ISCTE ◈ **Business School**
Instituto Universitário de Lisboa

E-BANKING: CURRENT USE AND FACTORS AFFECTING ITS ADOPTION IN PORTUGAL

Beatriz Isabel de Almeida Rodrigues

Dissertation submitted as a partial requirement for the conferral of

MSc in Management of Services and Technology

Supervisor:

Professor Marjan Sara Fonseca Jalali, ISCTE Business School, Marketing, Operations and Management Department

October 2017

E-banking adoption in Portugal

RESUMO

A internet e os Sistemas de Informação são fenómenos mundiais que originaram novas soluções e modelos de negócio, que podem ser aplicados a diversos setores de atividade. Paralelamente foram desenvolvidos vários modelos e teorias para explicar as reações e os comportamentos de adoção de novas tecnologias. Tal inclui estruturas modelos como Teoria do Comportamento Planeado e Modelo de Adoção da Tecnologia.

A Banca online, também muito conhecida como e-banking, é um termo genérico usado para definir o conjunto de atividade de podem ser feitas com recurso à internet, em vez de ser necessário ir fisicamente a uma agência bancária. Este não é um tópico recente, tendo mesmo sido introduzido em Portugal em 1994. No entanto, a taxa de adoção em Portugal é bastante inferior comparada à dos principais países europeus.

O presente trabalho tem como objetivo dar um contributo no que toca a entender o que influenciam os consumidores portugueses a adotar o e-banking.

 Como forma de atingir o objetivo proposto, foi construído um modelo de investigação com base nas teorias atualmente presente na literatura. Para tal, foi utilizado um método quantitativo associado a um questionário, como forma de recolher as opiniões dos consumidores.

Pela análise dos resultados é possível apurar que o nível de utilização da banca online é superior à anteriormente estimada. Adicionalmente, de acordo com a análise do modelo proposto foi possível concluir que a falta de confiança e a falta de contacto pessoal são os principais fatores que impedem o uso da banca online em Portugal.

E-banking adoption in Portugal

ABSTRACT

The internet and Information Systems are a worldwide phenomenon that originated new solutions and business models, which can be used in innumerous activity sectors. In parallel several theories and models were developed to better understand consumers' reactions and new technologies adoption behavior, including frameworks like Theory of Planned Behavior and Technology Acceptance Model.

Internet banking, mostly known as e-banking, is a general term to refer to the set of activities that can be perform electronically, without fiscally visit any bricks-and-mortar institution. E-banking is not a brand new topic starting in Portugal in 1994. Although, e-banking adoption in Portugal is by far lower than compared with the leading European countries.

The present work aims to contribute to the investigation to which factors influence Portuguese customers' e-banking adoption.

In order to accomplish this goal, a research model was built up, following current tested theories present in the literature. For that, was used a quantitative method associated to an online survey to collect customers' opinions.

The results show that e-banking adoption in the sample is higher than the current estimations. Additionally, according to the analysis of the proposed model was possible to conclude that the lack trust and the lack of personal contact are the two main factors preventing consumers from using e-banking services.

Key-words: E-banking adoption; Technology Acceptance Model; Information Systems; Consumers' acceptance

JEL Classification System:
 M10 – Business Administration: General

M15 – IT Management

E-banking adoption in Portugal

ACKNOWDELGEMENTS

During the Master I met wonderful people that had a huge impact on my academic path and personal life, to whom I should thanks for the time, patience and kind words.

To Professor João Vilas-Boas, I have to congratulate for the entire dedication to the Master, in particular the constant will to develop it and design it to follow higher standards.

I should specially thank to my supervisor, Professor Marjan Jalali, for all the support and dedication. All her availability, quick response and encouraging words, were unconditional and decisive during the entire process.

Finally, a huge thanking to my family and friends, without who I could not have overcome all the obstacles and barriers.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF TABLES

LIST OF ABREVIATIONS

APS – Advanced Planning and Optimization Solutions

ATM – Automated Teller Machine

BES – Banco Espírito Santo

BI – Behavioural Intentions

CGD – Caixa Geral de Depósitos

CIBM – Consumer Internet Banking Model

EBTAM – E-business Technology Acceptance Model

EU – European Union

ERP – Enterprise Resource Planning

ICT – Information and Communication Technology

IS – Information System

IT – Information Technology

IU – Intention to Use

PB – Perceived Benefits

PBC – Perceived Behavioral Control

PEOU – Perceived Ease of Use

PI – Perceived Impediments

PC – Personal Contact

PP – Perceived Privacy

PS – Perceived Security

PU – Perceived Usefulness

SCM – Supply Chain Management

SFCU – Stanford Federal Credit Union

SI – Social Influence

SN – Subjective Norm

TAM – Technology Acceptance Model

TPB – Theory of Planned Behavior

TRA – Theory of Reasoned Action

INTRODUCTION

The internet and companies were not always an interconnected reality. Over time this channel has shown its potential to companies, as long as companies and consumers were using computers and internet to communicate (Silva, 2008). Moreover, internet has been widely used, and in the last 10 years the number of internet users worldwide has tripled, and now stands at almost 3.5 billion (Statista, 2017) with a world penetration of 49.2% (Internet World Stat, 201). In Europe the estimated internet penetration for 2016 is about 73.9% (Internet World Stat, 2016), and the estimated value for Portugal around 67.3% (Internet Live Stat, 2016).

The internet appears to be a constant in each and every sector. It has restructured the whole business world, changing almost every business process and leading a new business model to emerge, e-business (Basu and Muylle, 2007). According to Kumar and Kumar (2014) e-business refers to doing business on the internet and this process includes: buying and selling products, supplies and services; servicing customers; processing payments; managing production control; collaborating with business partners; sharing information; recruiting. Additionally, e-business ~~even~~ is considered a major force in the marketplace and a key tool to succeed over the competition (Mudholkar et al, 2013). The use of e-business has reshaped organizations' supply chain structure (Weingarten et al, 2015) and changed the way value is created throughout the entire supply chain (Amit and Zott, 2001).

Banks are no exception and are also following the increasing trend of using the internet in their everyday business activities. As a result, multi-channel distribution is being more widely used in banking in order to better meet market needs. Using such a distribution strategy implies managing and optimizing the mix of channels, integrating and coordinating them to prevent conflicts among the different distribution channels (Rosenbloom, 2007). In the banking context, the distribution channel based on internet is generically named e-banking. It started not only as an innovative payment method and a way to increase customers' convenience, but also as a tool to reduce costs and increase profits (Arnaboldi and Claeys, 2008). Electronic banking allows consumers to make a set of operations without physically going to a bricks-and-mortar institution (Haque et al 2009). E-banking is a convenient and time saving tool for customers (Salehi and Alipou,

2010), that is seen as a key component of banks' corporate strategies (Arnaboldi and Claeys, 2008).

On average, e-banking penetration rate in Europe, in 2016, was of 49% (Statista, 2017), with Norway in the lead with an e-banking penetration rate of 91% (Statista, 2017). Despite the potential benefits of e-banking for customers, such as significant time savings (Salehi and Alipou, 2010) and quick and continuous access to information (Gurau, 2002) the penetration rate in Portugal is still one of the lowest in Europe. Portugal, in 2016, was in the bottom seven countries of e-banking adoption, with a 29% penetration rate (Statista, 2017).

This issue of low adoption rates, in Portugal or elsewhere, does not only concern electronic banking, however, but also pertains to many other types of technologies, and over the year many theories have emerged to try determine the factors affecting the adoption of Information Systems (IS). The Technology Acceptance Model (TAM) developed by Davis (1989), proposes an explanation of consumers' acceptance and adoption behavior of technology based on perceived usefulness and perceived ease of use, and was the first theory used to describe the adoption of IS. Later, new models appeared in the literature using TAM fundamentals, and more recently, this research field has been introducing new theoretical frameworks directly related to e-banking adoption.

It is now known, for instance, that lack of trust in e-banking influences consumers' adoption of it (Gabner-Krauter and Faullant, 2008), and according to some authors constitutes the main reason preventing consumers from using those kinds of services (Flavian et al, 2006).

With studies showing that the e-banking adoption rate in Portugal is one of the lowest in Europe, the main goal of this dissertation is to understand the main factors affecting e-banking adoption in Portugal and the future perspectives of e-banking, from consumers' point of view. More specifically to: i) assess the current use of e-banking in Portugal; ii) determine the factors which according to consumers influence their adoption of e-banking; iii) analyze consumers' perspectives on the future of e-banking.

The topic under discussion is important for bank managers because it can provide relevant information to drive strategic decisions. The results should provide key drivers for banks to match their offer with what customers really want and need. Furthermore, the study

should help Portuguese Banks to better understand their customers' fears and motivations with respect to e-banking.

The present work will start with a literature review on the topics mentioned before, followed by the determination of the investigation framework and the methodology used will end with the data analysis, discussion and conclusion.

1. LITERATURE REVIEW

The fundamentals for the present study are presented in the present section. The literature review portrays the overall scenario of e-business and e-banking. It starts with the explanation of what is e-business and the transformations that it causes to supply chain, followed by the description of the banking sector, with special attention to multi-channel distribution and e-banking definition. Finally it describes the role of customers in e-banking and their process on adopting new technologies.

The literature review has three main sections. The first one "Internet and the business world", is an initial insight into the topic, explaining the overall context of e-business and some general specifications of its supply chain. The second sections is an overview of the banking sector with particular emphasis on the definition of e-banking and its current distributions model. The last section aims to describe the main models used to explain consumers' new technology adoption behavior and the recent frameworks directly related to e-banking adoption.

1.1. Internet and the business world

Technological changes require constant adaptations in the economic, social and cultural field (Angeloska-Dichovska and Mirchevska, 2017). According to Angeloska-Dichovska and Mirchevska (2017) these changes influence the environment where information is created and increase competition among companies, by creating the need to continuously adapt to a more and more complex marketplace.

Together with globalization, technological evolution is one of the main factors stimulating competition among companies and boosting development (Sceulovs and Gaile-Sarkane, 2014). This shift toward the exploitation of the Internet and the electronic environment is a mainstream trend in today's business world and a trigger for new ways of doing business (Sceulovs and Gaile-Sarkane, 2014).

1.1.1. E-business

Electronic business, defined as doing business using the internet (Kumar and Kumar, 2014) and commonly named e-business, as mentioned before has drastically changed how companies do business. Over the past decades, the Internet restructured and reconfigured the entire business world, changing industry structures and shifting the balance of power between suppliers and customers (Basu and Muylle, 2007). E-business is also considered a major force in the global economy and a way to stay competitive (Mudholkar et al,

2013). It provides new opportunities for companies to compete on a global scale and plays an important role in the world's economy (Ciarniene and Stankeviciute, 2015).

According to Kumar and Kumar (2014) e-business refers to doing business on the internet and this process includes: buying and selling products, supplies and services; servicing customers; processing payments; managing production control; collaborating with business partners; sharing information; recruiting. Swaminathan and Tayur (2003, p.1389) have a similar definition, for them e-business "is a process that uses internet or other electronic medium as a channel to complete business transactions". Melão (2008), for instance, refers to e-business as the use of ICT (Information and Communication Technology) as a way to (re)design, manage, execute, improve and control business processes, both within and between organizations. Ciarniene and Stankeviciute (2015, p.735) sum up the definition of e-business as: "an internal and external business processes automation within computer's network; an innovative IT application in the enterprise and beyond, in order to increase the competitiveness; an additional customer value through a computer-mediated network; a critical competitive strategy."

Information Technology (IT) is a set of information systems for the use of administrators and managers that includes database hardware, information network software, among other tools (Rahmanseresht et al, 2016). IT allows organizations to take their operations to a worldwide scale, thanks to applications and software accessible from any part of the world and with a wide capacity for data collection and analysis. According to Rahmanseresht et al (2016), it has even become a key component for organizations to gain competitive advantage. Furthermore, is has been developing rapidly in the past decade, allowing e-business to become a global phenomenon, exponentially growing and expanding in different contexts (Zabukovšek et al, 2015).

The definition of e-business has never been completely clear, and it is sometimes equated with e-commerce and e-service. Nonetheless, in accordance with the definitions of e-business given before, e-commerce can be seen as a part of the e-business (Magutu et al, 2011). According to this view, e-commerce is seen as a mere transaction activity, where goods and services are bought and sold (Magutu et al, 2011), while e-business is more than just buying and selling goods and services, (Turban et al, 2006) it also includes servicing customers, collaborating with business partners and all the electronic transactions conducted within an organization (Turban et al, 2006). Electronic service (e-

service) in turn, is a term to define all sorts of ICT services. E-services can be defined as "activities provided by provider to a recipient; these services are non-material; they are provided by means of information and communication devices and the result of their consumption can be a benefit, service or acquisition of property" (Kvasnicova et al, 2015, p.193).

The electronic business has caused changes in many companies, in particular, in their operational scenario (Swaminathan and Tayur, 2003). The referred change have a practical impact on the supply and value chain (Wiengarten et al, 2015), which deserves to be analyzed in more detail in the next section.

1.1.2. E-supply chain and value creation

The adoption of the internet has had a huge impact in all aspects of business, from marketing and finance to information systems (IS) and operations (Swaminathan and Tayur, 2003). In fact, the arrival of ICT to the organizational environment has changed the traditional approach to business and markets (Hamidianpour et al, 2016).

A supply chain is a network of organizations and a set of activities that work together to produce value for the customers (Wang et al, 2008). Supply chain management (SCM) is the integration and organization of all activities involved in the production of products and services, from suppliers to the end user (Hamidianpour et al, 2016). SCM is considered a critical competency in today's global market (Wang et al, 2008).

The use of e-business has reshaped organizations' supply chain structure (Weingarten et al, 2015). E-business influence the changing of focus of SCM from production efficiency to being customer-driven (Wang et al, 2008). Additionally, with the adoption of e-business, the supply chain can benefit from cost reductions, more flexibility and faster response times (Wang et al, 2008). According to Sanders (2007), the use of IT has made it possible to share a huge amount of information along the entire supply chain. IT enables real-time access to information and integration between supply chain partners (Sanders, 2007). Before the internet it was impossible to have access to real-time demand and inventory information, among others (Sanders, 2007).

E-business strategy boosts the role of the internet in the competitive advantage of companies (Cagliano et al, 2009) and "in the context of supply chain, e-business integration refers to the assimilation and adaptation of internet-based e-business

operations, which enables firms to exchange information , share resources , and undertake continuous and collaborative activities" (Shi and Liao, 2015, p.943).

Swaminathan and Tayur (2003) state that the internet has influenced supply chain models in three ways: i) it has facilitated use of enterprise resource planning (ERP) and advanced planning and optimization solutions (APS); ii) it has created the ability to obtain real time information and access to large computer systems, enabling firms to develop detailed supply chain models that can be utilized to make real-time decisions; iii) it has facilitated the creation of opportunities to integrate information and decision making across different functional units, thus creating a need for supply chain models that go beyond a business unit to study the extended enterprise.

Information systems and technology have the potential to coordinate the different functions of a business, allowing the virtual integration of the entire supply chain, from suppliers to customers (Akyuz and Rehan, 2007). According to Akyuz and Rehan (2007) this integration merges SCM with the internet and they referred to it as e-supply chain management (e-SCM). In practice e-SCM is the use of internet technologies in the management of supply chain interactions and integration is key to efficiency (Akyuz and Rehan, 2007). Figure 1 presents a schematic representation of an integrated supply chain.

