents us with a normalcy screen test via a multivariate approach from obtained responses, showing a Mardia average required to be present under a 70-point value. The results are standard with a Kurtosis = 256.24 and critical band = 54.50; however, considering that asymmetric standards stand at 3, and that kurtosis variants remain under 10, the procedure to filter data and analysis is deemed to showcase a valid analysis for standards of reliability.

**Variant Convergence** evaluates the maximum degree for selected items to be highlighted via latent concepts from the framework by trying out the constructs that need disaggregation, depending on reliability (CR), item reliability (algorithmic potential value), and average variable extracted (AVE). There is acceptance of framework concepts present in CV anytime that CR surpasses the standard 0.70 (Heinzel et al., 2011); in addition, AVE is over 0.50 (Hair, 2009) and the averaged variables relating to the concepts have an established value over 0.70, or at least of 0.50 (Hair, 2009). All the variables rated in the average equation AVE are above the threshold 0.50 for our case study; also, CR average values are above 0.70. Having eliminated 14 entries for low latency, cross-sectional latencies and for optimizing analysis towards data validation, the overall results support CV scale. Finally, Alfa Cronbach is not included for lack of CR, arising from different values assigned to different items (Chin, 1998). The following Table 3 shows the variables AVE and CR.

Variant convergence works to verify that items for a latent construct

**Table 3**  
Algorithmic potential value.

Constructs	Items	Standard loadings	CR	AVE
Performance expectancy	PEE2	0.78	0.736	0.583
	PEE4	0.74		
Effort expectancy	EE1	0.77	0.815	0.526
	EE2	0.73		
	EE3	0.75		
	EE4	0.65		
Social influence	SI1	0.87	0.895	0.74
	SI2	0.84		
	SI3	0.87		
Facilitating conditions	FC1	0.75	0.764	0.619
	FC2	0.82		
Hedonic motivation	HM1	0.88	0.837	0.635
	HM2	0.67		
	HM3	0.83		
Price/Value	PVA2	0.90	0.898	0.815
	PVA3	0.91		
Habit	HBT1	0.83	0.767	0.623
	HBT3	0.75		
Trust	TR3	0.62	0.7	0.544
	TR4	0.84		
	PSE1	0.90		
	PSE2	0.84		
Perceived security	PRI1	0.77	0.832	0.622
	PRI2	0.81		
	PRI3	0.79		
Behavioral intention	BI1	0.64	0.827	0.619
	BI2	0.82		
	BI3	0.88		

Source: authors, 2022.

are not linked, as required, and that these remain unchained to any other construct. First step is Fornell & Larcker test by which a contrast in the square root of AVE to any provided variable runs a value (Barclay et al., 1995). In order to obtain a feasible variant necessarily the value obtained is higher than its correlation values to other constructs (Fornell and Larcker, 1981; Hair et al., 2016). Sectional values measured across, also need to show a higher value in columns and rows (Henseler et al., 2009). For each construct, a value for AVE (shown in bold in Table 4) was over the values of correlations; so, this attests a necessary degree in AVE. The ratio will validate constructs for each factor, considering that the scale assesses models in a hierarchical relationship, by graded levelers. According to the items, the quotients under 1 point, for a conservative standard approach, around 0.90. By adding into the equation factors of Trust and Perception of Risk, which are values above 1, it is shown a correlation for the two items leveled within the same construct (see Table 5); for the present study the factors are omitted as it is seen in Table 6. After this adjustment to variants measured under 0.90 to follow the standard HTMT criteria, survey, and data analysis yield values for validation of the assessment of latent variables and constructs, leveled via AVE. Then, both, AVE and CR remain verifiable.

**3.4.3.2. Adjustment of grading model.** Once the estimated model for assessment for the quality of variables in data is provided, then a statistic goodness of fit is required for the adjustment: index of adjustment chi-square divided (CMIN/DF), goodness of fit index of adjustment contrast (CFI), square of residual approximate average (RMSEA) and p, a Close Fit (PCLOSE). Table 7 shows the adjustments, as follows:

Correlations and framework chains are represented in Fig. 3.

### 3.5. Structural assessment model

The evaluation of the framework will follow over the next sections to assess modeling validity and research guides.

