**The antecedents of mobile banking usage under capital controls - A mixed methods approach.**

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**Abstract**

**Purpose** - Capital controls are limitations that restrict cash withdrawals and international transfers in Greece. The purpose of the study is to explore how capital controls have influenced m-banking usage and disclose the underlying factors that explain m-banking usage intentions.

**Design/Methodology/Approach** - Grounded on the TAM Model, this study assumes that usage behavior may be different from intentions to adopt. In-depth interviews (study 1) were employed with both consumers and bank employees to explore the factors of m-banking adoption under capital controls, followed by an online survey (study 2) pertaining to examine the relationships between underlying factors.

**Findings** – Study 1 reveals that the growth of m-banking usage is strongly associated with capital controls that perceived ease of use, perceived usefulness, perceived risk, technology anxiety, and decision comfort are significant attributes in influencing usage intention. Study 2 verifies that most underlying factors are important predictors of m-banking usage intention except technology anxiety does not impact m-banking usages.

**Research limitations/implications** – The respective effects on usage intentions may be different in the absence of capital controls. A similar study could examine the importance of the respective constructs in conditions of no forced use. The scenario of forcing users to adopt a technological innovation could be further explored under different cultural contexts.

**Practical implications** – Retail banking consumers have changed their banking and financing behaviors because of capital controls. Forced usage may cause customers to cultivate positive attitudes towards the technology and consider it for continuous usage.

**Originality/Value** – Capital controls were found to impact positively customer behavior towards m-banking. It is revealed that capital controls have forced bank customers to adopt and use m-banking for their financial needs in a long run.

**Keywords:** m-banking, capital controls, mandatory use, usage intentions, mixed methods design.

# **Introduction**

The increasing use of smartphones has attracted academic interest over the drivers that influence mobile marketing practices and usage behaviors (Marriott *et al.*, 2017). In 2019, on average, more than 70% of individuals in Europe used their smartphones to access the Internet for various purposes (Eurostat, 2021). The trend has driven significant transformations in banking sectors by acknowledging a larger extent of mobile banking adoption (Karjaluoto *et al.*, 2021) and consumer-oriented services (Laukkanen, 2016). Theoretically, mobile banking (hereafter m-banking) is defined as ‘*the use of handheld devices to access banking information and/or conduct banking transactions via Short Message Service (SMS) messaging services, downloadable applications and/or wireless application protocols to access financial and nonfinancial services*’ (Karjaluoto *et al.*, 2021, p. 272). M-banking, on the one hand, offers the advantage for banking organizations known as cost-effectiveness (Shankar *et al.*, 2019) that they can reach mass consumers through portable banking alternatives. On the other hand, banking consumers become more empowered to conduct remote operations such as their personal accounts or payment transfers both domestically and internationally (Picoto and Pinto, 2021) without waiting for physical assistance in retail branches. Hence, more banking organizations and consumers have continuously updated their needs with regards to financial and nonfinancial services through mobile devices (Karjaluoto *et al.*, 2019).

Due to the digitalization, service industries experience tremendous advances that direct more opportunities for consumers to determine when, where, and how services are consumed (Payne *et al.*, 2021). The emerging practice is evidenced that consumers are encouraged to complete transactions through contactless payment (via mobile devices such as smartphones, Apple Watch) since the beginning of pandemic. Moreover, the number of m-banking users exhibits constant growth worldwide during the last decade (Statista, 2021). As a result, banking organizations can cope with the needs and convince their consumers to adopt m-banking services to a maximum (Geebren *et al.*, 2021). Meanwhile, banking consumers can choose from distinctive mobile tools for daily financial needs such as straightforward transactions and international transfers by simple clicks. Besides, more advanced services are provided via m-banking platforms that consumers could purchase and trade financial portfolios, follow the updated stock markets and conduct a series of financial activities (Jebarajakirthy and Shankar, 2021). Therefore, banking organizations are providing their consumers with various alternatives to meet individual needs through communicating and offering up-to-date information and satisfaction (Malaquias and Hwang, 2019; Mensah *et al.,* 2022). To that end, both banking organizations and consumers achieve benefits and derive satisfaction from adopting m-banking services.