Figure 1 - Highly integrated supply chain
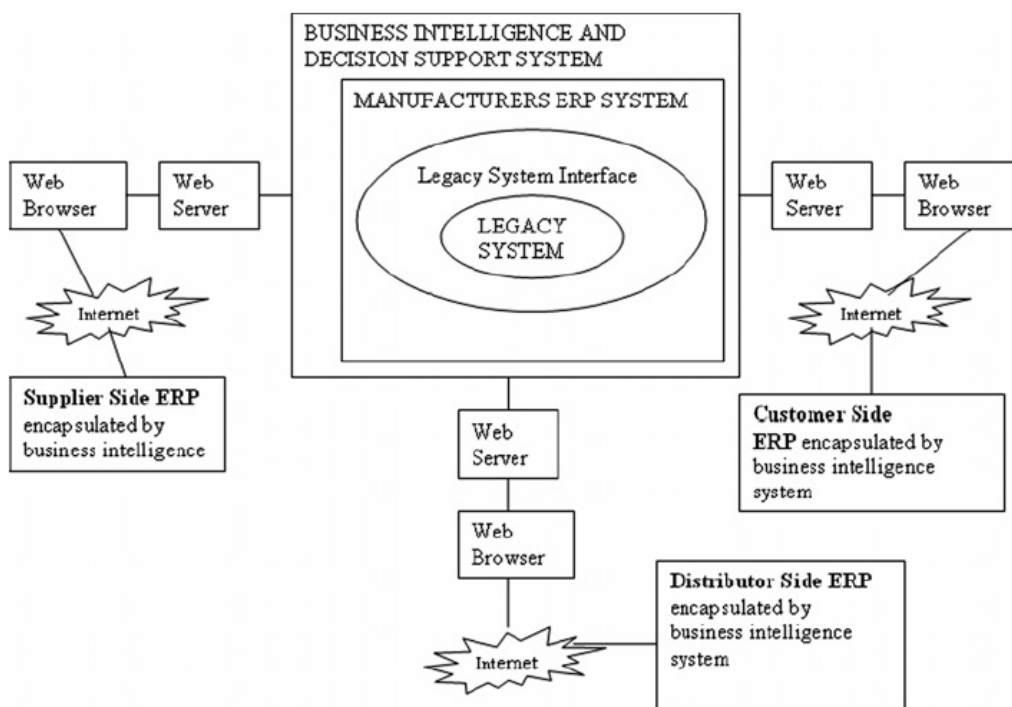
Source: Akyuz and Rehan, 2007

In short, e-SCM is "the impact that the internet has on the integration of key business processes from the end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders" (Dey, 2015).

The integration of the e-supply chain described above, has many benefits, including: creating a more cooperative business environment; a more interactive approach to supply chain; demand data and supply capacity data visibility; increased ability to anticipate and respond to demand fluctuations; tools to coordinate relationships across the entire supply chain; creation of operational linkages; creation of strategic partnerships; breaking down some organizational and functional boundaries; enhancing the flow of information (Akyuz and Rehan, 2007).

According to Porter (1985:38) "value is the amount buyers are willing to pay for what a firm provides them". According to the same author the ultimate goal of companies is the creation of value for customers. In the scope of the present analysis the expression "source of value creation" is used to describe any factor that may influence the value created by e-business (Amit and Zott, 2001).

Along with the transformation of the supply chain, and as a consequence of that, e-business also changed the process of value creation, which cannot be described using traditional theories (Amit and Zott, 2001). Having that in mind, Amit and Zott (2001), conducted their own investigation to develop the definition of value creation and adopt it to broad applications, such as e-business, basing their research on Schumpeterian innovation, the resource-based view of the firm, strategic networks and transaction cost economics.

With their investigation, the authors, concluded that value creation opportunities in virtual markets are originated in the combination, reconfiguration and integration of different drivers (Amit and Zott, 2001). They also stated that value creation in virtual markets may be based on "new combination of information, physical products and services, innovative configurations of transactions, and the reconfiguration and integration of resources, capabilities, roles and relationships among suppliers, partners and customers" (Amit and Zott, 2001:496). At the end, Amit and Zott (2001), proposed their own definition of value stating that the "total value is created as the sum of the values appropriated by each party involved in the transaction". Moreover, they state that value is created regardless of who appropriates it. The model proposed by them describes the potential sources of value

creation in e- business. This model consists of four dimensions, or four potential sources of value creation, that are also interrelated (Figure 2). The authors identified efficiency, complementarities, lock-in and novelty as the four main potential sources of value creation.

Figure 2 - Sources of value creation in e-business
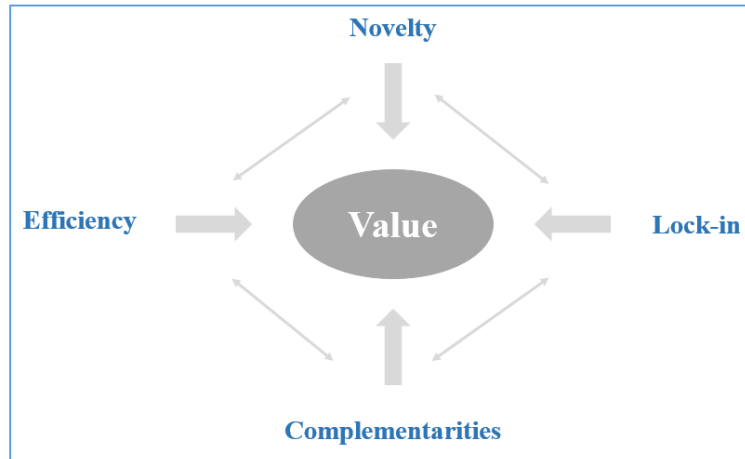
Source: Amit and Zott, 2001

Efficiency is pointed out by Amit and Zott as the primary value driver for e-business. The authors adopt a vision of efficiency consistent with the transaction cost theory that suggests that transaction efficiency increases when transaction costs decrease. "Therefore, the greater the transaction efficiency gains that are enabled by a particular e-business, the lower the costs and hence the more valuable it will be". Moreover, by leveraging cheap interconnectivity of virtual markets, e-business increases transactional efficiency by enabling faster and more informed decision making.

Another proposed source of value creation in e-business are complementarities. These are present whenever having a bundle of goods together provides more value than each one of the goods separately. E-business leverages this potential by offering bundles of both complementary goods and services, and the exploitation of complementarities is boosted by efficiency gains. The value creation of e-business can also be achieved through lock-in. Lock-in represents the extent to which customers are willing to repeat transactions and the extent to which business associates have incentives to maintain and improve their relationships. Furthermore, lock-in prevents strategic partners from migrating to

competitors. The fourth and last dimension is novelty. E-business also innovates in the way it structures the transactions, and consequently in the business structure.

1.2. Banks' distribution channels and e-banking in Portugal

In general, the banking sector has two types of markets, retail and corporate (Berg and Kim, 1998). Usually banks that are retail oriented rely more on branch networks to develop their activities, and their operational activities are based on deposits. On the other hand, banks that have corporate customers as their main target tend to base their operation on the purchase of funds rather than on produced deposits (Berg and Kim, 1998).

Nowadays, due to a series of mergers and acquisitions in the past few years, throughout Europe, the banking sector has less institutions and each individual institution is bigger (Powlowska, 2015). According to Powlowska (2015), this is a common practice in all EU-27 countries that leads to a more concentrated sector. The banking sector is also heterogeneous, banks have clear differences in the value of their assets (Powlowska, 2015).

The global banking system is not mechanic and static, as it was once thought to be (Pop, 2015). Quite the opposite, it is dynamic and innovative, and traditional activities such as deposits, repayable funds and the granting of credits represent only a small part of the actual business (Pop, 2015). In fact, the technological developments of the past decades were a turning point in the banking sector, introducing new distribution channels (Silva, 2008).

Moreover, the introduction of new technologies into banking was a necessity for banks to stay competitive in high globalized markets (Silva, 2008). According to Silva (2008) banks focus their attention on clients and develop new marketing strategies and product/services based on new distribution channels, for example, e-banking (Silva, 2008).

1.2.1. Banks multi-channel distribution

The technological changes and globalization of markets in the past decades increased the competition among the financial institutions and led to a homogeneity of prices on deposits and loans (Akinci et al, 2004). To gain competitive advantage banks had to explore non-financial factors and new distribution trends emerged. Banks diversified their

traditional delivery channels, introducing virtual channels, and adopted a multi-channel distribution system (Akinci et al, 2004).

Multi-channel distribution is a service that adds value through the complementarity between physical and virtual components (Sousa and Voss, 2004). Distribution channels can be one of two types: virtual or physical. Sousa and Voss (2004) define physical channels as "means of communication with the customer employing a physical (bricks-and-mortar) infrastructure". The same authors define the virtual channel as "means of communication using advanced telecommunications, information, and multimedia technologies". With virtual channels the different services are available at any time and place (Seck and Philippe, 2013).

The vast opportunities offered by the internet changed the paradigm of services companies and led to the adoption of multi-channel distribution systems, using both traditional physical and virtual channels (Seck and Philippe, 2013). The banking sector is a good example of this new distribution approach. Banks use a mix of channels composed by "offices, retail outlets, telephone, call centers, ATMs and websites" as a way to better connect with consumers (Seck and Philippe, 2013).

A multi-channel strategy should not be seen as a mere addition of successive channels, but as a cohesive combination of the two types of channels that should be integrated and in complete harmony (Rosenbloom, 2007). Integration is now a key component through which companies attempt to reach an efficient multi-channel management (Seck and Philippe, 2013). It is necessary to create multi-channel strategies to "increase presence, awareness, trial and sales" (Sharma and Mehrotra, 2007).

In a multi-channel context, the customer experience is formed throughout all the moments of the interaction (Sousa and Voss, 2006). Customers base their service quality perception and satisfaction on all the channels they interact with (Sousa and Voss, 2006) and expect consistent and uniform quality across the multiple channels (Seck and Phillipe, 2013). Moreover, customer satisfaction has been a focus of managers' attention worldwide (Welch et al, 2005) because it has been proven to increase customer retention, market share, loyalty, and company profits (Szymankski and Henard, 2001). In addition, according to Seck and Phillipe (2013), multi-channel consumers are more profitable than single channel consumers. The same authors state that increased contact through several

channels can increase shopping opportunities and allow a better communication with the customers.

1.2.2. E-banking

Like many other sectors, banking has been suffering changes due to development and improvements in ICT (Chavan, 2013), which has been a useful tool to follow market demands and practices. This development of new technologies has been causing a huge impact on organizations in terms of management and control, marketing and research, operations and decision making (Chavan, 2013).

Banking technology is not a new topic. It has been a constant presence in the literature since the late 1980s and early 1990s (Hernandez and Mazzon, 2007). According to Hernandez and Mazzon (2007) deregulation and globalization have been the main reasons behind the biggest technological changes in banking industry, together with the necessity to cut costs and increase profitability.

Electronic banking (e-banking) is the specific case of e-business in the banking sector (Hamidianpour et al, 2016). It is a set of services including automatic teller machines (ATM), point of sales, internet banking, telephone-banking and mobile banking (Hamidianpour et al, 2016)

E-banking can be defined as a set of activities conducted from home instead of a physical bank location (Kaur et al, 2015). It is an "umbrella term for the process by which a customer may perform banking transactions electronically without visiting a bricks-and-mortar institution" (Haque et al, 2009). E-banking can be also referred to as online banking, cyber banking, virtual banking and net banking (Kaur et al, 2015). Moreover, Angelakopoulos e Mihiotis (2011) state that there are three types of e-banking: internet banking, phone banking and mobile banking, that differ in terms of distribution channel, internet, phone and mobile phone, respectively.

According to Chavan (2013), e-banking is not something totally new. It started some time ago in the form of ATMs and telephone transactions. This first generation of solutions typically only allowed customers to view their statements online, conduct transfers between accounts and pay bills (Kaur et al, 2015). Nowadays, the amount of operations that can be carried out using e-banking services is far greater. Customers can use e-banking to: pay utility bills and insurance premiums; fund transferences; consult current account and savings balances; carryout mortgage payments; options subscriptions; book

orders online; book flights and railway tickets; and, purchase products online (Mudholkar et al,2013;)

The majority of banks recognize the need to change their business processes and follow the latest trends, in order to stay competitive (Mudholkar et al, 2013). Having that in mind, financial organizations aim to take the most benefits possible from technology, mostly to increase efficiency and have the end result of reducing costs (Chavan, 2013). In the last two decades, banks have focused on computerizing and electronizing each and every aspect of their processes (Masocha et al, 2011). With that mission arose e-banking, that allows banks to deliver products in a more customer oriented way (Masocha et al, 2011). This distribution channel is a consumer relationship management facilitator, which helps banks to better meet customers' expectations and tighten their relationships with customers (Kumar and Kumar, 2015).

Since the first e-banking services were provided, in October 1994 and supplied by Stanford Federal Credit Union (SFCU), e-banking rapidly spread all over the world (Yoon, 2010). In Portugal, the first e-banking service arose in 1998, implemented by Banco Espirito Santo (BES). BES was followed by Banco Português de Investimentos (BPI) and Caixa Geral de Depósitos (CGD) that introduced e-banking in 2000 and 2003, respectively (Cândido, 2010).

The overall e-banking penetration rate in Europe has increased in the last decade, and according to available data, the penetration rate of e-banking in 2016 in Europe was 49% (Statista 06.10.2017). Portugal was positioned among the European countries with the lowest penetration rates in 2016, 29% (Statista 06.10.2017), as shown in table 1, right after Hungary and Slovenia. Denmark is the EU country with the highest penetration rate, 88%; however, Norway is the Schengen area country with the highest rate, 91%.

E-banking adoption in Portugal

Table 1 - E-banking penetration in European markets

Country	Penetration rate (%)	Country	Penetration rate (%)
Norway	91	EU (27 countries)	49
Denmark	88	Malta	46
Finland	86	Slovakia	45
Netherlands	85	Spain	43
Sweden	83	Poland	39
Estonia	79	Croatia	38
Luxembourg	71	Hungary	35
Belgium	64	Slovenia	35
Latvia	62	Italy	29
France	59	Portugal	29
Lithuania	54	Cyprus	28
Austria	53	Greece	19
Germany	53	Romania	5
Ireland	52	Bulgaria	4
Czech Republic	51		

Source: Statista 06.10.2017

According to a Marktest study (21.02.2017) e-banking penetration tripled in Portugal in the last decade, as shown in figure 3. Nonetheless, the study pointed out a higher penetration rate than Statista, of 35%, which is still small compared with the leading countries as Finland, for example. This penetration rate represents around 2.5 million of Portuguese and has been stable since 2014, despite the decrease of open bricks-and-mortar (Exresso 04.07.2015). It should also be underlined that the penetration rate is strongly influenced by age (Marktest, 2017). In the population group with more than 64 years, in Portugal, the e-banking penetration rate is around 6,2%, compared with the 59,7% of people between 25 and 34 years old (Marktest, 2017). In the same study, was stated that men use e-banking more than women and that the social condition also influences e-banking use, where people with higher wages and education use more internet banking.

Figure 3- E-banking penetration rate in Portugal
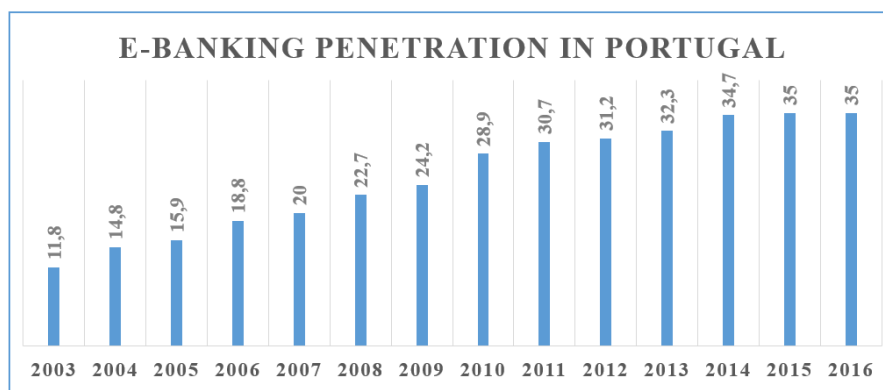
Source: Marktest, 2017

1.2.2.1. Advantages and disadvantages of e-banking

E-banking opened up a totally new world of possibilities and opportunities for financial institutions and changed their strategic behavior. "Online banking has a lot of benefits which add value to customers' satisfaction in terms of better quality of service offerings and at the same time enable the banks gain more competitive advantage over other competitors" (Chavan, 2013, p.19).