**Table 4**  
Model for values: reliability and variant convergence (Fornell & Larcker Test).

	PE	EE	SI	FC	HM	PV	HB	TR	PS	PR	BI
PE	<b>0.763</b>										
EE	0.337***	<b>0.757</b>									
SI	0.658***	0.362***	<b>0.86</b>								
FC	0.262**	0.859***	0.304***	<b>0.786</b>							
HM	0.534***	0.226**	0.388***	0.137†	<b>0.86</b>						
PV	0.369***	-0.046	0.211**	-0.043	0.259***	<b>0.903</b>					
HB	0.547***	0.377***	0.450***	0.443***	0.268***	0.227**	<b>0.79</b>				
TR	0.455***	0.503***	0.508***	0.531***	0.356***	0.212**	0.693***	<b>0.737</b>			
PS	0.390***	0.485***	0.411***	0.497***	0.318***	0.182**	0.664***	1.025***	<b>0.875</b>		
PR	-0.071	-0.230**	-0.071	-0.234**	0.081	0.191**	-0.215**	-0.325***	-0.365***	<b>0.789</b>	
BI	0.508***	0.335***	0.473***	0.405***	0.290***	0.185**	0.899***	0.588***	0.544***	-0.177*	<b>0.857</b>

Square root of average variant in sectional representation is shown in bold. Elements outside the sectional divide represent a shared variance.

Significance of Correlations: †  $p < 0.100$ ; \*  $p < 0.050$ ; \*\*  $p < 0.010$ ; \*\*\*  $p < 0.001$ .

Source: authors, 2022.

**Table 5**  
Ratio Heterotrait-Monotrait (initial).

	PE	EE	SI	FC	HM	PV	HB	TR	PS	PR	BI
PE											
EE	0.348										
SI	0.657	0.39									
FC	0.272	0.898	0.303								
HM	0.567	0.33	0.47	0.266							
PV	0.37	0.023	0.217	0.042	0.27						
HB	0.545	0.432	0.442	0.438	0.358	0.22					
TR	0.465	0.533	0.532	0.547	0.461	0.21	0.724				
PS	0.397	0.497	0.413	0.501	0.397	0.18	0.657	<b>1.029</b>			
PR	0.071	0.231	0.076	0.237	0.041	0.2	0.222	0.287	0.383		
BI	0.505	0.483	0.467	0.504	0.376	0.18	<b>0.924</b>	0.677	0.624	0.27	

Thresholds are 0.850 for strict and 0.900 for liberal discriminant validity (Henseler et al., 2015).

Source: authors, 2022

### 3.5.1. Assessment of validation

Once the assessment of the model and the applied equations are completed, the sample needs to be validated; for that purpose, N de Hoelter critical index is applied showing a significant level in the value 0.05, equivalent to 95 % trust (Hoelter, 1983; Bollen and Liang, 1988). Software applied for the assessment is proprietary AMOS 27. The proper threshold for bottom-line adjustments stands at 200, and values under 75 are rejected. ( $75 \leq \text{value} < 200$ ; acceptable  $\geq 200$ ) (Garson, 2014; Wan, 2002). The scope of the sample with 304 surveys is acceptable according to Holters procedure; the minimum threshold for a valid sample remains 243 questionnaires for an overall 95 % reliability.

### 3.5.2. Modeling assessment

The model presents four standard levelers acceptable for adjustment

**Table 6**  
Ratio Heterotrait-Monotrait (final).

	PE	EE	SI	FC	HM	PV	HB	PS	PR	BI
PE										
EE	0.347									
SI	0.657	0.365								
FC	0.272	0.86	0.303							
HM	0.532	0.23	0.393	0.15						
PV	0.37	0.04	0.217	0.042	0.263					
HB	0.545	0.381	0.442	0.438	0.266	0.22				
PS	0.397	0.49	0.413	0.501	0.314	0.18	0.657			
PR	0.071	0.232	0.076	0.237	0.079	0.2	0.222	0.383		
BI	0.531	0.339	0.478	0.405	0.305	0.19	0.9	0.556	0.182	

Thresholds are 0.850 for strict and 0.900 for liberal discriminant validity (Henseler et al., 2015).