Extant studies focus on the adoption of mobile banking services under different research contexts and highlight certain factors that influence the usage intentions. However, an inclusive usage behavior has received scarce attention (Tam and Oliveira, 2017). Previous research predominantly investigates practices following the TAM model, or they explore technological, cultural, behavioral and organizational influences of mobile service adoption (e.g., Kummer *et al.*, 2017; Magsamen-Conrad and Dillon, 2020; McLean *et al.*, 2020; Slade *et al.*, 2015). In addition, under the umbrella of m-banking, existing research address consumers’ adoption intention and factors of selecting m-banking services, whereas consumers’ usage behavior remains underexplored (Tam and Oliveira, 2017; Glavee-Geo *et al.*, 2020). Moreover, perceived ease of use, perceived usefulness, and perceived risk are often discussed as the primary essential drivers of consumers’ adoption intention of m-banking services (Verissimo, 2016; Marriott *et al.*, 2017; Tam and Oliveira, 2017). Other streams of literature have addressed the negative impact of technology anxiety on consumers’ adoption of electronic channels and new devices in the earlier stages (Yao and Liao, 2011; Nagr, 2016; Hohenberger *et al.*, 2017). Furthermore, scholars provide theoretical contributions for information technology outlets rather than positioning marketing-centric implications (Bailey *et al.*, 2017; Lin *et al.*, 2020). In that respect, it is worthwhile to examine m-banking use in a specific practical context where capital controls have been implemented. Taken together, this research sets to fill this gap by empirically identifying the key drivers of m-banking usage in a market that the capital controls are imposed. Furthermore, our research is grounded on the TAM model to examine emerging factors and consumers’ behavioral responses in using m-banking services in such a distinct financial environment. Therefore, we aim to investigate the following research questions: (1) how have capital controls influenced m-banking usage in Greece, and (2) what are the underlying factors that explain m-banking usage intentions due to capital controls.

Our findings of the mixed-method design reveal a unique positive influence of capital controls on bank consumer behavior towards using m-banking, which also contributes to the literature of forced usage of new technology. Furthermore, banking consumers contextualized in our research have changed their behaviors and attitudes in line with m-banking advances. Moreover, the qualitative study contributes to the literature by extending our understanding regarding the important attributes of usage behavior of m-banking including TAM constructs, perceived risks, and the technology anxiety. It also reveals that the decision comfort plays important role in using m-banking services whilst technology anxiety does not predict m-banking usage in the context of capital controls.

This study is contextualized in a Southern European country which confronted with imposition of capital controls between 2015 and 2019. We assume that consumers are likely to behave differently in terms of m-banking uses due to the forced policy by the government. First, according to the Hellenic Bank Association report (2017), about 67% of total population in Greece were internet users and 66% of them were smartphone users which indicates pivotal uses of m-banking services for transactions and transfers purposes. Second, it is also noted that banking population of Greece was 7.44 million (Statista, 2020), and the penetration rate of m-banking was no more than 10% before 2019 (Giovanis *et al.*, 2019a). However, the figure boosted by 142% for m-banking usages because of the capital control within the same period (Giovanis *et al.*, 2019b). Therefore, Greek consumers’ banking habits have changed drastically since the introduction of capital controls, which drives our interest of exploring m-banking usage behind the practice. Through conducting a sequential exploratory study, we first interviewed 11 bank employees and 10 consumers with the purpose of generating insights related to capital controls and their m-banking usages. Followed by quantitative design, we collected 325 valid survey responses from m-banking consumers and examined the relationships between a set of antecedents and usage intention.

The remainder of the research is structured as follows. We first present the background of the capital controls and review the theoretical vehicles of the research including TAM model. The qualitative study will follow in terms of interviewing bank employees and consumers, disclosing their preliminary insights on how capital controls have impacted their financial needs. Based on the qualitative findings, we then develop a quantitative study and formulate a conceptual framework based on TAM, in order to investigate the antecedents and usage intention of m-banking. In the end, we provide comprehensive discussions, address theoretical and managerial contributions whilst suggesting future research directions.

# **Literature review**

***2.1 Capital Controls in Greece***

Greece, a member of the eurozone, has experienced the imposition of capital controls for four years (2015-2019). The main restriction that affects the retail bank consumer includes including limitations on cash withdrawals from ATMs and money transfers abroad (Samitas and Polyzos, 2016). Hence, some financial organizations especially banks started encouraging cashless and online banking applications¹, offering other alternatives for bank consumers to solve their immediate financial needs as a result of capital controls policy. Existing studies have addressed the financial and economic factors caused by capital controls (Samitas and Polyzos, 2016), however, there is limited research delineating the impact that capital controls have led, especially on the antecedents of consumer behavior responding to the practice. For instance, consumers who choose m-banking are likely to engage further on their mobile devices which indirectly contributes to subsequent shopping behaviors.