Customers' satisfaction and banks' competitive advantage are just two of the long list of e-banking benefits proposed by Salehi and Alipou (2010). According to these authors, online banking benefits can be classified according to three points of view: the banks' point of view, the customers' point of view and economic benefits. From the banks' point of view, the overall benefits are better branding and better responsiveness to the market, better brand image and profit maximization. The economic benefits pertain to lower operational costs of banks, potentially lowering margins and expanding reach through self-service (Salehi and Alipou 2010). Finally, the main benefit for customers pointed out by Salehi and Alipou (2010) are the significant time savings. Additional benefits for customers, include increased comfort compared to traditional services, quick and continuous access to information, better cash management, and faster, easier and more reliable services (Gurau, 2002). Moreover, with e-banking, customers can take as much time as they want to perform tasks wherever they want to and the service itself is simple, convenient and available 24 hours a day (Angelakopoulos and Mihiotis, 2011).

E-banking is not the solution for all banks' problems, and there are even some problems/challenges pointed out in the current literature, both for banks and customers. On one hand, intense competition is one of the main problems for banks arising from facilitated access to information, as customers can easily and effortlessly access banks' websites (Angelakopoulos and Mihiotis, 2011). Additional disadvantages pointed out by the authors are the amount of time and money required for establishing, maintaining and replacing the technological infrastructures.

On the other hand, for customers, the main disadvantages are security and the safety of their personal data, which originates a lack of trust in e-baking services (Angelakopoulos and Mihiotis, 2011; Silva, 2008). Other disadvantages mentioned include the lack of required technological skills by the users, lack of specialized equipment and/or infrastructures, and necessity of customers' personal contact during service supply (Gabadeyan and Akinyoso, 2011; Curran and Meuter, 2005).

1.3. Consumers' technology acceptance

Online banking services, as referred in the previous section, have several benefits for customers, and banks are still developing this services to better meet customers' constant demands of quick answers, superior usability, personal attention and highly customized products and services (Mudholkar et al, 2013)

Despite the increasing number of internet users and the well-known advantages of internet banking for customers, the adoption rates of e-banking are not growing as expected (White and Nteli, 2004). As referred in the previous section, there are differences in e-banking adoption rates across Europe, a fact that raise questions regarding the factors which influence internet banking adoption by customers.

Early researches studied the factors behind human behavior and the motivations to perform a specific action (see Madden et al, 1992; Ajzen, 1991) where theories like Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB) appeared. Afterwards, using different methods and approaches, several researchers have studied the different factors influencing customers' technology adoption (see Davis, 1989; Venkatesh and Davis, 2000; Venkatesh and Bala, 2008) where the main models is the Technology Acceptance Model (TAM). Additionally, regarding the specific case of e-banking and using the previous theories as fundamentals, recently some authors developed conceptual frameworks to explain e-banking adoption, such as, Safeena et al. (2014) and Ezzi (2014). The referred models will be detailed further on this work.

Adding to the theories used to describe technology adoption by consumers, there are some more interesting findings concerning to what influences technology adoption. For example, Gabner-Krauter and Faullant (2008) discovered that trust is a focal point in any type of transaction, being especially relevant in online transactions mostly because the lack of trust is one of the main reasons for the reluctance of customers to conduct financial transactions online (Flavian et al, 2006). Another factor described in the literature as influencing e-banking adoption is previous experiences, which can both have a positive or a negative influence in consumers' attitudes towards e-banking (Laforet and Li, 2005).

1.3.1. Trust, security and Privacy

Trust is an important factor in social interactions, involving uncertainty and dependency (Gabner-Krauter and Faullant, 2008). In virtual environments the uncertainty level is higher than in a traditional setting, thus trust become an important factor (Gabner-Krauter

and Faullant, 2008). Grabner-kräuter and Faullant (2008) define technology trust as a belief combined with a willingness to rely on the internet as a medium for economic transactions, and state that it is particularly important when it comes to e-business, because in a virtual environment the level of uncertainty is higher than in traditional means in what refers to economic transactions. It has been proven in several studies that the ability to trust is a key enabler of information systems adoption (Flavian and Guinalıu, 2006) and the lack of trust the main reason stopping consumers from using e-banking (Flavian et al, 2006)

Personal and financial information can be used for fraudulent purposes and online transactions involve higher security concerns than traditional ones (Lee and Turban, 2002). Perceived security was previously defined as "threat that creates a circumstance, condition, or event with the potential to cause economic hardship to data or network resources in the form of destruction, disclosures, modification of data, denial of service, and/or fraud, waste and abuse" (Kalakota and Whinston, 1997). Users have the need to feel secure when they conduct online transactions and the lack of protection is even pointed out as one of the major disadvantages of information systems (Lee and Turban, 2002).

According to Grabner-kräuter and Faullant (2008), there is a growing concern related to the information given online. The interception and misuse of that information is a growing concern among consumers in terms of privacy. Thus, online consumers hesitate to make available their personal information and because of that do not use some information systems (Lim, 2003).

As mentioned before, trust can influence consumers' behavior, in a positive or a negative way; therefore, when security and privacy are clearly disclosed, consumers increase their trust in online operations and are consequently more willing to perform online transactions (Chellappa and Pavlou, 2002).

1.3.2. Personal contact

As mentioned in the definitions of e-banking and in the description of its benefits, e-banking allows customers to perform the necessary tasks without visiting a bricks-and-mortar institution (Haque et al, 2009). Nonetheless, there are people that continue to perform the tasks in the traditional way for numerous reasons. Some customers do not

use e-banking because they enjoy the social experience of going to a bricks-and-mortar institution and prefer to deal with people (Zeithaml and Gilly, 1987).

Recent studies used personal contact as a construct of conceptual frameworks to study factors influencing IS adoption and concluded that the lack of personal contact can be even considered a factor that discourages IS adoption (Curran and Meuter, 2005; Hanafizadeh et al, 2014).

1.3.3. Theory of Reasoned Action (TRA)

The Theory of Reasoned Action (TRA) was initially developed by Fishbein and Ajzen in 1975 and focused on individual motivations as constructs to determine the likelihood to perform a specific behavior (Montaño and Kasprzyk, 2008). In particular TRA led to the study of attitude and behavior, where it is stated that individuals' behavior (B) is determined by the intention to perform that same behavior (Moore and Benbasat, 1996). TRA is based on three main constructs: behavioral intention (BI), attitude (A) and subjective norm (SN) with the configuration shown in figure 4.

Figure 4 - TRA Model
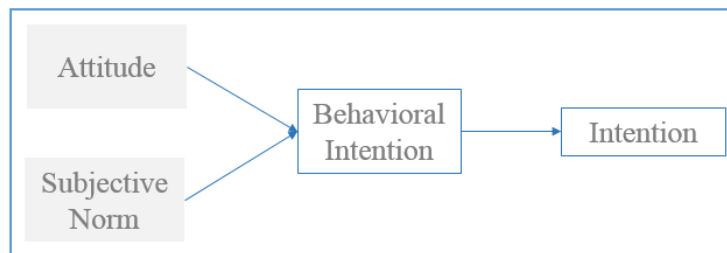
Source: Madden et al, 1992

According to the TRA, behavioral intention is determined by personal beliefs and social influence. Personal beliefs, named attitude (A) in the model, "is the individual's positive or negative evaluation of performing the behavior", while the social influence, called subjective norm (SN) in the model, represents the social pressure "to perform or not to perform the behavior in question" (Safeena et al, 2014, p.837).

The model suggests that the behavioral intention depends on person's attitude towards the behavior and subjective norm; this means that behavioral intention is positively influenced by individuals' attitudes and subjective norms (Safeena et al, 2014). Additionally, behavioral intention is what influences the actual behavior of individuals.

TRA itself is not widely used to study internet banking adoption. However, it is a starting point or a component of several models as exemplified bellow.

1.3.4. Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) is an extension of the TRA model and was proposed by Ajzen in 1985. TPB aims to overcome the limitations of TRA, by including a new construct, perceived behavioral control (PBC), which refers to the availability of resources and control an individual has to carry out a behavior freely and without any external conditioning. Even so the main goal of the theory is the same of TRA: explain the individuals' behavior (Safeena et al, 2014).

According to Ajzen (1991), TPB assumes that human behavior is explain by behavioral intention and behavioral control, as represented in figure 5. Similarly to TRA, in the present theory, behavioral intention is also determined by attitude and subjective norm, and are assumed to capture the motivational factors that influence the actual behavior (Ajzen, 1991).

Figure 5 - TPB Model
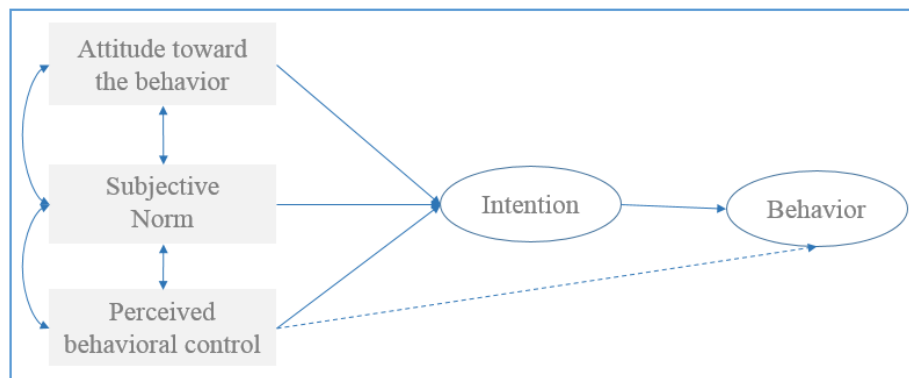
Source: Ajzen, 1991

Additionally, Ajzen (1991) states that the "stronger the intention to engage in a behavior, the more likely should be is performance". However, he makes clear that behavioral intention only takes expression when a person has the required opportunities and resources to perform a certain behavior, and can decide to perform it or not.

1.3.5. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) has its roots in TRA and TPB, aiming to express the way customers accept new technologies. TAM was proposed by Davis (1989)

and underlies almost every recent study in the information systems (IS) field. The model suggests that when users are presented with a new technology, their decision to use it is based on a multiplicity of factors (Safeena et al, 2014).

According to Davis (1989), as portrayed in figure 6, TAM assumes that users' acceptance of a new information system is determined by their intention to use the system. In constructing one's use intention towards an IS both perceived usefulness (PU) and perceived ease of use (PEOU) are deemed relevant. The variables are the main constructs of TAM and are used as determinants of users' intentions to use a specific IS. As defined by Davis (1989) PU is the possible impact on performance that a person thinks the use of a specific system can have and PEOU represents how easy and effortless a person thinks that using a specific system will be. Although both PU and PEOU influence the intention to use a sort of technology, the usefulness/usage relationship is stronger than the ease-of-use/usage relationship (Davis, 1989). This means that consumers are more willing to use a technology because of the functionalities it has for them, than because it is easy to use (Davis, 1989). Additionally, PEOU, also has a positive influence on PU, which means that when someone thinks that a system is easy and effortless to use he/she will also think that it has a positive impact on the task performance.

Figure 6 - Technology Acceptance Model
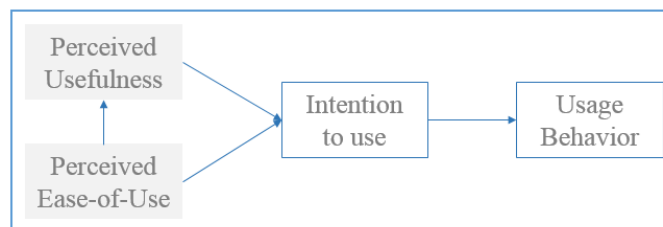
Source: Davis, 1989

TAM is a proved theory in the literature, serving even as a tool to plan the introduction of new IS, more than just an evaluation system (Taylor and Todd, 1995). The model is the foundation of several new models, rather directly related to e-banking or not. For instance, TAM2 developed by Venkatesh and Davis (2000), incorporates social influence processes and cognitive instrumental processes, related to the initial constructs of TAM, as presented in figure 7. TAM2 adds the following constructs to the model: subjective norm, voluntariness, image, experience, job relevance, output quality and result demonstrability. As previously mentioned, subjective norm represents the perceived

social pressure to use an IS. Voluntariness represents the perception of an IS as not-mandatory. In its turn, image represents the impact people think the adoption of an IT solution will have on their social status. Experience is the user capability to use the system. Job relevance is the perception of impact on the persons' job. The output quality is the perception someone has of how well the task went. Finally result, demonstrability is the tangibility of the results.

Figure 7 - TAM2 Framework
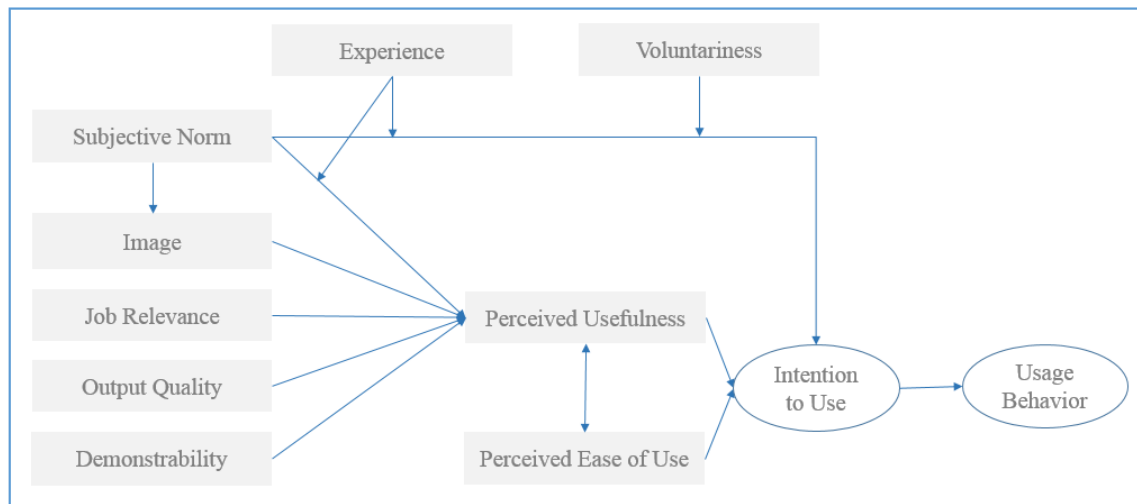
Source: Venkatesh and Davis, 2000

TAM3 is another model with foundation in TAM constructs, more specifically it is a development of TAM2. This model was developed by Venkatesh and Bala (2008) and keeps the variables determined in TAM2, affecting PU, and adds six new determinants affecting PEOU: computer anxiety, playfulness, self-efficacy, perceived enjoyment, objective usability and perception of external control, as shown in figure 8. Anxiety represents the degree of apprehension of using an IT solution. Playfulness represents the cognitive spontaneous level in computer interaction, this means, using computers because it is fun rather for a specific purpose. Another variable added to TAM3, self-efficacy, represents the skills the individual thinks to have when using an IT solution. The perceived enjoyment represents how enjoyable is to use the IS. The objective usability compares the effort necessary to complete the task, with and without the IT solution. Finally, perception of external control, is based on the perception of existing an organizational and technical use support system.