Source: authors, 2022.

of the framework, with the intent of assessing the richness of the general framework. This framework rendered similar results to the confirmation model by complying with its requirements for adjustments (CMIN 0,817, CFI 0,945, RMSA 0,932, PClose 0,944). The results led evidence that the model complies with data validation needs. Finally, with the objective in sight of predicting user intent of P2P adoption, the  $R^2$  is a quotient that needs to be obtained; the coefficient is 0.825, translates into user adoption estimated at 82.5 %.

Additionally, the chain relation between concepts in the framework will be provided, followed by inter-dependable variables and dependable ones, for providing a Beta  $\beta$  quotient and  $p$  value. Based on a first approach to the analysis, the seven guidelines proposed as factors impacting user intent, by inquiring into the Bizum P2P system. The preliminary items taken from SEM (Table 8) will show that guidelines 3 and 7, factors significantly impacting adoption. The resulting guideline, as shown, expects that habit and social influence alike, will link to further utilization of P2P mobile payments. From the ratios, it follows that habit is a strong predictor, over user intent for adoption ( $\beta = 0,665$ ,  $p < 0,001$ ), followed by social influence ( $\beta = 0,087$ ,  $p < 0,050$ ); the

**Table 7**  
Goodness of fit adjustment for final modeling.

	CMIN/DF	CFI	RMSEA	PCLOSE
Values researched	1.435	0.978	0.038	0.98
Desired values	Between 1 and 3	>0.95	<0.06	>0.05
Interpretation	Adjustment data excellence	Adjustment contrast excellence	Error approximation to zero, almost excellent data modeling	Adjustment excellence

Source: authors, 2022.



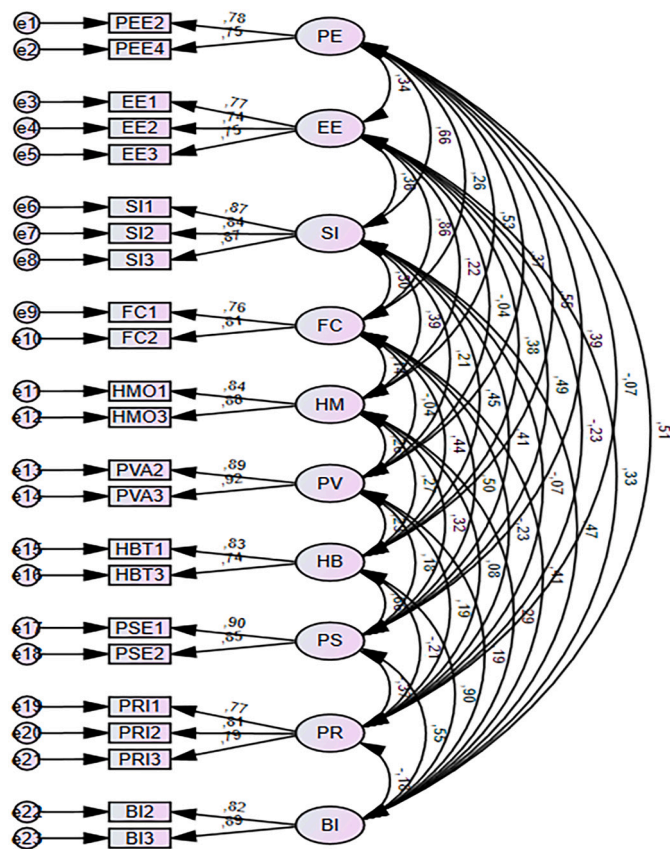


Fig. 3. Final grade/ratios model. Source: authors, 2022.

Table 8 Framework equations applied model resulting from UTAUT2.

Guidelines	$\beta$	t value	p value	Decision
H1: Performance Expectancy→Behavioral Intention	-0.051	-0.634	0.526	Unsupported
H2: Effort Expectancy→Behavioral Intention	-0.04	-0.351	0.726	Unsupported
H3: Social Influence→Behavioral Intention	0.087	1.666	0.096	Supported al 90 %
H4: Facilitating Conditions→Behavioral Intention	0.05	0.43	0.668	Unsupported
H5: Hedonic Motivation→Behavioral Intention	0.057	1.189	0.235	Unsupported
H6: Price Value→Behavioral Intention	-0.013	-0.314	0.754	Unsupported
H7: Habit→Behavioral Intention	0.665	8.238	***	Supported

Measurement correlation-values: †  $p < 0.100$  \*  $p < 0.050$  \*\*  $p < 0.010$  \*\*\*  $p < 0.001$ .