The uniqueness of our research lies in that capital controls can be considered as forcing bank consumers to adopt and use online methods of banking in the absence, or restricted use of the branch in a mandatory manner. There is limited research evidence on mandatory adoption and its consequences (Heidenrich and Talke, 2020). Even, most of the studies on innovation adoption have assumed a voluntary condition or there is no explicit reference to the case of forced use (e.g., Heidenrich and Talke, 2020). However, there are situations such as the imposition of capital controls that have forced consumers to adopt a technological interface such as m-banking. Alternatively, consumers may have been asked to use the online services and developed negative attitudes and behavioral intentions towards the respective technological interface in the early stages (Reinders *et al.*, 2008). Nevertheless, consumers do not necessarily form a more positive attitude and behavioral intentions when they are offered more service options (Reinders *et al.*, 2008). Besides, when consumers are offered with interaction (e.g., with a front-line employee in the branch or via phone banking), negative attitudes may be offset (Reinders et al., 2008). On the one hand, consumers in general with a previous experience with the technological interface are more likely to form fewer negative attitudes towards using the technology (Reinders *et al.*, 2008). On the other hand, consumers’ expertise with the self-service technology, and to a lesser extent, expertise with the service itself were found to be associated with the least positive evaluations of the self-service technology (Reinders *et al.*, 2015). Similarly, users are found to exhibit negative emotions and perceptions towards the respective self-service technology (Feng *et al.*, 2019). The level of dissatisfied experience may distinguish more sophisticated consumers in terms of new technology acceptance (especially innovators and early adopters) from those less sophisticated ones that concern belonging to the majority of the respective target population (Rogers, 2003). Some consumers from the late majority may realize in practice the benefits of the technological innovation following the forced use situation resulting in the adoption and continuous use of the technology because of the peer pressure. In addition, the anticipated attitudes and behavioral intentions may vary given the nature of service that the technological interface offers as well as the alternative options available. It seems that capital controls in Greece may have been the reason for several bank consumers to start using cashless and m-banking services. Similarly, these consumers have started using the m-banking services because of such mandatory usage.

***2.2 Theoretical Background***

M-banking is a distinct practice for consumers’ transactions with mobile technologies. Extant research has examined the factors relevant to the adoption attributes of mobile technologies by bank consumers (Jebarajakirthy and Shankar, 2021; Geebren *et al*., 2021). However, there is limited research on the examination of the antecedents of usage behavior (Tam and Oliveira, 2017). In this research, we regard capital controls as research context and investigate bank customers’ perceptions toward using m-banking technology.

In order to disclose the underlying attributes and bank consumers’ usage of m-banking services, the current research builds on the technology acceptance model (TAM) which demonstrates how users accept and use a new technology in the area of information systems (Davis, 1989). Previous publications have largely applied and extended the theory across different disciplines but commonly explaining technology innovation and adoptions (Zhang *et al.*, 2018). TAM initially stresses that the successful adoption of new technology is based on positive attitudes towards perceived usefulness and perceived ease of use. We should note that the addition of ‘enjoyment’ arrived later in TAM (Davis *et al.*, 1992). The model has been developed in line with diversified contexts. For instance, perceived ease of use and perceived usefulness were fundamentally examined on usage intentions, while technology anxiety (Callum *et al*., 2014) and perceived risk (Hubert *et al*., 2017) were additionally studied as antecedents of TAM influences.

With reference to the behavioral outcomes, we investigate m-banking usage behavior. Previous studies have mainly examined the antecedents of behavioral intentions to predict adoption behavior (McLean *et al*., 2020). Further, McLean *et al*. (2020) is one of the few studies that examined user attitudes regarding different stages of the adoption process of mobile applications for shopping purposes. Moreover, empirical research has mostly studied the acceptance of technology innovations through the examination of perceived drivers and corresponding impact on intentions to adopt or lacking a clear distinction between adoption and usage behavior (McLean *et al.*, 2020). An earlier study by Sohail and Al-Jabri (2014) found differences between users and non-users of m-banking for several innovation characteristics and demographics. In addition, Magsamen-Conrad and Dillon (2020) applied the innovation diffusion theory to illustrate adoption stages of mobile technology from a different angle, further supporting our proposition of examining the usage behavior, so-called usage intention which is the consequent variable. Taken together, we consider employing TAM as appropriate theoretical vehicle to address the m-banking usage behavior under the capital controls.

# **Study 1: Qualitative interviews**

***3.1 Participants and sampling***

The mixed methods approach employed in our research is appropriate to improve the validity of results by combining both qualitative and quantitative insights to answer the research questions more comprehensively (Creswell, 2009). The semi-structured interviews answer the first research question and indicate relevant constructs pertaining to inspecting the second research question. The aim of Study 1 is to get insights from real m-banking users including consumers and bank employees based on their practical experiences influenced by capital controls. Hence, purposive sampling method was chosen to interview suitable targets without gender or background focus. The research assistant obtained consent and interviewed twenty-one m-banking users including 10 consumers and 11 bank employees from different areas of Athens, Greece. The majority of the consumers who participated in the interviews were under 45-year-old who actively use smartphones and m-banking services. The interview lasts approximately 25 minutes with each participant. It should be addressed that the researcher assigned pseudonym to each participant (e.g., Consumer 1: C1 and Employee 1: E1) according to Myers (2013, pp. 52-53), as each participant’s identity and conversations were kept confidential for the research purpose only. Table 1 presents the profile of both consumers and bank employee participants.