Figure 8 - TAM3 Framework
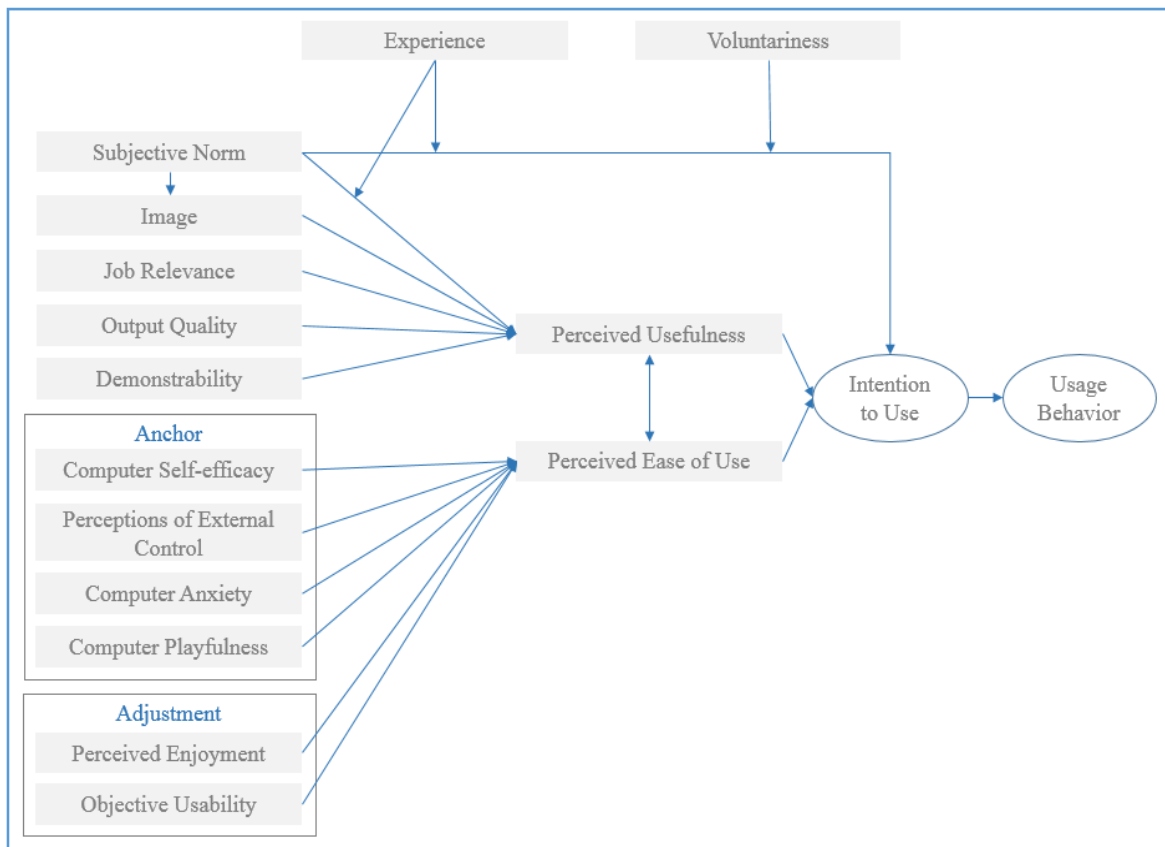
Source: Venkatesh and Bala, 2008

As mentioned before, TAM fundamentals have been used to build theoretical frameworks specifically applied to the e-banking case. Two study models were proposed by Ezzi, S. (2014) and Safeena et al (2014).

The e-business TAM (EBTAM) theory developed by Ezzi (2014) is known as the Consumer Internet Banking Model (CIBM) and introduces some new constructs, such as trust, perceived privacy, perceived security, responsiveness and demographics. In line with the previous investigators, Ezzi (2014) tried to describe consumers' attitudes towards e-banking and their intentions to use it. As a result of the investigation, the author ended up with the model in figure 9 and new constructs: perceived privacy and security – individuals fear to provide sensitive information online; trust – confidence in the quality and reliability of services; computer self-efficacy – confidence in the ability to perform a task; responsiveness – feedback time and accuracy; demographics – age, education, gender and income level. Additionally, by testing the model, Ezzi (2014) proved that the referred customers' attitudes positively influence their intention to use e-banking services.

Figure 9 - CIBM Framework
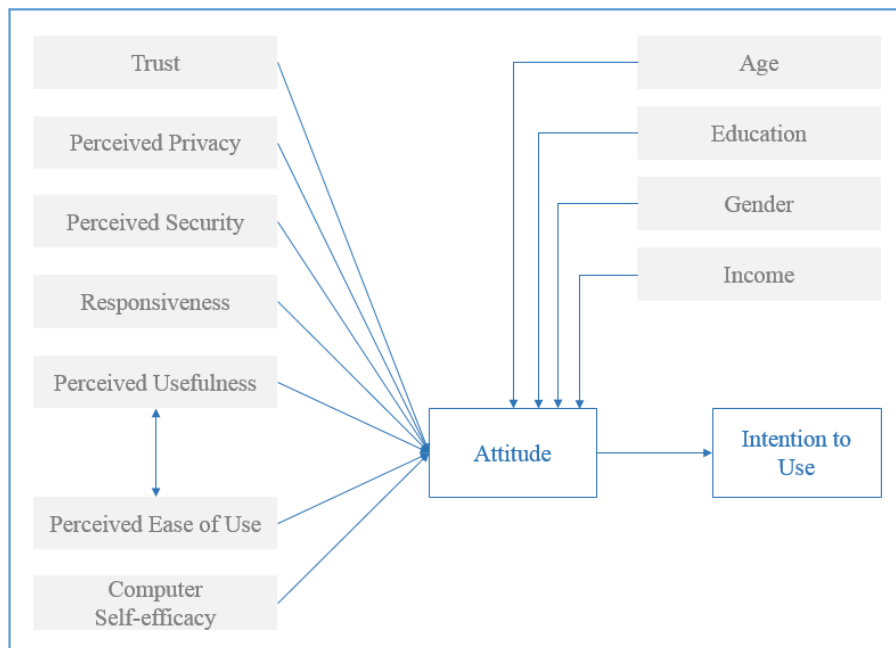
Source: Ezzi, 2014

A parallel research and consequent development of an EBTAM framework (figure 10) was carried out by Safeena et al (2014). The authors determined that internet banking adoption is influenced by perceived benefits (PB), perceived impediments (PI) and social influence (SI). From the model analysis, it was proven that perceived benefits (relative advantages, perceived usefulness and perceived ease of use) and social influence (subjective norm and image) have a positive impact on internet banking adoption.

Perceived impediments (trust, security and legal issues) have a negative impact on internet banking adoption and gender and age have an even bigger impact on internet adoption (Safeena et al, 2014).

Figure 10 - EBTAM Framework
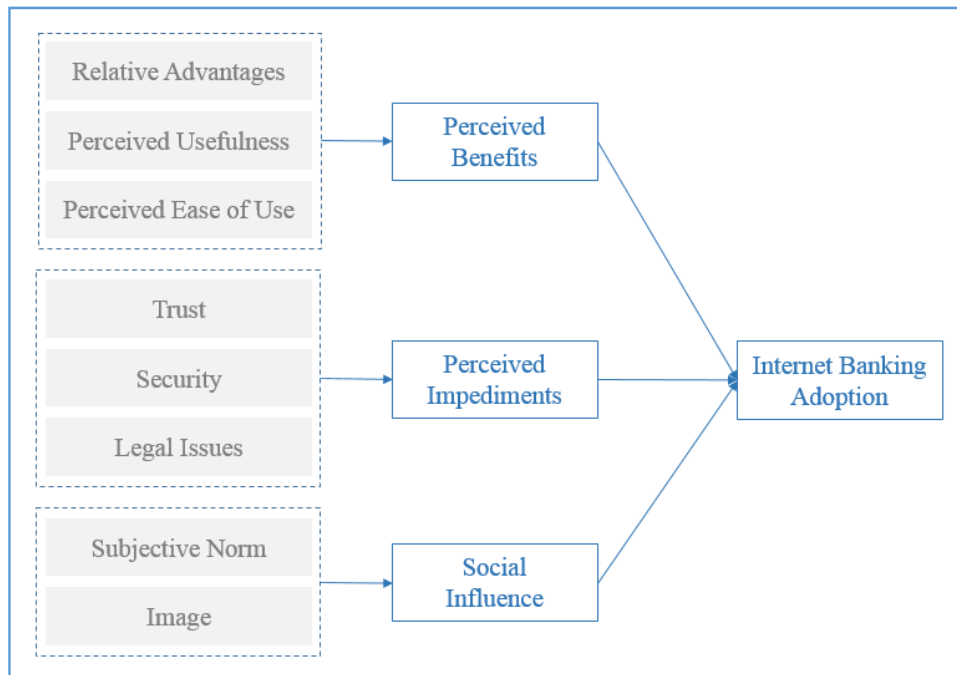
Safeena et al, 2014

Summing up the main models referred in the present literature review, is presented in table 2. It aims not only to summarize the most important topics approached in the current section, but also serves as a support for the chosen research model.

Table 2 - Summary of the Models

Model	Author	Constructs	Impact on IS/e-banking use
Theory of Reasoned Action (TRA)	Fishbein and Ajzen, 1975	Attitude (A)	May have a positive or a negative impact depending on the personal belifs;
		Subjective Norm (SN)	Have a positive or a negative impact depending on the social pressure to perform or not the task;
		Behavioral Intention (BI)	Depends on the previous constructs;
Theory of Planned Behavior (TPB)	Ajzen, 1985	Attitude (A)	May have a positive or a negative impact depending on the personal belifs;
		Subjective Norm (SN)	Have a positive or a negative impact depending on the social pressure to perform or not the task;
		Perceived Behavioral Control (PBC)	Positive influence if the individual has the necessary control and resources to perform the task;
		Behavioral Intention (BI)	Depends on the previous constructs;
Technology Acceptance Model (TAM)	Davis, 1989	Perceived Usefulness (PU)	Positive influence;
		Perceived Ease of Use (PEOU)	Positive influence;
		Intention to Use (IU)	Positive influence;

TAM 2	Venkatesh and Davis, 2000	Perceived Usefulness (PU)	Positive influence;
		Perceived Ease of Use (PEOU)	Positive influence;
		Intention to Use (IU)	Positive influence;
		Subjective Norm (SN)	Have a positive or a negative impact depending on the social pressure to perform or not the task;
		Image (I)	Positive influence;
		Experience	May have a positive or a negative impact depending if the individual has the necessary skills or not;
		Voluntariness	Moderating variable;
		Job Relevance (JR)	Positive influence;
		Output Quality (OQ)	Positive influence;
		Result Demonstrability (RD)	Positive influence;
TAM 3	Venkatesh and Bala, 2008	Perceived Usefulness (PU)	Positive influence;
		Perceived Ease of Use (PEOU)	Positive influence;
		Intention to Use (IU)	Positive influence;
		Subjective Norm (SN)	Have a positive or a negative impact depending on the social pressure to perform or not the task;
		Image (I)	Positive influence;
		Experience	May have a positive or a negative impact depending if the individual has the necessary skills or not;
		Voluntariness (V)	Moderating variable;
		Job Relevance (JR)	Positive influence;
		Output Quality (OQ)	Positive influence;
		Result Demonstrability (RD)	Positive influence;
		Computer Anxiety (CA)	Negative Influence;
		Playfulness (P)	Positive and negative influence;
		Self-efficacy (SE)	Positive and negative influence;
		Perceived Enjoyment (PE)	Positive influence;
		Objective Usability (OU)	Positive influence;
		Perception of External Control (F	Positive and negative influence;
Consumer Internet Banking Model (CIBM)	Ezzi, 2014	Perceived Usefulness (PU)	Positive influence;
		Perceived Ease of Use (PEOU)	Positive influence;
		Intention to Use (IU)	Positive influence;
		Trust (T)	Negative Influence;
		Perceived Privacy (PP)	Negative Influence;
		Perceived Security (PS)	Negative Influence;
		Responsiveness	Positive influence;
		Self-efficacy (SE)	Positive and negative influence;
		Demografics	Not analised in detail;
EBTAM	Safeena et al., 2014	Perceived Benefits (PB)	Positive influence;
		Perceived Impediments (PI)	Negative Influence;
		Social Influence (SI)	Positive influence;

Source: Author

25

2. RESEARCH MODEL

Considering the literature review section it is possible to conclude that consumers sometimes have reservations in what concerns e-banking adoption, which is reflected in different e-banking penetration rates among countries. Moreover, in the specific case of Portugal, the use of internet banking services has been stable since 2014 and one of the lowest in Europe (Statista, 2017). Thus, the present work aims to give an insight into the topic by examining consumer's perceptions of what influences their use of e-banking. For that, the proposed model bases its constructs in the literature and correspondent models.

The proposed research framework, similar to that of Safeena et al (2014) model, has three main groups of constructs. The first one includes perceived usefulness and perceived ease of use, which corresponds to the TAM model, and aims to validate if these perceived benefits positively influence Portuguese customers to adopt e-banking. The second group is formed by trust and personal contact. Trust, as previously mentioned, has been identified in the literature as one of the main reasons stopping consumers from using information systems. Thus, this construct aims to confirm whether this also applies to e-banking adoption in Portugal. Perceived privacy and perceived security, in turn, and as described in the literature review, are the main components of trust, and were necessary to assess its real impact on Portuguese customers' trust, to better understand what influences people trust. The second construct of this group, personal contact, was introduced in the framework because the lack of personal contact is one of the main differences between e-banking and traditional banking. This inclusion of this variable is one of the main differences relative to previous models, but was considered necessary to assess to what extent the lack of personal contact impacts e-banking adoption. The final group was composed of subjective norm and image, and aimed to test the impact of social influence on e-banking use.

Additionally, the constructs are directly linked to e-banking adoption and not to the behavioral intention because the author aims to assess the direct impact of the constructs in consumers' e-banking adoption and not in their intention to use it.

Figure 11 - Research model framework
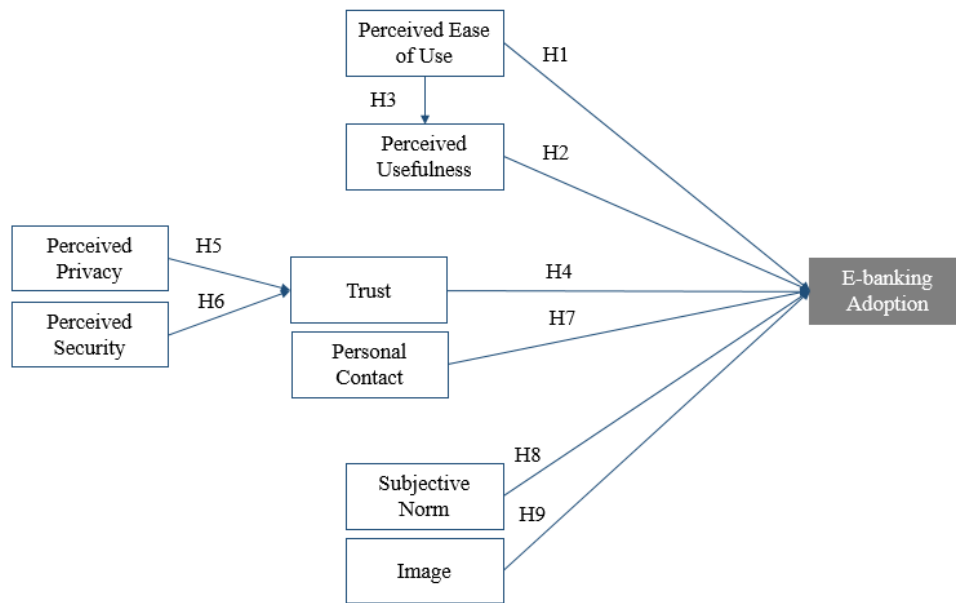
Source: Author

The table below lists the constructs used in the framework and the definitions considered for the study.

Table 3 - Constructs used in the Framework

Construct	Definition
Perceived Ease of Use (PEOU)	Belief that there is no need of effort when using e-banking. Ease of use also influences customers' perceived usefulness of e-banking.
Perceived Usefulness (PU)	Belief that the use of e-banking will help the individuals' bank tasks performance.
Trust	Belief that e-banking will follow a safe conduct. Confidence in quality and reliability of services. Trust is also influenced by perceived privacy and perceived security.
Perceived Privacy (PP)	Perceived privacy is the belief that the personal data used to access e-banking and the tasks performed are not revealed to other
Perceived Security (PS)	Perceived security is the degree to which individuals feel protected against any threat resulting from the use of e-banking.
Personal Contact (PC)	Refers to the necessity to stablish personal contact during the service supply.
Subjective Norm (SN)	The perceived social pressure one think to have to use e-banking.
Image	The impact people think the adoption of e-banking has in his/hers social status.

Source: Author

27

2.1. Hypothesis

Broadly speaking, in the main theories described in the literature review, usually the constructs influence behavioural intention, and behavioural intention then translates into the effective use of IS or e-banking. In the proposed model, as mentioned before, e-banking use is directly linked to the proposed constructs, thus, the hypotheses will test the direct impact of the constructs on e-banking's effective use.