Source: authors, 2022.

degree of reliability lies at 90 % for this last factor, considering that p value is in a scale 0,05-0,01. Other guidelines result in values less significant for measuring a user's intent in mobile payment systems adoption are the following: "Performance Expectation" ( $\beta = 0,051, p > 0.100$ ); "Effort Expectation" ( $\beta = 0,04, p > 0,100$ ); "Facilitating Conditions" ( $\beta = 0,05, p > 0,100$ ); "Hedonic Motivation" ( $\beta = 0,057, p > 0,100$ ); and "Price/Value" ( $\beta = 0,013, p > 0,100$ ).

Next, a second inquiry, central to the study, poses the question: How

are other factors that rely on emotional values, such as, trust, security, and perceived risk, impacting user intent and adoption of P2P systems? These guidelines are graded based on three constructs grounding the research and the results, as shown below. The feature SEM values, as compiled, are security (H8) at  $\beta = -0.099, p > 0.100$ ; and risk perception (H10) at  $\beta = -0.016, p > 0,100$  (See Table 9).

Correlations and framework chains are represented in Fig. 4.

#### 4. Results and discussion

Since a main objective set a need of delimiting those factors relevant to behavioral intention for Bizum P2P, the ground for research around the Model UTAUT2 is set around the above depicted guidelines for measuring a rate in the areas of *Trust*, *Security* and *Perceived Risk*. Whereas factors like *Habit* and *Social Influence* are significantly impacting *Behavioral Intention*, only *Habit* is strongly impacting P2P adoption. To this bottom line considerations relative to duties and stipulations around usage, in the context of financial operations, other considerations relative to development and specific tech insights for Spain, are individual perceptions, skill and experience; these are highlighted, also, as relevant from a socio-geographical context for the study.

There is a noticeable change in habits associated with payment modes in Spain after the global health pandemic crisis of Covid-19. Resulting from this shift, cash transactions are left as second choice after debit transactions. *Banco de España* in a report published in 2021 presented this data supporting the shift towards credit/debit, interact methods of payment, up to 36 % Spanish population declared this option as their preferred method of payment for daily transactions. Most significantly, a 61.2 % of the population responded to have modified habits as a result of the restrictions and protective measurements imposed by health authorities during the period of confinement and emergency health alert, as well as commercial outlets favoring interact payments, with a 2.5 % of the citizens reporting completely deflect cash for sanitary causes and risk of infection. Mainly the trend will continue, since a high percentage, according to the study (Gavilan, 2022), will continue to maintain the new norm for no cash transactions after pandemic restrictions revert (69.1 % and 61.3 % as recorded for individuals and businesses). Since recommendations remain a cautionary measure in favor of alternative payments methods not involving cash handling or small change for most of the areas under influence of Health Authorities, there is an evident shift on modes of transactions and interacting with money in Spanish territories.

According to a report tool for innovation in finances, *Barometro*, this percentage increased with more people using mobile platforms for payments up to 58.22 % from a pre-pandemic level, 55.66 %. This percentage continue to increase during second wave and well into 2020, to reach a 63.22 %. This resulted in a banking system use increase parallel to a greater number of users selecting P2P platforms and options for online. As such, Bizum P2P for personal money orders and non-commercial transactions (individuals), increased its rate of use from 62.79 % to 75.26 %, with the higher lapse growth after a second wave, from 65.93 % (Barómetro de Innovación Financiera 2021, 2022; Saura et al., 2022). For a great area of Spanish population, P2P systems

Table 9 Results model for structural equations added variables.

Guidelines	$\beta$	t value	p value	Decision
H8: Trust →Behavioral Intention	-	-	-	-
H9: Security →Behavioral Intention	-0.099	-1.441	0.000	Unsupported
H10: Perceived risk→Behavioral Intention	-0.016	-0.378	0.272	Unsupported

Measurement correlation-values: †  $p < 0.100$  \*  $p < 0.050$  \*\*  $p < 0.010$  \*\*\*  $p < 0.001$ .