{Insert Table 1 about here}

***3.2 Data Collection***

The first study conducted in-depth interviews with individual participants and collect deeper understandings of m-banking usages. The method embraces the feature of opinions pooling that each participant is encouraged to contribute his or her own thoughts despite they may share homogenous background such as colleagues or friends. By exploring the hidden values of participants’ attitudes, cognition and behaviors, in-depth interviews have been largely adopted as promising approach to collect exploratory information in the domain of social sciences. Thus, the research assistant acted as the interviewer and organized face-to-face conversations with each participant. More specifically, interviewees’ consent of participation was gained wherein they were informed detailed instructions prior to the interviews. An interview guide was prepared in advance including a list of topics regarding how capital controls affected Greek consumers’ financial services and usages on m-banking applications (see Appendix 1). A voice recorder was used to record participants’ conversations and the researcher took some observational notes during the process.

***3.3 Thematic Analysis***

Due to the richness and uniqueness of the data, the research team adopted thematic analysis to derive various factors related to m-banking uses. First, interview transcripts were created and NVivo 12 was utilized to record and analyze the empirical data. Second, we followed Strauss’s systematic coding schema (Strauss and Corbin, 1990) to code the qualitative data, themes were coded based on subjective interpretation through distinguishing similarities and differences across bank consumers and employees respectively. Third, thematic analysis method was significantly employed to analyze the data as most qualitative research follow (Neuendorf, 2019, p. 220). Moreover, by familiarizing with the data, we generated a series of initial codes (first- and second-order codes) and developed hierarchies of concepts that fell into the same theme. This coding process was replicated, and another member further reviewed the themes to finalize structured themes and sub-themes, simultaneously ensuring the rigor and trustworthiness of data (Nowell *et al.*, 2017). Last, after confirming the finalized themes, we present preliminary findings with direct quotes derived from participants’ conversations accompanied with participant reference identity (Throuvala *et al.*, 2019).

***3.4 Results of Qualitative Interviews***

According to the empirical findings, both consumers and bank employees expressed positive attitudes towards m-banking usage for financial needs due to the restrictions of capital controls since 2015. The interview began with questioning personal awareness and opinions caused by the capital controls and how their financial needs and banking habits were affected. These questions indirectly triggered participants to disclose their m-banking adoptions and usage experience. When sharing personal experience and attitudes, the majority of participants acknowledged the benefit and efficiency that m-banking alternatives have brought for users and the industry. Through thematic analysis, we interpreted the qualitative results and present significant findings as follows (see Table 2).

{Insert Table 2 about here}

1. *Restrictions of the Capital Controls*

The capital controls have affected the majority consumers’ financing alternatives especially when confronting with limited cash withdraws and bank transfers abroad. During the years of the controls being implemented, people have been aware of the policies and coped with the rules while seeking for other alternatives to facilitate their daily transactions and payments. Derived from interviews, nine out of ten consumers expressed strong awareness and related causes of the capital controls that impact their financial behaviors. For example, when being asked about the awareness of the capital controls, C1 shared his answer, “*Yes, I am aware about the legal restrictions of capital controls and unfortunately, this situation has affected many families and the way that people live. People could withdraw a specific amount of their money from ATM and not the whole amount for their liabilities”* [C1 – Male, 46-55]. Some consumers further answered the limitations of the capital controls which shaped their dissatisfaction towards the controls. C10 explained, “*Capital controls have affected my banking needs because of the limit of the money that you could transfer and because you there was a limit on the withdrawal from the ATM’S. Furthermore, capital controls created problems with payment, so I started pay everything through mobile banking*” [C10 – Female, 26-35]. Therefore, consumers admitted the downside of capital controls and certain restrictions such as limited cash withdrawal and transaction allowance.