The first constructs and consequent hypotheses are based on TAM assumptions, developed by Davis in 1989. Perceived ease of use represents the necessary effort to perform a task using e-banking, and not only influences e-banking adoption directly, but also influences its perceived utility. So, the first hypothesis proposes that perceived ease of use influences e-banking adoption.

H1: Perceived ease of use has a positive influence in e-banking adoption.

Another fundamental construct of TAM (Davis, 1989) is perceived usefulness. According to the author, it refers to the possible impact on performance that a person thinks the use of a specific system can have. Perceived usefulness is also one of the main factors influencing IS adoption, compared with ease of use. This means that consumers are more willing to use a technology because of the functionalities it has for them, than because it is easy to use (Davis, 1989). Perceived usefulness is a constant presence in the models used to describe IS adoption, including the resent research on e-banking adoption (Venkatesh and Davis, 2000; Venkatesh and Bala, 2008; Ezzi, 2014; Safeena et al, 2014).

H2: Perceived usefulness has a positive impact on e-banking adoption.

According to the original model of Davis (1989) perceived ease of use also influences the perceived usefulness. Thus it is hypothesed that:

H3: Perceived ease of use has a positive impact on perceived usefulness.

Trust is a feature present in every social and economic interaction. Moreover, online interactions have a high level of uncertainty associated to them compared with physical interactions; thus it is necessary to forge stronger bonds of trust with the consumers (Gabner-Krauter and Faullant, 2008). Additionally, some studies report that lack of trust is the main reason stopping consumers from using e-banking (Flavian et al, 2006). Grabner-kräuter and Faullant (2008) state that there is a high concern related to the information given online, concerning to the interception and misuse of that information,

in terms of privacy. Thus, online consumers often hesitate to make available their personal information and because of that do not use certain information systems (Lim, 2003). Additionally, users have the need to feel secure when conducting online transactions and the lack of protection is even pointed out as one of the major barriers to the adoption of information systems (Lee and Turban, 2002).

H4: The lack of trust in e-banking reduces its adoption.

H5: Perceived privacy has a positive impact in e-banking trust.

H6: Perceived security has a positive impact in e-banking trust.

Performing a task using e-banking hinges on the idea of no need for personal interaction. However, some people continue to use traditional distribution systems because they enjoy the social experience of going to a bricks-and-mortar institution and prefer to deal with people (Zeithaml and Gilly, 1987). The lack of personal contact is pointed out in some studies as negatively influencing e-banking adoption (Hanafizadeh et al, 2014). Thus, it is proposed that:

H7: Lack of personal contact has a negative impact on e-banking adoption.

Also related to social interactions we have the subjective norm. This construct represents the social pressure to perform or not the behavior in question (Safeena et al, 2014) and it has been shown that it can have both a positive and a negative impact on the perceived usefulness (Venkatesh and Davis, 2000; Venkatesh and Bala, 2008). The referred impact depends on the direction of the social pressure, and whether it reinforces the intention to use it or not to use it. Furthermore, subjective norm has also been shown to have a positive impact on social influence, which in turn has a positive influence on e-banking adoption (Safeena et al, 2014).

H8: Subjective norm has a positive impact on e-banking adoption.

In its turn, image is related to personal beliefs and social interaction. It represents the impact people think the adoption of an IT solution will have on their social status (Venkatesh and Davis, 2000; Venkatesh and Bala, 2008).

H9: Image has a positive impact in e-banking adoption.

3. METHODOLOGY

As previously mentioned, the main purpose of the present investigation is to understand what influences customers to adopt, e-banking in Portugal. In this sense, three key aims were defined, namely: i) to assess the overall use of e-banking in Portugal as well as the most used services; ii) to understand the factors influencing e-banking adoption from customers' point of view; and, iii) to understand customers' expectations for the future of e-banking.

Having the research goals in mind, a research model was developed, that started with a conceptual approach showing what is in the literature so far. In this section the research framework is presented, using the previous topics discussed in the literature review.

Afterwards, the data collection methods, survey organization, data analysis procedure and measuring instruments are also presented in detail.

3.1. Data collection

Taking into consideration the nature of the research framework (see figure 11) was necessary to follow a quantitative method where, through statistical procedures, the hypotheses could be tested with the intention to identify the factors influencing e-banking adoption (Creswell, 2008, Walliman 2011). Quantitative research is a research methodology to quantify data, and applied for statistical analysis (Malhotra, 2007) and may be applied to test pre-determined hypotheses and produce generalizable results.

The primary data was collected based on an online survey between 20th Abril 2017 and 20th June 2017, that was made available using Google Forms and diffused using social networks and via email. Surveys are a suitable tool to collect quantitative data, which as a method of collecting data is a simple and flexible tool (Walliman 2011). Walliman (2011) refers to surveys as structured formats that are easy and convenient for respondents, and cheap and quick to collect large amount of data. The questionnaire was made available online because it is a convenient distribution method. It does not have financial costs associated and is the least time consuming method compared with the traditional ones, personally and by post (Walliman 2011).

3.2. Survey

In order to meet the project goals with the specific need of the study constructs, the survey was composed of four main sections. The first one had questions related to respondents' current use of e-banking. It included questions to assess which type of e-banking services were used and how often. The second section was directly related to the hypotheses and the third section aimed to understand respondents' perspectives for the future of e-banking, namely to what extent consumers' would like further developments in e-banking services. Finally, the fourth section was a list of demographic questions to better characterize the sample.

The questionnaire had 41 questions and the most of the questions were formulated in a way both users and non-users can answer. Moreover, the survey started with the question "In the last 12 month how many times did you use e-banking?" to differentiate the users and non-users, and these differences were reflected in the data analysis sections. The questions present in the survey were based on two studies carried out in Portugal (see Rodrigues, 2013; Correia, 2017). The questions were also measured according to a 5-point Likert scale that ranged from "Strongly disagree" to "Strongly agree". Additionally, table 4 sums up the questions used, directly related to the hypothesis test, and shows which construct did they measure and which was the theoretical foundation,

Due to time and resource constraints, a convenience sample was used, based on the author's contact list and social groups. This method presents a biased data collection, however this limitation was partly mitigated by the number of answers collected, 307. Of these, 256 were e-banking users.

Table 4 presents the questions of the second section of the survey and the theoretical fundamentals for each one in detail.

Table 4 - Survey questions

Hypothesis	Constructs	Question	References
H1	**PEOU**	I use/ would use e-banking because it is easier to use than tradicional systems. I think it would be easy for me to use e-banking.	Davis, 1989; Venkatesh and Davis, 2000; Venkatesh and Bala, 2008;

H2	**PU**	I think that e-banking is/could be useful to perform my financial tasks. In general I think that e-banking is useful.	Davis, 1989; Venkatesh and Davis, 2000; Venkatesh and Bala, 2008;
H3	**PEOU; PU**	I think the ease of use influences/could influence the usefulness of e-banking.	Davis, 1989; Venkatesh and Davis, 2000; Venkatesh and Bala, 2008; Ezzi, 2014
H4	**Trust**	I think e-banking is trustworthy. Trust in e-banking is/could be one of the main factors influencing me to use e-bankig.	Gabner-Krauter and Faullant, 2008; Gefen, 2003; Flavian and Guinalıu, 2006; Ezzi, 2014
H5	**PP; Trust**	The privacy of my personal data is key for me to trust e-banking.	Chellappa and Pavlou, 2002
H6	**PS; Trust**	The safety of e-banking influences my trust in e-banking	Chellappa and Pavlou, 2002
H7	**PC**	My account manager helps me in a way an e-banking platform cannot. Going to the Bank to speak with the employees is pleasent.	Zeithaml and Gilly, 1987; Curran and Meuter, 2005; Hanafizadeh et al., 2014
H8	**SN**	I use/could use e-banking because my friends do it. Most of my peers use e-banking, so I feel pressured to use it.	Madden et al., 1992; Ajzen, 1991; Safeena et al., 2014
H9	**Image**	I think that using e-bankig influences/could influence my status among my peers.	Safeena et al., 2014

Source: Author

3.3. Data analysis procedure

Considering the nature of the study, it was necessary to define the data analysis procedure that better suited our aims. In general, the following statistical techniques were used: i) univariate analysis – descriptive statistics; ii) bivariate analysis – hypothesis testing, correlation coefficient and simple linear regression; iii) multivariate analysis - Cronbach alfa and multiple linear regression.

The data analysis started with a general demographic description of the sample in terms of gender, age, location, professional status, education and income. After, the effective use of e-banking and its most used services were assessed.

To test the model and its correspondent hypotheses, the firs step was to test the reliability of the scales using Cronbach's Alfa. Cronbach's Alfa measures the internal consistency

between items in a scale and according to Maroco and Marque (2006), the minimum acceptable value for the coefficient is 0,6. Additionally, before the hypothesis testing, the matrix of correlations was analysed.

Finally, to test the hypotheses, were used three analytical models. The first one aimed to study the impact of PEOU on PU. The second one defined the impact of perceived security and perceived privacy on e-banking trust. The last one was a multiple regression to test the impact of the constructs on e-banking adoption.

Additionally, to understand the factors influencing e-banking adoption a descriptive analysis of the impact of the main benefits of e-banking on its adoption was made.

4. DATA ANALYSIS

The present section is divided in four main parts: i) sample characterization; ii) e-banking use; iii) hypothesis testing; iv) e-banking future perspectives.

In order to characterize the sample and proceed with the statistical analysis of the data was analysed using Office Excel 2013 and IMB SPSS Statistics 23.

4.1. Sample characterization

According to the table 5, the final sample consisted of 256 people. Although, as mentioned before, 307 answers were collected, of these 51 were not e-banking users, and as such were not included in the study. The sample consisted of 132 women (52%) and 124 men (48%), mostly from the cities of Beja (39%) and Lisbon (35%). In addition, 81% of the respondents had at least a bachelor degree, and were employed (67% worked for others and 6% were self-employed). Most of the respondents were between 18 and 25 years (40%), followed by the range of 46 to 65 years (38%) and finally, 26 to 45 year olds (22%).

Table 5 - Users demographic characterization

Variables	Items	Frequency	Percentage
Gender	Female	132	52%
	Male	124	48%
Age	18 - 25	102	40%
	26 - 45	56	22%
	46 - 65	98	38%
Location	Aveiro	4	2%
	Beja	101	39%
	Castelo Branco	8	3%
	Évora	5	2%
	Faro	7	3%
	Lisboa	90	35%
	Porto	7	3%
	Santarém	6	2%
	Setúbal	19	7%
	Viana do Castelo	9	4%
Education	High School	48	19%
	Bachelor	130	51%
	Master	72	28%
	Doctoral (PhD)	6	2%
Professional Status	Student	35	14%
	Working Student	21	8%
	Employee	171	67%
	Self-employed	15	6%
	Retired	14	5%

Additionally, as shown in table, almost half of the respondents had their bank account in Caixa Geral de Depósitos (49%). This percentage was followed by Millennium and BPI, with 14% and 13% respectively. The other banks have percentages between 8% and 1%. Thirty seven percent of the respondents reported that they still physically go to bank branches, while 63% reported that they do not. Some of the reasons given for going to the branches include: deposits, advice on insurance and financial investments, update the booklet, savings account management, international transfers and information of services provided by the bank. This was an open-ended question where customers freely identified their reasons to go to bricks-and-mortar institutions.

Finally, about 57% of the respondents considered that e-banking services are a strong factor influencing the choice of a bank. On a scale of 1 to 5, where 1 is totally disagree and 5 is totally agree, 25% of the respondents scored the importance of e-banking when choosing a bank as a 5 and 32% as a 4.

Figure 12 - Branch use and e-banking importance
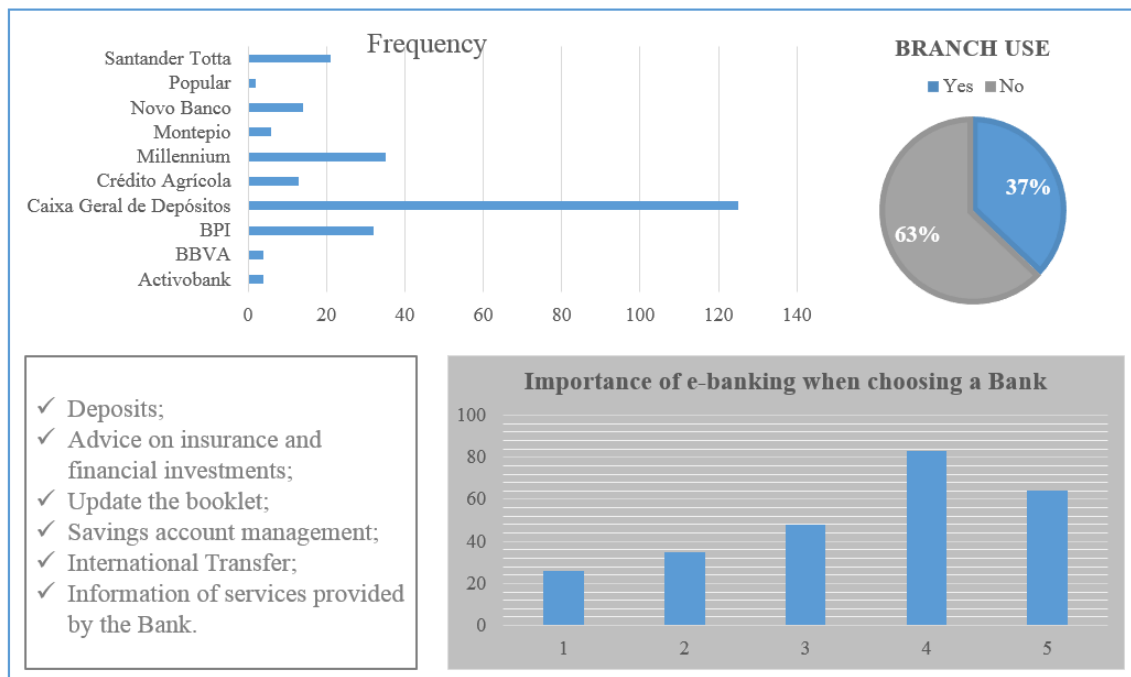
Source: Author

4.1.1. Non-users characterization

The non-users, as shown in table 13, had similar demographic characteristics to the users. The majority of non-users were female (61%) and between 46 and 65 years old (63%).

Most of the respondents (67%) had at least a bachelor degree, and are currently working (65% employee and 8% self-employed). Additionally, only 18% of the non-users of e-banking predicts to start using it. About, 82% answered that their use of e-banking will stay the same next years.

Figure 13 - Non-users characterization

Variables	Items	Frequency	Percentage
Gender	Female	31	61%
	Male	20	39%
Age	18 - 25	14	27%
	26 - 45	5	10%
	46 - 65	32	63%
Location	Beja	33	65%
	Braga	3	6%
	Lisboa	8	16%
	Santarém	2	4%
	Setúbal	5	10%
Education	High School	17	33%
	Bachelor	23	45%
	Master	9	18%
	Doctoral (PhD)	2	4%
Professional Status	Unemplyed	3	6%
	Student	4	8%
	Working Student	5	10%
	Employee	33	65%
	Self-employed	4	8%
	Retired	2	4%

Source: Author

4.2. Current use

To evaluate the overall percentage of use of e-banking, only for this measure ("e-banking use") the total answers were considered, 307 people. As shown in the figure below, most of the respondents used e-banking during the last year, 83%, which means that only 17% of the respondents did not use e-banking. According to the data provided by the surveys, the most frequent mode of used e-banking "two or three times a month", with a percentage of 31.25%. This frequency is followed by "two or three times a week", with a percentage of 29.6%. Only 18.7% of the respondents used e-banking on a daily basis.

Concerning the e-banking services used, the most used service was "balance and movements check" (97%), which means that 97% of the respondents use e-banking to "check the credit balance and movements". This is followed by "payments and of services and purchases", with a percentage of 89%. The two least used services are "investments

and assets acquisition" and "credit and debit card second order", with 6% and 3% respectively.

Taking into consideration the frequency of use, on a scale of 1 to 6, where 1 is use e-banking once or twice a year and 6 is daily, the average frequency of use was 4,88, which, once more, supports the high level of e-banking use in our sample.