Source: authors, 2022.

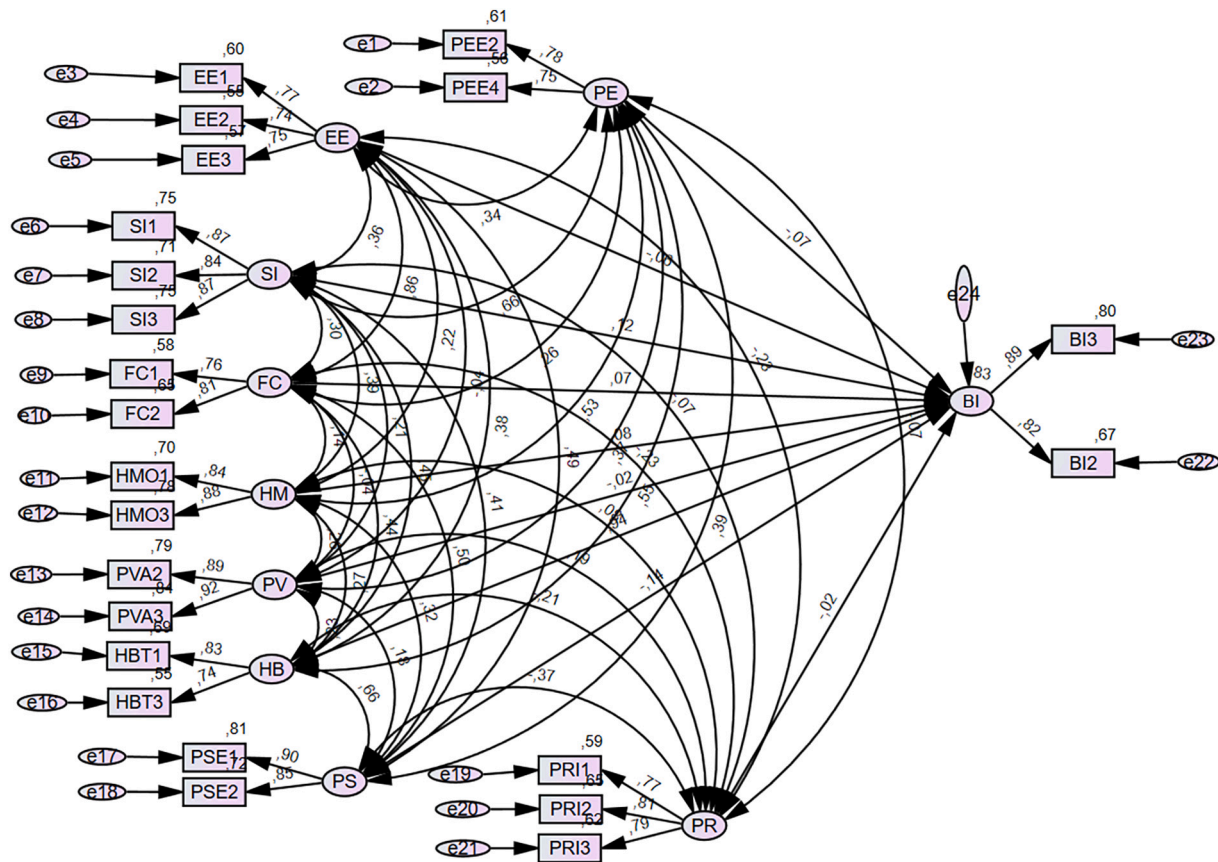


Fig. 4. Final structural-model. Source: authors, 2022.

represent a convenient method of payment even if the resort to adoption was fueled by factors out of their control. One factor to consider in consolidating new systems to replace cash payments, arising from sector's aim at digitization for banking services and remote working tools during the pandemic closures. This reflected in the closing of physical in-location offices, around 50 % offices from 2008 to 2020, and up to 20 % decrease in bank teller spots; the consequence most obvious for closures linked to less accessible via convenient points of access to cash, in turn, resulted in a change in behaviors.