Not only the consumers, but bank employees also disclosed their opinions attributed to the policy’s limitation on daily financial services. Bank employees themselves were fully aware of the control and had to obey the regulations issued internally, for example, a bank teller from a local branch explained the controls in depth, “*Yes, people can withdraw money from the Automated Teller Machine up to 2300€ per calendar month. Also, it is allowed the withdrawal of money from foreign currency and the use of debit card in foreign countries. In addition, the use of credit or prepaid card for cash withdrawals in Greece and abroad is not allowed. The use of credit, debit and prepaid card could be used for purchases from the Internet. Finally, the transfer of cash from Greece to foreign countries is allowed up to 2300€”* [E3, bank branch]. Besides, internal bank employees found inconvenience owing to the capital controls and the policy did not meet bank consumers’ needs when visiting a retail bank. A manager further demonstrated, “*Personally? I can’t use as much money as I want. I can have internal exchanges no problem, the restriction is for international transactions. As for the bank, we have also had problems because we cannot help the customers as they expect us to. The bank does not have a great deal of freedom in its transactions. Due to capital controls, it limits people's ability to do business”* [E4, bank branch manager]. Thus, the majority of participants acknowledged and showed a negative response toward complying the capital controls, and they have found alternatives to manage their financial needs and banking preferences.

1. *Behavioral Changes in Banking Habits*

Building on the insights in the previous section, the capital controls have changed consumers’ choices of financial services and banking behaviors. Thus, banks and other financial organizations in Greece have encouraged the complementary payment tools such as paying with credit/debit cards and e-banking etc. C6 added, “*Well although before the capital controls I wasn’t very active regarding my banking activities, I think that due to them I use most frequently my credit cards rather than cash and I have started using e-banking and mobile banking…. However, I think that I have changed overall my habits not only because of capital controls. I tend to do everything through my mobile*” [C6 – Female, 36-45]. Bank consumers acknowledged using credit or debit cards more often than previous, they also implied that their banking habit has also transformed resulted from the inconvenient policy. Thus, they appreciated the convenience of the card payments and the usefulness of internet-based transactions. C4 also agreed with mobile payment alternatives, “*Yes, the capital controls forced me to do changes in my habits. Now I do almost all my transactions through my mobile and I avoid having money in my pocket as I used in the past*” [C4 – Male, 26-35].

In a similar vein, bank employees cope with the trend by switching to significant card payments and online transactions in order to avoid the distress owing to cash withdraw limitation. E8 answered, “*Yes, the capital controls have made me change my banking habits, since I try to adjust my banking needs, using less cash (e.g. I use e-banking much more or I make my banking transactions in the branch where I can make transfers or payments by direct debit) so that I will not use up my monthly cash withdrawal limit”* [E8, executive in Finance]. E2, who works for the back office, also shared the same banking needs as they have done most of their daily transactions through the use of cards or the Internet banking (for payments and transfers). In addition to the vast changes regarding individual banking habits, a few participants indicated no change as they already got used to e-banking and mobile banking regardless of the capital controls (C3, E7 and E11). Taken together, Greek banking consumers including employees have turned to extensive use of mobile banking services.

1. *Rising Adoption of Mobile Banking*

Mobile banking such as mobile payment has been developed and widely adopted by mass audience alongside the advanced technology and consumer demands (Slade *et al.*, 2015). Not surprisingly, the current study discloses that participants actively chose to resolve their financial enquires via mobile devices. Moreover, participants appreciated the perceived ease of use and usefulness of employing m-banking options in spite of potential risks towards adopting the new technology in the beginning. Thus, we particularly addressed the concern by highlighting the m-banking’s attributes in terms of its perceived ease of use, usefulness, risks, technology anxiety, and users’ overall evaluation, which were derived from participants’ original insights.

When being asked if mobile banking is more compatible under the capital controls, both consumers and bank employees agreed with its efficiency in dealing with transactions. For example, consumers answered, “*Yes, mobile banking could inform me about the amount of funds that I have in my bank account. Also, through mobile banking I could do more easily my transactions such as to pay bills or to transfer money. In addition, mobile-banking is effective … m-banking provides users with easily accessibility for his or her transactions”* [C1 – Male, 46-55]. In addition, we also provided another answer: *“Generally, I would say that mobile banking is a very useful tool which enables you to overpass the difficulty of capital controls. It had helped me do more easily money transfers rather than going to the physical store of bank and wait in line, to have a better control on my account, to know the amount of money left, the money movements, to sort into groups of my expenditure”* [C6 – Female, 36-45]. Given the good performance of mobile banking services, consumers commonly evaluate them as ‘useful/easy/effective’ that provide better services than conventional approaches. The innovative alternatives house the functions including online payment, money transfer, international transactions, online bank balance and specific expenses of issued transactions (AI-Jabri and Sohail, 2012). Similarly, bank employees also agreed with mobile banking performance, E8 further implied, “*M-banking is much more convenient than e-banking, because we always have our cellphones with us and we are the only users of it, which makes it much safer than logging in from a pc to make transactions online*” [E8, executive in Finance]. Therefore, users admit the usefulness and perceived ease of use of m-banking applications which remedies the downside of capital controls.