Figure 14 - E-banking use
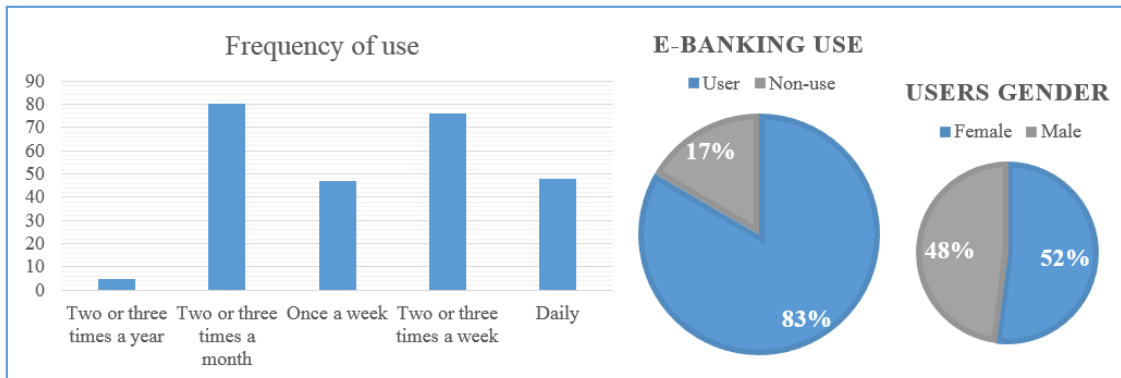
Source: Author

Figure 15 - Services used
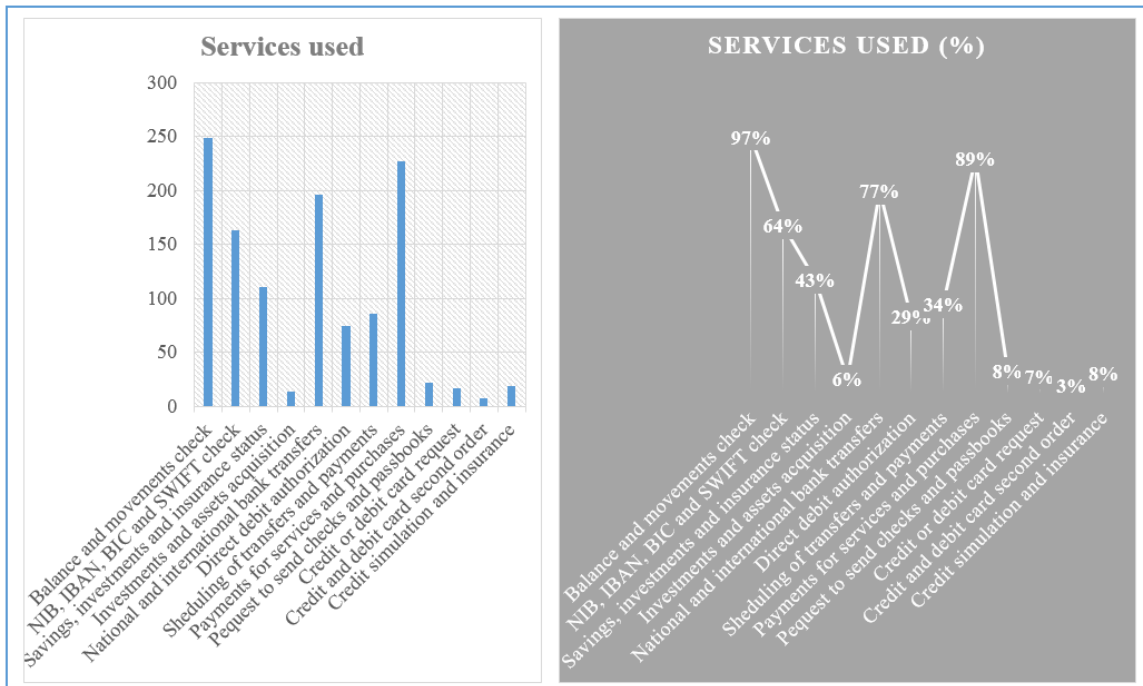
Source: Author

4.3. Scales reliability

Cronbach Alfa, as mentioned before, is used to assess the internal reliability, or consistency of a set of scales or test items. This means, it tests how closely related a set of items are as a group and which is the consistent measure of a concept. Cronbach Alfa coefficient ranges from 0 to 1, where 0 means that the items are not correlated and values close to 1 means that the items under analysis study the same concept. Additionally, the coefficient increases in the same direction as the inter-item correlation. This means that, the indicator can increase if the inter-item correlation increases.

Maroco and Marque (2006), state that the minimum acceptable value for the coefficient should be 0,6. In the study under analysis, as shown in the table below, alfa is 0,623. That means that 62,3% of the variability in a composite score, by combining the eight constructs under analysis, is considered the true score variance or reliable variance.

Additionally, as shown in appendix 2, there are two higher values for the Cronbach Alfa when a certain item is deleted. Nonetheless, all of the constructs were kept in the model because the initial value obtained (alfa=o,623) were already acceptable (higher than 0,6).

4.4. Correlations

The correlation between two variables represents the degree to which the variables are associated (covariance). The covariance may be either positive or negative.
In specific, Pearson's coefficient, measures the intensity of the linear association between variables, and may assume values between -1 and 1 (Hall, 2015).

Analyzing the correlation matrix of each model (see table 6), it is possible to infer that perceived privacy and perceived security are strongly related, with a coefficient of 0,81 (the coefficient is higher than 0,7). Thus, perceived security should be excluded from the analysis because it not only influences trust but also influences and explains perceived privacy.

Table 6 - Correlation matrix

Correlation Matrix Model 1

	PU	PEOU
PU	1	
PEOU	0,700580123	1

Correlation Matrix Model 2

	Trust	PP	PS
Trust	1		
PP	0,622785	1	
PS	0,62933	0,80981701	1

Correlation Matrix Model 3

	E-banking Use	PU	PEOU	SN	Image	Trust	PC
E-banking Use	1						
PU	0,099420303	1					
PEOU	0,109059227	0,605219009	1				
SN	0,186701446	0,427320952	0,190295714	1			
Image	-0,070941798	0,006479016	-0,103588386	-0,0818467	1		
Trust	-0,137404479	0,360470373	0,055846069	0,191207932	-0,054799423	1	
PC	-0,152803131	-0,02144815	-0,331323727	-0,04606403	0,20676993	0,484301516	1

4.5. Multiple regression analysis

According to Pestana and Gameiro (2005), a linear regression is a statistical model that allows the behavior of a variable (dependent variable) to be predicted, taking into consideration one or more relevant variables (independent variables). When there is only one independent variable the model is named simple linear regression and when the model has two or more independent variables it is named multiple liner regression.

When using a linear regression, it is necessary to assess the adequacy of the prediction of the model. That consists of testing if β is equal to zero, and may be carried out using an F test and a t test.

The F test tests the hypothesis of the R Square being equal to zero. If the resulting significance value is lower less than 0.05, the null hypothesis is rejected, which indicates that the variables under analysis are strongly related. The t test, determines whether the mean difference between two sets of observations is zero. In this case, if the significance level is less than 0.05, the null hypothesis is rejected and it may be assumed the difference between the variables is significantly different from zero.

Three analyses were carried out to test the hypotheses. The first one was a simple linear regression that aimed to test the hypothesis 3. The second was testing hypothesis 5. Finally, the third model, tested the direct connections between the proposed constructs and e-banking use (H1, H2, H4, H7, H8 and H9).

From the first analysis (see appendix 3), was possible to conclude that the perceived ease of use explained 48,8% of the variability of the perceived usefulness (adjusted $R^2 = 0,488$). Concerning to the F test the significance was lower than 0,05, which means that

the null hypothesis may be rejected and that the model output was not obtained merely by chance. The value of the t-test was also close to zero with corroborates the hypothesis under analysis and proves that the PEOU hds a positive impact on PU.

The second analysis (appendix 4), only tests the impact of perceived privacy in e-banking trust, because perceived security was eliminated from the analysis after the correlation test. The adjusted R Square of the model is 0,385, which means that 38,5% of the variability of trust is explained by the perceived privacy. Additionally, both the F test and the p-values of the variables are close to zero, which supports the hypothesis that perceived privacy can be used to explain the trust of consumers on e-banking.

The results of the third analysis (table 7) show that only 5,6% of the variability of the dependent variable is explained by the independent variables. Regarding to the F test, its value is inferior to 0,05 (F test = 0,00225), which means that the null hypothesis may be rejected. Nonetheless, e-banking adoption in Portugal is poorly explained by the set of constructs of analysis 3 (PEOU, PU, trust, personal contact, subjective norm, image.

Table 7 - Third analysis output

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,280122784
R Square	0,078468774
Adjusted R Square	**0,056263203**
Standard Error	1,169936264
Observations	256

ANOVA

	df	SS	MS	F	Significance F
Regression	6	29,02087925	4,836813209	3,533742586	**0,002246039**
Residual	249	340,8189645	1,368750861		
Total	255	369,8398438			

	Coeficient	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	3,989847726	0,700488285	5,695809356	3,45142E-08	2,610210224	5,369485229	2,610210224	5,369485229
PU	0,136316202	0,161310593	0,845054246	0,398891799	-0,181390959	0,454023362	-0,181390959	0,454023362
PEOU	0,042994888	0,163442064	0,263058888	0,792722729	-0,278910284	0,364900059	-0,278910284	0,364900059
SN	0,241670237	0,091988415	2,627181215	**0,009143776**	0,060495661	0,422844812	0,060495661	0,422844812
Image	-0,070460723	0,077500257	-0,909167613	0,364140814	-0,223100336	0,082178889	-0,223100336	0,082178889
Trust	-0,330433662	0,138064884	-2,393321542	**0,017437868**	-0,602357542	-0,058509782	-0,602357542	-0,058509782
PC	-0,042210093	0,102832656	-0,410473623	0,68181153	-0,244742799	0,160322614	-0,244742799	0,160322614

In addition, it was possible to observe that only two of the eight constructs were statistically significant. Only the subjective norm and trust have a P-value inferior to 0,05 (0,009 and 0,017 correspondently).With these results it is possible to confirm hypotheses H4 and H8. Trust has a negative coefficient (β=-0,33) which means that a lack of trust decreases e-banking adoption. In its turn, subjective norm has a positive coefficient (β=0,24) which means that it increases the use of e/banking.

Additionally, different variations of the model were tested, taking out one variable at the time. However, the results of the model were not better, so none of the variables was excluded.

Table 8 summed up the validation, of the several hypothesis formulated in the proposed framework, taking into consideration the previous analysis.

Table 8 - Hypothesis validation

| Hypothesis	Tested Statement	Confirmed/Not Confirmed
H1	PEOU has a positive influence in e-banking adoption.	Not Confirmed
H2	PU has a positive impact on e-banking adoption.	Not Confirmed
H3	PEOU has a positive impact on PU.	Confirmed
H4	The lack of trust in e-banking reduces its adoption.	Confirmed
H5	PP has a positive impact in e-banking trust.	Confirmed
H6	PS has a positive impact in e-banking trust.	Not Confirmed
H7	Lack of PC has a negative impact on e-banking adoption.	Not Confirmed
H8	SN has a positive impact on e-banking adoption.	Confirmed
H9	Image has a positive impact in e-banking adoption.	Not Confirmed

Source: Author

4.6. Impact of the perceived benefits

In the literature review several benefits of e-banking compared to traditional distribution services were identified. These benefits may be included in the perceived usefulness and in the perceived ease of use as components of such. However, it is useful to understand individually the impact each one of them has on e-banking adoption.

In the survey, the customers were asked to evaluate their perceived impact on e-banking use of several perceived benefits (convenience, efficiency, comfort, quality, time saving and 24h available) in their own use of e-banking. In general, in a scale of 1 to 5 where, 1 is "Strongly disagree" and 5 "Strongly agree", the respondents answered that the benefits have a strong impact on e-banking adoption. Furthermore, the means of the reported impact of the different perceived benefits is higher than four, which indicates that convenience, efficiency, comfort, quality, time saving and 24h availability have a strong and positive impact on e-banking adoption in Portugal.

Figure 16 – Perceived impact of e-banking benefits
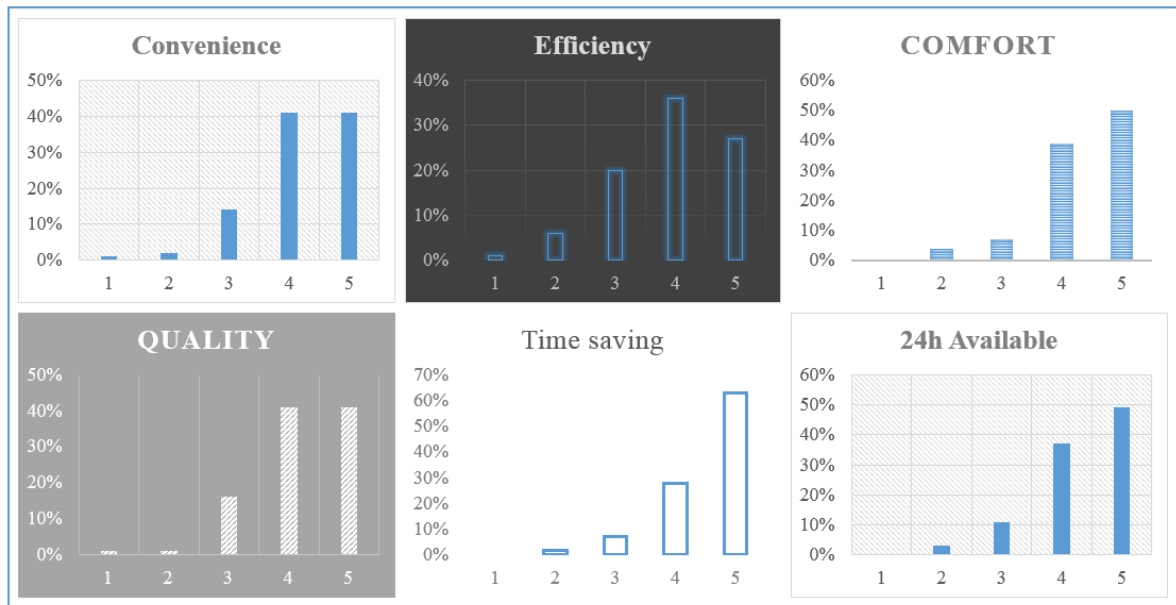
Source: Author

4.6. E-banking future use

As mentioned before, one of the sections of the survey aimed to assess respondent's intentions regarding their future use of e-banking. Analyzing the answers it is possible to conclude that the majority of the respondents, 73%, predicted they would keep the same level of use, and only 27% estimated they would use more e-banking in the coming year. Additionally, only 9% of the respondents reported they would like to have additional services provided by e-banking, 67% said they would like to have all their bank services provided by e-banking, and 72% answered that develop e-banking could have value added for customers.