Habits are developed at the time when behaviors become recurrent; that is why later, behaviors respond to automatic stimulæ and result from a controlled environment. Habits affect directly user intention without resulting from a rational process. Even though researchers have pointed to rational process in decision making, regarding user intention in use of P2P mobile (Hu et al., 2021; Jegerson and Hussain, 2022; Liu et al., 2022;). Theories in habits and user behavioral intention establish that set behaviors become repetition in order to form a habit, with rational processes being external to this process (Aarts and Dijksterhuis, 2000). For the study, users integrate P2P to daily routines, so after repeated use and continued money transfers via mobile, this routine becomes habit around patterns in money management. With increased use and frequency of payments, P2P users adapt to the technology to form a habit overtime. Habit represents a determining factor into building a use around P2Ps.

A set of habits can be activated as a variable for the study of leading factors into technology acceptance (Suo et al., 2022; Penney et al., 2021; Pasaribu and Rabbani, 2022), for a new approach into factors, thus, considering this variable irrelevant to user intention (Marpaung et al., 2021; Martinez and McAndrews, 2022).

Social Influences significantly impact user intent around family values, colleagues, and behavior expectation related areas ( $\beta = 0.087, p$

$< 0.050$ ). Overall findings reported for young respondents linked user intention with family opinion based on Spanish lifestyle and level of dependence as part of a family unit for living.

Some critical studies on social influence found that these variables are a factor actively influencing user intention (Suo et al., 2022; Nur and Panggabean, 2021; Penney et al., 2021; Migliore et al., 2022) versus scholars reporting that SI are not relevant (Hasyim, 2022; Kadir and Ismail, 2022; Pratama and Renny, 2022; Tang et al., 2021). For the objective of the present study, positive experiences linked to P2P mobile are shared within a network of friends and acquaintances, a milieu that in turn, favorably impacts an expanded use in each market segment.

Performance Expectation leads towards consumer decision making in payment choices based on the degree of accessibility via mobile technology (Madan and Yadav, 2016; Moorthy et al., 2020). For the present study, this factor yielded  $\beta = 0.051$ , and  $p > 0.100$ ; PE was not determinant even though there is an underlying link to user intent from a behavioral standpoint in adopting mobile technology (Abdullah Omran et al., 2017). This is consistent with previous scholarly reported results in critical studies (Hasyim et al., 2022; Kurniadi and Hendityasari, 2021; Sankaran and Chakraborty, 2021; Maharani, 2021; Pasaribu and Rabbani, 2022; Kadim and Sunardi, 2022).

Effort expectation ( $\beta = 0.04, p > 0.100$ ) does not predict user intent in P2P technology due to previous knowledge and experience, since most of the participants are knowledgeable and standard users of electronic payment systems. Mobile payment technology is immediate and accessible in contrast to other methods of payment like credit cards and cash; for these users, the new technology appears as a reasonable option that can be integrated with traditional methods of payment, as it has been reported in previous scholarly literature (Suo et al., 2022; Winata and Tjokrosaputro, 2022; Nur and Panggabean, 2021).

Facilitating Conditions appear as non-conditioning for behavioral

adoption of P2P systems due to extended usage of mobile ( $\beta = 0.05, p > 0.100$ ). Mobile users were already familiarized with their devices and did not need assistance for effectuating a payment via their device/platform. P2P technology seems intuitive and easy to use, with Bizum illustrating everyday transactions via platform payments and other banking transactions. This easy handling makes other additional support unnecessary and irrelevant towards user adoption; as such, *Effort Expectancy* cannot be accounted as an intrinsic motivation in decision making from a user's intent standpoint. This has been pointed out in previous studies (Suo et al., 2022; Martinez and McAndrews, 2022; Marpaung et al., 2021; Pasaribu and Rabbani, 2022; Penney et al., 2021; Pratama and Renny, 2022).

*Hedonic Motivation* ( $\beta = 0.057, p > 0.100$ ) and *Price/value chain* ( $\beta = 0.013, p > 0.100$ ), were not accounted as significant values in user intent towards P2P systems utilization. On the one hand, *Price/value* had no impact in adding a cost to the device use; on the other hand, linking value to hedonic motivation, highlighted that there is a lack of positive perception attaching the transaction for any user will be automatically completing a payment transaction, which decreased their assets. Then, HM becomes irrelevant as shown in previous studies (Suo et al., 2022; Al-Sabaawi et al., 2021; Maharani, 2021; Penney et al., 2021), along with PV (Kurniadi and Hendityasari, 2021; Maharani, 2021; Rabaa'i, 2021).