However, one critical challenge was disclosed when users initially accepted the mobile banking owing to the technology avoidance. Consumers expressed that they were not confident when approaching a new piece of mobile technology, especially they had to make decisions on managing their money (Poromatikul *et al.*, 2020). They felt risky and anxious when being asked to use m-banking services, as many clients were forced to switch to mobile banking without prior experience. In addition, bank employees were early adopters as they were encouraged to use because of mandatory internal policies, they further shared how bank consumers adopted the service. For example, “*At first people did not know how to use m-banking to their advantage but this is because they did not know how to use mobile technology when it came to e-banking. However, when people soon realized that the only way, they would make transactions of a larger amount was only online, mobile applications soon began to develop quicker as there was a greater demand for them. So yes, m-banking is compatible with capital controls”* [E5, bank branch]. Moreover, another employee addressed, “*I believe it is, due to the fact that in the last few years the m-banking updates are more about enhancing transactions’ security (e.g., automatic code production through mobile applications) and becoming as user-friendly as possible*” [E10, back office].

These findings infer a technology adoption issue that applies to extant social science research, since individual’s psychological responses such as perceived risks and technology anxiety may influence the intention of choosing an innovation (Lee, 2009). Furthermore, consumers may feel anxious if their confidential information disclosed when using the mobile payment (Dewan and Chen, 2005; Karjaluoto *et al.*, 2021), such concern undermines a user’s intention to engage with mobile banking alternatives. Recent years have witnessed the enhanced technology in providing secured and efficient mobile payment performance (Park *et al.*, 2019) which stimulates more acceptance towards mobile-based banking and shopping practices. In particular, Greek consumers have adapted the distinctive m-banking services in spite of ongoing capital controls. Meanwhile, bank employees supplemented how their consumers valued the mobile banking option, “*People forced to use the alternative channels in order to cover their banking needs (beyond the branch), m-banking is one of them. Thus, the increased use of these channels has the results: a) get used to m-banking, easier for them, and selected way for banking; b) to know more services offered by m-banking to satisfy their needs, and they were not aware of these services earlier”* [E9, bank branch]. To summarize, mobile banking wins outstanding popularity among Greek consumers after years of capital controls. Not only because its functional usefulness, but its perceived ease of use also contributes to consumer’s usage intention despite potential risks and anxiety of technology adoption in the early stage.

Another significant antecedent of m-banking usage is revealed as ‘decision comfort’, indicating m-banking users’ feelings of comfort when selecting mobile banking services in the current research. In line with a form of comfortableness related to digitalization (Payne *et al.*, 2021), participants expressed their comfort in choosing m-banking applications. For example, C6 further explained, “*I have better management of my bank accounts so that I can check my balance anytime if I want…for all of my financial services, I use mobile banking and I can easily do my transfers electronically without restrictions. I just feel very confident and comfortable with my banking app after getting used to it*” [C6 – Female, 36-45]. In similar vein, bank employee shared, “*E-banking or mobile banking is much more compatible with capital controls…it has become a priority that most people think first with using m-banking for transactions and payments…you know that we already largely rely on smartphones, doing banking on an app is more comfortable and straightforward*” [E4, bank branch manager]. Not surprisingly, a form of comfort leads Greek users choose m-banking for prospective advantages.

***3.5 Discussion on the Qualitative Results***

A predominant finding lies in that m-banking services have been widely acknowledged by Greek consumers for financial needs due to the restrictions of capital controls (Samitas and Polyzos, 2016). Since users in Greece were requested to switch their financial habits from traditional branches to the mobile platforms such as banking apps on a smartphone. Although in the earlier stage, consumers might have complained perceived risks and technology anxiety when transferring to mobile services as they had no prior experience, or they felt uncertain about managing their finances via smart devices. Consumers might worry their personal information disclosed when registering with online or m-banking applications. Furthermore, they felt anxious when using a new piece of technology, as other scholars similarly demonstrated the technology-driven anxiety (Yao and Liao, 2011; Park *et al*., 2019). Some bank consumers who did not appeal to new mobile banking services would probably aim to avoid uncertainty and hassle due to m-banking experience. Hence, we generated these restricting factors impeding consumers from actively using the m-banking alternatives.

The situations have changed when bank employees along with financial organizations assisting consumers that the majority consumers significantly depend on the m-banking as part of their daily lives pertaining for a series of financial enquires. In addition, participants denoted that they get accustomed to using innovative applications despite the underlying process of optimizing the usage. Later, consumers who get familiar with m-banking embracing a form of decision comfort in selecting such banking services. Both consumers and bank employees expressed a positive attitude toward m-banking usage, wherein employees play a leading role as early adopters and guide consumers to follow m-banking alternatives. As a result, m-banking wins nation-wide adoption due to its usefulness, convenience and efficiency. These attributes have certainly motivated more users to opt in mobile banking and they are more satisfied with financial service performance subsequently.