Figure 17 - E-banking future use
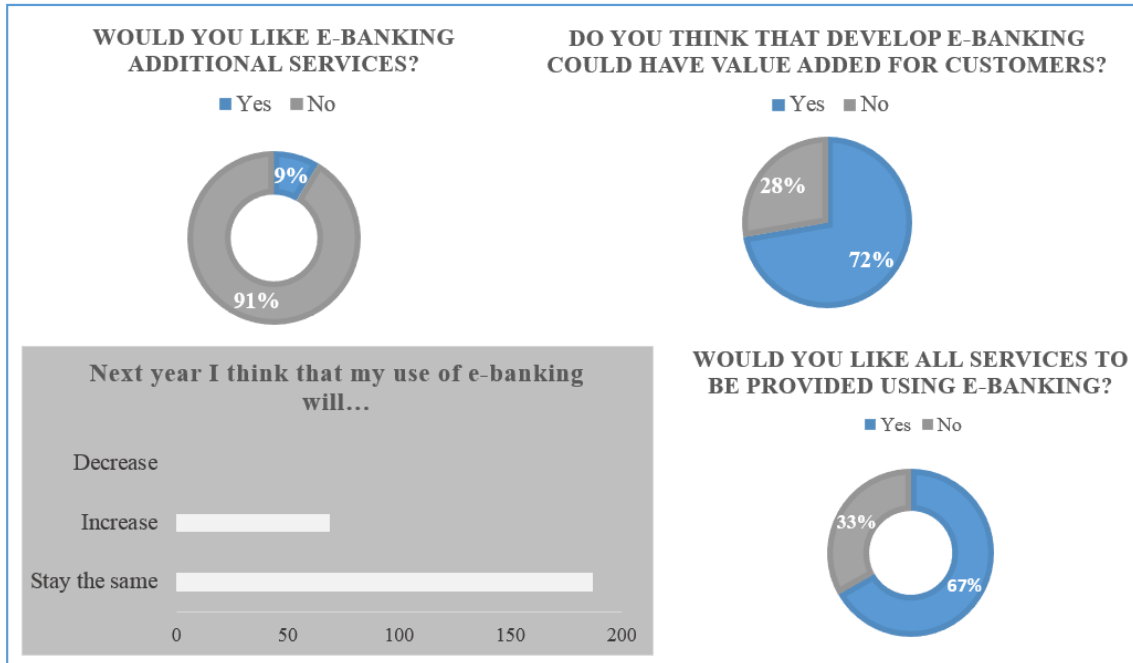
Source: Author

5. DISCUSSION

Taking into consideration the first specific goal of the dissertation, it was possible to observe that in the sample surveyed, the use of e-banking was higher than anticipated. According to the data 83% of the respondents used e-banking in opposition to the 29% indicated by Statista and the 35% estimated by Marktest. As mentioned before, the data was collected using a convenience sample what may have influenced the results. Nonetheless, the results corroborated the stated by Marktest that men use more e-banking than women. According to the data collected 52% of the users were male. Additionally, in the mentioned study of Marktest, it was indicated that social condition (wage and education) also influenced the use of e-banking. That fact may justify the higher e-banking penetration rate of the sample because, in general, the respondents had at least a bachelor degree (81%).

The high level of e-banking use seems to be in accordance with the reduced use of the traditional means of banking, this means, to go physically to a bricks-and-mortar institution. Only 37% of the respondents went to branches, and frequently went there for: deposits; advice on insurance and investments; savings account management.

The sample under analysis, gave a reasonable importance to the existence of e-banking when choosing a Bank (Mean=3,48). Although, the services with the higher rate of use were simple and customized services such as "balances and movement check" (97%), "payment of services and purchases" (89%) and "national and international bank transfers" (77%). This fact may support the authors that state that people have a low level of trust and tend to perform tasks with a high level of security associated, which usual are simpler (Gabner-Krauter and Faullant, 2008).

With the analysis of the framework, it was possible to conclude that PEOU had a positive influence on the perceived usefulness of e-banking (β=0,5). This was in accordance with the described in the literature, for example in the TAM (Davis 1985), TAM2 (Venkatesh and Davis, 2000) and TAM3 (Venkatesh and Bala, 2008). This fact may be explained with the benefits of e-banking presented in the literature review section. According to Gurau (2002), the ease of use is a benefit of e-banking, thus it will be perceived as useful.

Another conclusion of the hypothesis test was that e-banking trust was influenced by the perceived privacy of the service (β=0,46). This result proved that there is a high concern

related to the information given online (Grabner-kräuter and Faullant, 2008). According to a study of Jornal Económico (2017), Portuguese people are the most suspicious in what takes to share personal data with the companies, which means that perceived privacy and trust are specially relevant for personal consumers. Additionally, it was confirmed that trust is one of the main factors preventing consumers from using e-banking (Flavian et al, 2006). This means that the lack of trust has a negative impact on e-banking adoption (β=-0,33).

It was also confirmed that the social and peer pressure, named subjective norm, has a positive influence on e-banking adoption (β=0,24). This corroborates the stated on the TRA (Madden et al, 1992) and TPB (Ajzen, 1991). People are influence from the ones surrounding them, rather in a positive or in a negative way, and assimilate several of their "beliefs".

Regarding the future use of e-banking, most of the respondents (73%) predicted they would have the same level of usage of e-banking in the nest year. Furthermore, 91 % of the respondents stated they did not want or need more services provided using e-banking. However, 67% of users would like to have all services provided using e-banking. The last two statements may be contradictory, but indicate that people do not want any more services, maybe because they cannot imagine new one and because.

This dichotomy should have further investigation to understand what it really means. Despite the percentage of users that do not want more services provided online, 72% of e-banking users think that developing e-banking would have value added for customers. Once more, these results show that customer want more reliable and quality services, instead of more quantity of services provided online.

6. CONCLUSION

Technological developments changed the business world over the past decades (Angeloska-Dichovska and Mirchevska, 2016). This technological evolution was one of the main factors stimulating competition among companies and boosting development (Sceulovs and Gaile-Sarkane, 2014). Conducting a business online, or use internet as an ICT tool was named e-business and drastically changed the entire business world (Kumar and Kumar, 2014).

The adoption of the internet has had a huge impact in all aspects of business, from marketing and finance to information systems (IS) and operations (Swaminathan and Tayur, 2003). In fact, the arrival of ICT to the organizational environment has changed the traditional approach to business and markets (Hamidianpour et al, 2016). E-business emerged as an enabler to drive supply chain and influence the changing of focus of SCM from production efficiency to customer-driven (Wang et al, 2008). With the adoption of e-business, the supply chain could benefit from cost reductions, more flexibility and faster response times (Wang et al, 2008), which had a direct impact in customers lives and represents a set of benefits both for companies and customers.

Nowadays, the most of the sectors were investing ICT solutions and the banking sector was not an exception (Chavan, 2013). Despite the increasing number of internet users and the well-known advantages of internet banking for customers, the adoption rates of e-banking were not growing as expected (White and Nteli, 2004). As previously referred, there are several differences in e-banking adoption rates across Europe, fact that raised questions regarding to the factors which influence internet banking adoption by customers. Using different methods and approaches several researchers studied the different factors influencing customers' technology adoption (see Madden et al, 1992; Ajzen, 1991; Davis, 1989; Venkatesh and Davis, 2000; Venkatesh and Bala, 2008) where theories like Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB) appeared. Regarding the specific case of e-banking and using the previous theories as fundamentals, recently some authors developed conceptual frameworks to explain e-banking adoption, such as, Safeena et al. (2014) and Ezzi (2014).

According to a Marktest study e-banking penetration in Portugal is 35% (higher than the rate settled by Statista, 29%). It should also be mentioned that the penetration rate is

strongly influenced by the age segment, gender and social condition (Marktest, Basef Banca, 06.10.2017).

Taking into consideration the previously mentioned, the present study aim to identify the main factors influencing e-banking adoption in Portugal. Thus, to have a solid knowledge of the topic was conducted a literature review. Its main points were to understand the main changes in the business world caused by the use of IT and internet, and to understand the main theories used to describe the technology acceptance behavior of customers.

To suport the empirical study was built a conceptual framework with nine hypothesis, which was implemented using an online survey. The construct of the model were: perceived ease of use (PEOU), perceived usefulness (PU), trust, perceived privacy (PP), perceived security (PS), personal contact (PC), subjective norm (SN) and image. The survey also aimed to assess the current use of e-banking and the future perspectives of use of e-banking.

With the hypothesis test and the analysis of the additional data of the surveys, was possible to assess, with some reservations related to the bias data because of the convenience sample, that e-banking adoption is higher than descried in the literature.

However, it was not possible to corroborate several of the hypothesis. Nonetheless, it was possible to conclude that trust, or instead the lack of trust, is one of the main factors negatively influencing e-banking adoption. Furthermore, the peer pressure seems to have a relevant impact on e-banking adoption. Additionally, was also possible to confirm that PEOU has a positive influence on PU and that trust is influenced by perceived privacy.

 In addition, with the data analysis related to the future of e-banking, it was not clear the vision customers have for e-banking or even their will. Nonetheless, it was possible to conclude that e-banking users think that future e-banking developments have value added for customers.

6.1. Limitations

One of the main limitations was the use of a convenience sample, which couldn't portray the total reality of the population and was difficult to generalize the conclusions. Although, the survey was made available to all age ranks there were no answers from

people with more than 65 years old and the age rank 26 to 45 year had less responses (22%) than the other two (40% and 38%).

Additionally, the model includes the main variables described in the literature, it does not evaluate the all variables that may influence e-banking adoption and other variables that may influence the constructs used.

Some models described in the literature start to include several constructs reflecting the social influence or pressure to adopt e-banking and it is also reflected in the proposed framework. Although, it does not reflect directly the influence of the specific Portuguese culture, that may influence e-banking adoption, or at least explain some of the results.

6.2. Future research

In future researches, the proposed framework could be applied to a larger sample. The survey could even be supplied in paper among the population with less technological literacy.

As mention in the goals of the study, what was under analysis was the factors influencing the effective use of e-banking and not its intention of use, in opposition to the main studies descried. Thus, it would be interesting to proceed with further analysis to determine the exact factors that lead consumers to actually adopt e-banking, instead of just planning to do it.

Taking into consideration the results of the future perspectives of e-banking, would be useful to explore the importance of quality and reliability of e-banking, because some contradictory results are not fully justified and seem to be related with that. Although, instead of an online survey the search should be based on personal interviews to clearly understand the reasons behind the answers.

BIBLIOGRAPHY

Ajzen I, Fishbein M. 1980. **Understanding attitudes and predicting social behaviour**. Prentice-Hall, Englewood Cliffs.

Ajzen, I. 1985. From intensions to actions: A theory of planned behaviour. In. J. Kuhland & J. Beckman (Eds.), **Action-Control: from cognition to behavior**: 11-39. Heidelberg: Springer.

Ajzen, I. 1991. The theory of planned behavior**. Organizational Behavior and Human Decision Process**, 50(2): 179-211.

Akinci, S., Aksoy, S. & Atilgan, E., Adoption of internet banking among sophisticated consumer segments in an advanced developing country. **The international Journal of Bank Marketing**, 22(3): 265-232.

Akyuz, G. & Rehan. M., 2009. Requirements for forming an e-supply chain. **International Journal of Production Research**, 47(12): 3265-3287.

Amit, R. & Zott, C. 2001. Value creation in e-business. **Strategic Management Journal**, 22: 493-520.

Angelakopoulos, G. & Mihiotis, A. 2011. E-banking : challenges and opportunities in the Greek banking sector. **Electron Consumer** Res, 297–319.

Angeloska-Dichovska, M. and Mirchevska, T. 2017. Challenges of the Company in the New Economy and Development of E-business Strategy. **Strategic Management**, 22(2): 027-035.

Arnaboldi, F. & Claeys, P. 2008. **Internet Banking in Europe: a comparative analysis**. Working paper, Research Institute of Applied Economics.

Ataíde, A. Dar dados pessoais a empresas? Portugueses entre os mais 'desconfiados' da Europa. 05.10.2017.

Basu, A. and Muylle, S. 2007. How to plan e-business initiatives in established companies. **MIT Sloan Management Review**, 49(1): 28-36.

Berg, S. & Kim, M 1998. Banks as multioutput oligopolies: an empirical evaluation of the retail and corporate banking markets. **Journal of Money, Credit and Banking**, 30(2).

Cagliano, F., Golino, M. & Spina, G., 2009. Evolutionary patterns in business strategy. **International Journal of Operations & Production Management**, 29(9): 921-945.

Cândido, M. 2010. **A influência das tecnologias de informação e comunicação e dos empregados de contacto na lealdade do cliente**. Dissertação de Mestrado em Estratégia Empresarial. Faculdade de Economia da Universidade de Coimbra.

Chavan, J. 2013. Internet banking- benefits and challenges in an emerging economy. **International Journal of Research in Business Management (IJRBM),** (1)1: 19-26.

Chellappa, R. and Pavlou, P. 2002. Perceived information security, financial liability and consumer trust in electronic commerce transactions. **Logistics Information Management**, 15(5): 358-68.

Ciarniene, R. & Satnkeviciute, G, 2015. Theoretical framework of e-business competitiveness. **ELSEVIER,** 213: 734-739.

Creswell, J. 2008. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. **Sage Publications**, Inc; 3rd edition.

Curran, M., and Meuter, L. 2005. Self-service technology adoption: comparing three technologies. **Journal of Services Marketing**, 19(2), 103-113.

Davis, F. 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. **MIS Quarterly: Management Information System**, 13(3): 319-339.

Dey, D. 2015. E-supply chain Management – Future focus**. IJBIT**, 8(1): 48-58.

Ezzi, S. 2014. A theoretical model for internet banking: beyond perceived usefulness and ease of use. **Archives of business research,** 2(2): 31-56.

Fishbein, M. & Ajzen, I. 1975. Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research. **Addison-Wesley, Reading**.

Flavian, C., Guinaliu, M. & Torres, E. 2006. How bricks-and-mortar attributes affect online banking adoption. **International Journal of Bank Marketing**, 24(6): 406-23.

Gabadeyan, R. &nd Akinyosoye, O. 2011. Customers' preference for e-banking services: a case study of selected banks in Sierra Leone. **Australian Journal of Business and Management Research,** 1(4): 108-116.

Grabner-kräuter, S., & Faullant, R. 2008. Consumer acceptance of Internet banking : The influence of Internet trust. **International Journal of Bank Marketing**, 26(7): 483-504.

Gurau, C. 2002. Online banking in transaction economies: the implementation and development of online banking systems in Romania. **The International Journal of Bank Marketing**, 20(6).

Hamidianpour, F., Esmaeilpour, M. & Anavard, A, 2016. The effect of electronic banking on the performance of supply chain management of small business. **Journal of Internet Banking and Commerce**, 21(2).

Hanafizadeh, P., Behboudi, M., Koshksaray, A. A., & Tabar, M. J. S. 2014. Mobile banking adoption by Iranian bank clients. **Telematics and Informatics**, 31(1): 62-78.

Haque, A., Ismail, A. & Daraz, A. 2009. Issues of e-banking transactions: an empirical investigation on Malaysian customers perception. **Journal of Applied Sciences**, 9(10): 1870-1879.

Hernandez, J. and Mazzon, J. 2008. Adoption of Internet banking : Proposition and implementation of an integrated methodology approach. **International Journal of Bank Marketing,** 25(2): 72-88.

Internet Live Stat. http://www.internetlivestats.com/internet-users-by-country. (30.09.2016).

Internet World Stats. http://www.internetworldstats.com/stats.htm (30.09.2016).

Kaur, N., Pathak, A., & Kaur, P. 2015. Online Banking on E-Commerce in India. **International Journal of Engineering Research and Applications,** 5(4), 39–49.

Kalakota, R. & Whinston, A. 1997. **Electronic Commerce,** A Manager's Guide. Addison Wesley, Reading, MA.

Kumar, M. P., & Kumar, T. S. 2014. E-business : Pros and cons in Customer Relationship Management. **International Journal of Management and International Business Studies**, 4(3), 349–356.

Kvasnicova, T., Kremenova, I. & Fabus. J. 2016. From na analysis of services definitions and classifications to the proposal of new e-service classification. Procedia Economics and Finance, 39: 192-196.

Lee, M. & Turban, E. 2002. A trust model for consumer internet shopping. **International Journal of Electronic Commerce**, 6(1): 75-91.

Lim, N. 2003. Consumers' perceived risk: sources versus consequences. **Electronic Commerce Research and Applications**, 2(3): 216-28.

Madden, T., Ellen, P. & Ajzen, I. 1992. A comparison of the theory of planned behavior and theory of reasoned action. **Society of Personality and Social Psychology**, 18(1).

Magutu, et al. 2011. E-Commerce Products and Services in the Banking Industry: The adoption and Usage in Commercial Banks in Kenya. Journal of Electronic Banking Systems, (20119.

Malhotra, N. and Birks, D. 2006. Marketing Research: An Applied Approach. **Financial Times/ Prentice Hall.**

Masocha, R., Chiliya, N. & Zindiye, S. 2010. E-banking adoption by customers in the rural milieus of South Africa: A case of Alice, Eastern Cape, South Africa. **African Journal of Business Management,** 5(5): 1857-1863.