*Security* ( $\beta = -0.099, p > 0.100$ ) and *Risk perception* ( $\beta = -0.016, p > 0.100$ ) are not influencing factors significant to adoption, since major financial institutions are main providers of services for mobile payment. Bizum users are backed up by Spanish major players in Banks. Underlining this sense of security regulations from relevant European Commission for encryption technology in Credit/Debit card terminals, is placed accordingly since issuing a Payment Services Directive in 2019 (PSD2). With the aim of improving security and reinforce protective measures, this policy framework establishes guidelines for protecting bank users, including up to 50 euros maximum loss resulting from fraud and unauthorized transactions. This resolution is valid for claims within a maximum 15-day period after irregular use of payment or fraud detected in credit/debit cards. Additionally, a two-step verification process became standard for added security (2FA), to obtain proof of identity by means of checking on a set of information from personal profile: mobile phone number, credit/debit card or digital signature (known elements); password, pin number, digital trace (inherent elements). Therefore, *Security* and *Risk Perceived* are not determining user intention and these variables, stay unaccounted.

Another factor to account for security and perceived risk as non-determinant variables for technology use in Spain, is habit, considered independent from any rational line of mental processes that could lead to a specific technology use, upon implantation of the new system. Usage and rationalization would not explain alone adoption built into habit. Then, security (Pratama and Renny, 2022) and perceived risk remain prevalent to account for P2P usage in Spain (Al-Sabaawi et al., 2021; Belanche et al., 2022; Pratama and Renny, 2022; Widianto et al., 2021).

In sum, after obtaining guidelines for the study and analysis of factors in adoption of mobile P2P, for a total 82.5 % user-base, there are two standing variables predicting Behavioral Intention: *Habit* and *Social influence*. This outcome validates a higher percentage after the preliminary presuppose around 74 % estimated in line with UTAUT2 framework in Venkatesh et al. (2016).

## 5. Conclusions

User behaviors around payment methods evolved prominently during the last global pandemic outbreak from 2020 and onwards. Bank digitization adapted fast to the renewed environment imposed by confinement and curfew restrictions, a background conditioned by health restrictions that facilitated the changes in selected methods of payment, introducing new technologies. There are several studies contrasting opinions around preferred methods for payment, and these

noted a change in habits arising from this environment. In fact, many conventional uses and social interactions linking to money operations and exchange, even everyday transactions like splitting the check in a restaurant or funding a giftset from a group, mobile payment established itself as the preferred platform becoming a common, regular, option to be prompted among diverse methods of payment available. Considering the framework and guidelines for analysis presented as hypothesis for adoption, the changes in *Behavioral Intention* that are significant, arise from two well-defined predictors, *Habit* and *Social influence*, for a total percentage user-base of 82.5 %. Other variables that were included as part of the motivation/behavioral framework in P2P mobile adoption, *PE*, *EE*, *FC*, *PV*, *HM*, *Trust*, *Security*, and *Perceived Risk*, were not significant.

Finally, the theoretical framework underlying the data analysis allowed a systematic approach by using concepts and measuring variables, since it underlines the predominance of Covid-19 as an external factor considerably affecting habits in Spain with regards to Bizum platform and the use of other P2P mobile platforms. *Habit* is significantly relevant, one variable above others impacting adoption. For future adoption analysis, the range of factors taken in consideration may potentially vary to narrow the variables that are directly linked and most significant, this shift resulting from societal changes derived from pandemic virus. Setting a framework that aligns with UTAUT2, as pointed at the beginning of this study, adds a nuanced picture to technology adoption, in line with previous standards, by adding new data to the research on cognitive behaviors around information systems and mobile technology.