To sum up, the qualitative findings disclose a list of antecedents including perceived ease of use, perceived usefulness, perceived risk, technology anxiety, and decision comfort that influence usage intention of m-banking services in the current research. The first four factors have been well-developed in the information system literature in terms of new technology adoption, whereas decision comfort is a surprising finding in our first study. Furthermore, the mandatory adoption of m-banking services by Greek consumers has experienced a larger extent of usage rate wherein they find it comfortable to choose m-banking for all forms of financing enquiries. Thus, the researchers are interested to examine to what extent would the five motivational factors impacting the m-banking usage intentions, aiming to provide statistical evidence to interpret the results.

1. **Study 2: Survey**

***4.1 Hypotheses Development and Conceptual Framework***

The qualitative findings contribute to establishing the quantitative research wherein a conceptual framework will be proposed taking main constructs into consideration. After disclosing emerging factors that influence consumers’ usages of m-banking services in Greece, a survey was undertaken to answer the second research question. A set of hypotheses are proposed as follows before depth examinations on survey methodology.

Perceived ease of use was initially found as antecedent of perceived usefulness (Davis, 1989). Subsequent studies examined further the latter finding and found no consistent results, they also found no links between the two constructs (McLean *et al.*, 2020). This may be explained by the different contexts of the respective empirical studies. In addition, perceived usefulness has been found as the primary predictor of intention to use, and perceived ease of use is considered as secondary to usefulness (Brown *et al.*, 2014). In essence, the longitudinal study of McLean *et al.* (2020) reveals that perceived ease of use and usefulness are important positive influences of consumer attitudes for both the initial adoption and continuous usage phases. Moreover, perceived ease of use and perceived usefulness are important influences of consumer intentions to adopt m-banking services (Marriott *et al.*, 2017; Tam and Oliveira, 2017). To that end, we similarly posit that perceived ease of use and perceived usefulness of m-banking services would relatively influence usage intention, we propose:

H1: Perceived ease of use has a positive effect on m-banking usage intention.

H2: Perceived usefulness has a positive effect on m-banking usage intention.

The different types of risks (e.g., financial, performance, privacy and security) have been examined as significant drivers of mobile shopping usage intention (Hubert *et al*., 2017; Chopdar *et al*., 2018; Thusi and Maduku, 2020). Perceived risk has also been found as an antecedent of ease of use and usefulness in parallel (e.g., Park *et al.*, 2015; Hubbert *et al*., 2017). In theory, perceived risk illustrates a negative attitude towards innovation adoption which has been frequently argued in the extensions of the UTAUT grounded publications (Slade *et al*., 2015). As a matter of fact, consumers embracing perceived risk would certainly avoid the usages or hold a reluctance to engage with the innovation or new technologies. Besides, many studies investigated perceived risk as an antecedent of adoption intentions of technological interfaces (e.g., Slade *et al*., 2015; Tseng and Wang, 2016; Naicker and Van Der Merwe, 2018). We therefore assume that perceived risk may be a downside reason for Greek consumers not to use m-banking services in the beginning, we propose:

H3: Perceived risk has a negative effect on m-banking usage intention.

In addition, technology anxiety is a potential predictor of technology acceptance and adoption (Osatuyi, 2015). In an earlier study, the impact of technology anxiety on online apparel shopping was found to vary - low to high, based on the technology examined (Kim and Forsythe, 2009). Technology anxiety is a negative response for adoption decision that may be associated with specific personality types of consumers and moderated by perceived complexity of the innovation (Saaksjarvi and Samiee, 2011). Hence, anxiety has been justified as an important negative antecedent of ease of use, usefulness, and intention to adopt technological interfaces (e.g., Lee *et al.*, 2011; Powell, 2013; Callum *et al.*, 2014; Osatuyi, 2015; Bailey *et al.*, 2017; Lin *et al.*, 2020). However, for about 40% of academic articles examined in a study on computer anxiety (Powell, 2013), there lacks evidence confirming certain associations between technology anxiety and usage intention. It raises a need for research to examine whether and how technology anxiety impacts usage intention of m-banking services in this research context. Therefore, we propose:

H4: Technology anxiety has a negative effect on m-banking usage intention.