Melão, N. 2008. E-business Processes and e-Business Process Modelling: A State-of-Art Overview. **International Journal of Services Technology and Management**, 11(3):293-322.

Mudholkar, P., Shanker, M. & Maitra, S. 2013. Role of E-Business in improving Banking Services. **International Journal of Latest Trends in Engineering and Technology** (IJLTET), 2(4), 512–516.

Montaño, D. & Kasprzyk, D. 2008. Healthy behavior and healthy education: Theory, Research, and Practice. **Jossey-Bass.** 4th Edition.

Moore, G. & Benbasat, I. 1996. Integration diffusion of innovations and theory of reasoned action models to predict utilization of information technology by end-users. **Springer Science and Business Media Dordrecht**.

Pavlou, P. & Fygenson, M. 2006. Understanding and predicting electronic commerce adoption: an extension of the theory of planned behaviour. **MIS Quarterly**, 30(1): 115-43.

Pawlowska, M., 2015. **Changes in the size of European Union banking sector – the role of competition between banks**. NBP working paper nº. 205.

Pop, A. 2015. The new banking sector. Towards reforming the too big to fail banks. **Economic and Finance**, 23: 1485-1491.

Rahmanseresht, H. 2016. The Effect of Information Technology (IT) on Organizational Structure in Governmental Banks of Iran. **Journal of Management Culture**, 3(4): 246–260.

Rosenbloom, B. 2007. Multi-channel strategy in business-to-business markets : Prospects and problems. **Industrial Marketing Management**, 36: 4–9.

Safeena, R., Kammani, A. & Date, H. 2014. Assessment of internet banking adoption: an empirical analysis. **Arab Journal of Scientific Engineering**, 39: 837-849.

Salehi, M. and Alipour, M. 2010. E-Banking in Emerging Economy: Empirical Evidence of Iran. **Journal of Economics and Finance**, 2(1).

Sanders, N. 2007. An empirical study of the impact of e-business technologies on organizational collaboration and performance. **Journal of Operations Management,** 25: 1332-1347.

Sceulovs, D. & Gaile-Sarkane, E, 2014. Impact of e-environment on SMEs business development. **ELSEVIER**. 156: 409-413.

Seck, A., & Philippe, J., 2013. Service encounter in multi-channel distribution context : virtual and face-to-face interactions and consumer satisfaction. **The Service Industrial Journal,** 33(6), 565–579.

Sharma, A. & Mehrotra, A.,2007. Choosing an optimal channel mix in multichannel Environments. **Industrial Marketing Management**. 36: 21–28.

Shi, X. & Lao, Z. 2015. Inter-firm dependence, inter-firm trust, and operational performance: The mediating effect of e-business integration. **Information & Management**, 52: 943-950.

Silva, M. 2008. **Tecnologias de Comunicação na Banca: O home banking no contexto de Marketing Relacional**. Unpublished master dissertation, Universidade Fernando Pessoa.

Sousa, R. & Voss, C., 2004. **Service quality in multi-channel services employing virtual channels.** Operations and technology management, working paper, London Business School.

Statista Research and Analysis. https://www.statista.com/statistics/222286/online-banking-penetration-in-leading-european-countries/ (16.04.2017).

Swaminathan, J. & Tauyr. S. 2003. Models for supply chain in e-business. Management Science, 49(10): 1387-1406.

Szymankski, D. & Henard, D. 2001. Customer satisfaction: a meta analysis of the empirical evidence. **Journal of the Academy Marketing Science**, 29: 16-35.

Turban, E. et al. 2006. **Electronic Commerce: A Managerial Perspective", Prentice Hall**, 129-156.

Venkatesh, V. & Bala, H. 2008. Technology acceptance model 3 and a research agenda on interventions. **Decis Sci,** 39(2): 273–312.

Venkatesh V, & Davis F. 2000. A theoretical extension of the technology acceptance model: four longitudinal field studies. **Management Science**, 46(2):186–204.

Venkatesh, V., Morris, M., Davis, G. & Davis, F. 2003. User acceptance of information technology: toward a unified view. **MIS Q,** 27(3): 425–478.

Walliman, N. 2011. *Research methods: the basics*. Routledge

Wang et al., 2008. On-demand e-supply chain integration: A multi-agent constraint-based approach. **Expert Systems with Applications**, 34: 2683-2692.

Weingarten, F., Bhakoo, V. & Gimenez. C, 2015. The impact of host country regulatory quality on the value creation process in e-business supply chains. **International Journal of Production Research**, 53(16): 4963-4978.

Welch, E., Hinnant, C. & Moon, J., 2005. Linking citizen satisfaction with e-government and trust in governement. **Journal of Public Administration Research and Theory**, 15: 371-391.

White, H. & Nteli, F. 2004. Internet banking in the UK: why are there not more customers?. **Journal of Financial Services Marketing**, 9(1): 49-56.

Yoon, C. 2010. Antecedents of customer satisfaction with online banking in China: The effects of experience. **Computers in Human Behaviour,** 26(6): 1296–1304.

Zabukovsek, S., Sisovska, I., & Mravljak, M. 2015. E-business in Micro Companies : Lessons learned. **Nase Gospodarstvo / Our Economy**, 61(2): 15–24.

Appendix
1. Survey

E-banking

Caro(a) participante,
Este questionário surge no âmbito da minha dissertação de mestrado em Gestão de Serviços e da Tecnologia na ISCTE Business School.
O objetivo é entender a utilização de serviços de e-banking por parte dos consumidores. Peço-lhe que responda de acordo com as suas experiências e perceções. Não existem respostas certas ou erradas, apenas pontos de vista pessoais.
As respostas recolhidas serão totalmente confidenciais e anónimas e utilizadas exclusivamente para âmbito académico. Por favor responda a todas as perguntas, de modo a poder validar a sua participação.
Obrigada pela sua disponibilidade e colaboração.
Caso tenha alguma questão ou esteja interessado em conhecer os resultados deste estudo, não hesite em contactar.
bidar@iscte-iul.pt

* Required

E-banking

O e-banking refere-se a um conjunto de atividades que são feitas à distância sem necessidade de deslocação física a uma sucursal bancária. Essas atividades incluem todas as interações que são estabelecidas entre o consumidor e o Banco, desde a consulta de saldo até à simulação de créditos de seguros.

1. **Nos últimos 12 meses, em média, quantas vezes utilizou serviços de e-banking? ***
   Mark only one oval.

   ◯ Nunca

   ◯ Uma ou duas vezes por ano

   ◯ Uma vez por mês

   ◯ Duas ou três vezes por mês

   ◯ Uma vez por semana

   ◯ Duas ou três vezes por semana

   ◯ Diariamente

2. **Nos últimos 12 meses, quais dos seguintes serviços de e-banking já utilizou? ***
   Check all that apply.

   ☐ Consulta de saldo e movimentos

   ☐ Consulta de NIB, IBAN, BIC e SWIFT

   ☐ Consulta do estado de poupanças, investimentos e seguros

   ☐ Aquisição de ativos, produtos e serviços de consumo e investimento

   ☐ Transferências nacionais e internacionais

   ☐ Autorização de débito direto em conta

   ☐ Agendamento de transferências e pagamentos

   ☐ Pagamentos de serviços e compras

   ☐ Pedido de envio de cheques e cadernetas

   ☐ Solicitação de cartões de crédito ou débito

   ☐ Requisição de segunda via de cartões de crédito ou débito

   ☐ Simulação de créditos e seguros

   ☐ Other: _____

3. **Indique qual o seu grau de satisfação geral para com os serviços de e-banking fornecidos pelo seu banco, onde 1 = Muito insatisfeito e 5 = Extremamente satisfeito ***
   Mark only one oval.

   ◯ 1

   ◯ 2

   ◯ 3

   ◯ 4

   ◯ 5

Fatores que influenciam a utilização de e-banking

A presente secção tem como objetivo avaliar a sua opinião e experiência relativamente à utilização de e-banking. Tendo em conta a sua experiência ou opinião relativa à utilização de e-banking, diga de que forma concorda com as seguintes afirmações, segundo uma escala de 1 a 5, onde 1–discordo totalmente e 5–concordo totalmente.

4. **Considero que a utilização do e-banking é/seria útil na realização das minhas tarefas bancárias. ***
   Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

5. **A utilização de e-banking torna/tornaria mais conveniente a realização das minhas tarefas bancárias. ***
   Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

6. **Utilizo/utilizaria o e-banking devido à sua facilidade de utilização face aos meios tradicionais. ***
   Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

7. **Considero que a facilidade de utilização influencia/influenciaria a utilidade do sistema de e-banking. ***
   Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

8. **No geral, considero que a utilização de e-banking permite/permitiria realizar as tarefas de forma mais rápida do que se realizadas utilizando os modelos tradicionais. ***
   Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

9. **Considero que a redução do tempo de realização das tarefas que a utilização de e-banking proporciona contribui/contribuiria para a sua utilidade. ***
   Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

10. **A redução do tempo de realização das tarefas influencia/influenciaria a minha escolha em utilizar o e-banking face aos meios tradicionais. ***
Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

11. **Considero que a conveniência na utilização de e-banking influencia/influenciaria a sua utilidade. ***
Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

12. **Utilizo/utilizaria o e-banking porque o meu círculo social/amigos também o faz. ***
Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

13. **Considero que a utilização do e-banking contribui/contribuiria para a minha imagem junto do meu circulo social/amigos. ***
Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

14. **Eu penso que seria simples para mim tornar-me hábil a utilizar o e-banking. ***
Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

15. **A maioria das pessoas que me rodeiam utilizam e-banking, por isso sinto me pressionado para o fazer. ***
Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

17. **No geral, considero que o e-banking é útil. ***
Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

18. **Sinto que a segurança da plataforma de e-banking é/seria fundamental para a minha confiança no e-banking. ***
Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

19. **Sinto que os serviços de e-banking não são de confiança. ***
Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

20. **Não confiar no e-banking é um dos fatores que mais me impede/impediria de utilizar o e-banking. ***

Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

21. **Sinto que assegurar a privacidade dos meus dados é/seria fundamental para a minha confiança no e-banking. ***

Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

22. **As pessoas do meu banco ajudam-me como nenhum sistema informático consegue/conseguirá. ***

Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

23. **Ir ao banco e falar com um empregado é agradável. ***

Mark only one oval.

	1	2	3	4	5	
Discordo totalmente	◯	◯	◯	◯	◯	Concordo totalmente

Perspetivas futuras

24. **Em que banco possui a sua conta bancária. Em caso de ter mais do que uma, indique o Banco onde tem a sua conta bancária principal.**

_____

25. **Costuma deslocar-se ao balcão da sua agência bancária? ***

Mark only one oval.

◯ Sim

◯ Não

26. **Se sim quais são as principais ações que o/a levam a deslocar-se ao balção?**

_____

27. **Pressupondo que neste momento estaria a avaliar os diversos bancos, no sentido de mudar a localização da sua conta bancária, até que ponto a existência de e-banking pesaria na sua decisão. Responda segundo uma escala de 1 a 5, onde 1 = Sem qualquer impacto na minha decisão e 5 = É um dos fatores mais importantes na minha decisão.** *
Mark only one oval.

	1	2	3	4	5
	◯	◯	◯	◯	◯

28. **Em termos de e-banking, há algum serviço que ainda não seja proporcionado pelo seu banco que gostava que fosse?** *
Mark only one oval.

◯ Sim
◯ Não

29. **Se sim indique qual/quais:**

_____

30. **Acha que é uma mais-valia para os consumidores serem feitos desenvolvimentos na área do e-banking?** *
Mark only one oval.

◯ Sim
◯ Não

31. **Que vantagens vê em tais desenvolvimentos?**

_____

32. **No próximo ano, prevê…** *
Mark only one oval.

◯ Reduzir o seu uso de e-banking.
◯ Manter o seu uso de e-banking.
◯ Aumentar o seu uso de e-banking.

33. **Gostaria que todos os serviços bancários fossem oferecidos via e-banking?** *
Mark only one oval.

◯ Sim
◯ Não

Dados demográficos

34. **Idade** *
Mark only one oval.

◯ Entre 18 e 25 anos
◯ Entre 18 e 25 anos
◯ Entre 26 e 45 anos
◯ Entre 46 e 65 anos
◯ Mais de 65 anos

61

35. **Indique qual o seu distrito de residência:** *

Mark only one oval.

- Aveiro
- Beja
- Braga
- Bragança
- Porto
- Santarém
- Setúbal
- Castelo Branco
- Coimbra
- Évora
- Faro
- Viana do Castelo
- Vila Real
- Viseu
- Guarda
- Leiria
- Lisboa
- Portalegre
- R. A. Açores
- R. A. Madeira

36. **Indique a sua situação profissional atual:** *

Mark only one oval.

- Estudante
- Trabalhador-estudante
- Empregado
- Desempregado
- Reformado

37. **Indique o nível de escolaridade mais alto que tem completo.** *
   Mark only one oval.

   ( ) Ensino básico

   ( ) Ensino secundário

   ( ) Licenciatura

   ( ) Mestrado

   ( ) Doutoramento

38. **Indique o rendimento mensal líquido do seu agregado familiar:** *
   Mark only one oval.

   ( ) Até 600€

   ( ) 601€ a 1.500€

   ( ) 1.501€ a 2.500€

   ( ) 2.501€ a 3.500€

   ( ) 3.501€ a 4.500€

   ( ) 4.501€ a 5.500€

   ( ) Superior a 5.500€

39. **Indique o número de pessoas no seu agregado familiar:** *
   Mark only one oval.

   ( ) 1

   ( ) 2

   ( ) 3

   ( ) 4

   ( ) Mais do que 4

40. **Nos últimos 12 meses, em média, quantas vezes utilizou a internet?** *
   Mark only one oval.

   ( ) Nunca

   ( ) Uma ou duas vezes

   ( ) Uma vez por mês

   ( ) Duas ou três vezes por mês

   ( ) Uma vez por semana

   ( ) Duas ou três vezes por semana

   ( ) Diariamente

41. **Deixe o seu e-mail se estiver interessado em receber os dados desta investigação.**

   _____

2. Cronbach Alfa

Reliability Statistics		
Cronbach's Alfa	Cronbach's Alfa Based on Standardized Items	N of items
,623	,666	8

Item-Total Statistics				
	Scale Mean If Item Deleted	Scale Variance If Item Deleted	Correlated Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alfa If Tem Deleted
PU	26,0000	9,269	,701	,584	,501
PEOU	26,0137	10,228	,507	,516	,555
SN	26,8379	10,012	,321	,208	,590
IMAGE	27,7422	12,553	-,129	,097	,724
TRUST	27,1992	10,605	,348	,622	,586
PP	26,0547	8,115	,687	,706	,465
PS	26,0508	8,029	,675	,708	,466
PC	26,5352	12,703	-,141	,415	,718

3. Results of the first analysis

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,700580123
R Square	0,490812508
Adjusted R Square	0,488807833
Standard Error	0,485455243
Observations	256

ANOVA

	df	SS	MS	F	Significance F
Regression	1	57,69922826	57,69922826	244,8339347	**4,22053E-39**
Residual	254	59,85936549	0,235666793		
Total	255	117,5585938			

	Coeficient	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	2,227423392	0,13885798	16,04101822	1,80745E-40	1,95396377	2,500883014	1,95396377	2,500883014
PEOU	**0,499797064**	0,03194169	15,64717018	**4,22053E-39**	0,436892775	0,562701353	0,436892775	0,562701353

4. Results of the second analysis

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,622785
R Square	0,387862
Adjusted R Square	**0,385452**
Standard Error	0,537457
Observations	256

ANOVA

	df	SS	MS	F	Significance F
Regression	1	46,48884852	46,48884852	160,9388414	**6,79238E-29**
Residual	254	73,37052648	0,28886034		
Total	255	119,859375			

	Coeficient	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	1,179603	0,158789027	7,42874641	1,66617E-12	0,866892635	1,492314194	0,866892635	1,492314194
PP	0,458618	0,036151053	12,68616732	**6,79238E-29**	0,387424325	0,529812301	0,387424325	0,529812301