Additionally, studies linking technology acceptance in P2P mobile to attitude and intention (Daragmeh et al., 2021; To and Trinh, 2021; Srivastava and Singh, 2022) show that unlike other areas of technology directly linking a behavioral approach to user impact, these fields of study underpin the effect from the M-learning environment (Cao & Nguyen, 2022), Ai (Robinson et al., 2022), e-commerce (Chen et al., 2022), and validate this approach to habit. Our study represents one of the first research to validate such an influence on P2P and validate this approach to habit. Our study represents one of the first research to validate such an influence on P2P mobile payments, as the hypothesis suggest that habit has a more significant impact than attitude on users' behavioral intention towards P2P mobile payments.

### 5.1. Theoretical contributions

Contributions to the theoretical ground in this area of UTAUT2 research, arise from an integrated model suggested as a holistic understanding for adoption, around the overall P2P mobile systems, after Pandemic crisis. In Spain, specifically, considering a growing industry, previous studies are limited for similar undertakings and data analysis. By extending the presented model from UTAUT2 to assess common variables aligned with constructs from the theory, including trust, security and perceived risk, the study aligns with a known set that has been empirically validated. In line with a high predictive strength connected to user intention, the same method and variables will apply in a wider segment for technology systems within the mobile payment technology, NFC, QR, and B2B. As seen, habit stands as the variable most revealing around behavioral user intention, and habit can be a focus for research aligned in the technology adoption environment. The proposed method and chain of hypothesis are cohesive with habit leading towards P2P in the described user environment, a main factor considering that consumer behavior appears from a rational process. In retrospect, the evolution of technology and user adoption rounds to our objective, namely, presenting a complete analysis and methodological framework that weight in habit in an adoption framework, delimited by social influences, from a positive light.

## 5.2. Managerial implications

Some of the results derived from the study, also, align with expectations from P2P users and network service providers, developing application systems. One implication linking design towards technology implementation will set a redesign feedback loop that connects with users' common needs and expectations. From this potential upgrade towards a future in applications perspective, it is suggested to:

- 1) Easy payment systems into social interactions by means of sharing recommendations and/or product/service satisfaction surveys. This will add visibility and access to consumer demographic bands previously unreached.
- 2) Consider P2P providers via mobile platform since it will help identify and evaluate those elements interacting with routines and habits around consumers' interests. One plausible path is offering a simplified mobile payment system for users to be able to experiment its benefits and the ability to adapt it to their needs.
- 3) Avoid commission sales for financial services, as providers of technology and methods of payments in the P2P; for added security and trust built into the P2P system, incentives can be offered.
- 4) Demonstrate the utility and ease of use of these technology-based tools.

## 5.3. Limitations and future research directions

The sample for this study is laid transverse from a short time frame and, for this nature, user perceptions are prompt to varying and evolving over time in the specific utilization of P2P system with new knowledge and improved skills. A longitudinal study is feasible in order to obtain a more reliable base with predictors for specific demographic bands.

One limitation associated with a delimited geographical scope surfaces from plausible future lines of investigation, considering that the findings and outcomes are applicable only to the setting described. However, since the insights, by means of contrasted studies and segmented findings by geographical areas, can be activated to other cultural settings, the showcased theoretical ground proves to bring up those variables that are relevant into a geographically delimited technology market, for confirmation or rejection, as these tie in a specific set of devices and P2P systems. In this sense, survey participants are bounded to a Spanish network of interactions that will differ from different geographic areas and regions.

The applicable demographic band in the survey needs to bring a cautionary note into the report and assessment, considering that most of the respondents are in the 18–22 years old (65.5 %), a digital native generation that relies on mobile use for a great part of their routines and habits. This consideration opens a new avenue for enquiry, in order to focus on an older population and their use of technology systems for payment.

Finally, considering the scope around a unique application, Bizum P2P, and extending the number of platforms surveyed will allow assessment on a cross-sectional board to analyze Google Pay, Apple, Pay Cash, and Paypal. Additional bands for criteria will narrow age, income level, and urban/rural population. In terms of P2P mobile adoption within Spain, a future study around a vertical-segmented view, will lead to identifying changes in user intent and mobile adoption for the Spanish population.

## Declaration of competing interest

We confirm that neither the manuscript, nor any parts of its content are currently under consideration or published in another journal, and there are no conflicts of interest. Also, this research hasn't received any grant.

## Data availability

Data will be made available on request.

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