Study 1 further reveals that decision comfort could be one of the possible antecedents of m-banking usages in Greece due to capital controls. The construct indicates consumers’ emotional acceptance towards new technologies as we derived such interpretation from interviews earlier. It has been examined as a post-decision evaluation (Parker *et al.*, 2016). On the one hand, Akhter (2015) demonstrated that one’s feeling of comfortableness with digital tools may lead to perceived risks, complication and enjoyment. Another study inserted that AI technology’s adoption depends on consumers’ level of comfort (Jacobson *et al.*, 2020). These scholars acknowledge that the need for consumer to feel comfortable plays an inevitable role in engaging with advanced technologies in the domain of service delivery (Payne *et al.*, 2021). On the other hand, a string of future research potentially value decision comfort in terms of its links with other constructs such as intentions and behaviors (Parker *et al.*, 2016). At the same time, decision comfort has been found as a positive emotion influencing consumer post-decision evaluations (Heath *et al.*, 2015; Parker *et al.*, 2016). Decision comfort and stimulation have been documented as influencing attitudes and word-of-mouth (Heath *et al.*, 2015). However, existing research show limited explanations on decision comfort (Parker *et al.*, 2016) which encourage our motivation to examine the variable further. Thus, we propose:

H5: Decision comfort will have a positive effect on m-banking usage intention.

A conceptual framework is therefore proposed delineating five antecedents of m-banking usage intention as follows.

{Insert Figure 1 about here}

***4.2 Method and Sampling***

An online survey was distributed through different social media channels, such as a link was posted on Facebook to generate responses in Greece through convenience sampling method. The target respondents were adults aged over 18 who own a smartphone and were users of m-banking services, because they were appropriate respondents to provide coherent answers to questions. A pre-determined questionnaire was probed including questions related to m-banking adoption behavior, usage types and frequency, financial needs as well as demographic information. It is noted that a pilot test was implemented to 40 m-banking users for enhancing the questionnaire’s clarity and readability. A screening question was probed in the beginning to maintain respondents’ attention and control for the following condition: “*Have you ever visited/contacted a bank through your mobile phone (either through a mobile app or through your mobile browser)?*”. Only smartphone users who had previous online and m-banking experiences were directed to continuous completion of the survey. It took one month to collect 325 valid responses out of 360 distributed questionnaires. Table 3 exhibits demographic information of respondents.

{Insert Table 3 about here}

In general, respondents stated that they predominantly check their account balance, transfer funds between accounts, make a payment for transactions and other financial purposes. Moreover, most respondents were segmented as young (18-35 years old: 76.6%), and 54.5% of them were employed in the private sector or were self-employed. Regarding the education information, majority respondents have received university education including undergraduate (63.4%) and postgraduate (31.1%). Besides, respondents’ household income was slightly higher than average (median value is 30,000-39,999 euros). It is interesting to report that about 60.9% of respondents were frequent m-banking users on a weekly or monthly basis; whereas approximately 14.2% respondents were occasional users (every 2 to 3 months) based on individual needs, and the rest (24.9%) only visited m-banking apps a few times per year when necessary.

***4.3 Measurement Development***

The questionnaire mainly adopted the seven-point Likert scale questions to ask respondents’ opinions through providing numeric values, wherein 1 indicates ‘strongly disagree’ and 7 represents ‘strongly agree’. In order to optimize the scales’ validity and reliability, we employed scales from existing research and revised further to fit the current research context (see Appendix 2). Moreover, the specific items representing the constructs (drawn from Study 1) were adopted from the following sources: four items of perceived ease of use (Venkatesh *et al.*, 2012), three items of perceived usefulness (Curran and Meuter, 2005), four items of perceived risk (Curran and Meuter, 2005), four items of technological anxiety (Meuter *et al.*, 2005; Venkatesh *et al.*, 2003), five items of decision comfort (Parker *et al.*, 2016) and three items of usage intention (Baptista and Oliveira, 2015) respectively. It is noted that the measures for perceived risk were phrased following positive tongue, we justified our results accordingly.

***4.4 Results***

The measurement model was examined as the first step. We began with confirmatory factor analysis (CFA) to confirm the hypothesized dimensionality and evaluate the scale in terms of reliability and validity. Standardized residual covariances larger than |2.58| were eliminated for further analysis, following the suggestions of Janssens *et al.* (2008) on modelling. In that respect, the items ‘Useful 3’, ‘Anxiety 4’, ‘Risk 3’ and ‘Risk 4’, were excluded from further analysis due to inappropriate residual values. Table 4 therefore presents a summary of the measurement model. It showcases the factor loadings of each item relating to their respective construct. All of coefficients are significant at 0.01 level and the values are greater than 0.50, suggesting convergent validity to be achieved (Janssens *et al.*, 2008). In addition, we provide reliability examination for each construct (Janssens *et al.*, 2008), the Cronbach’s alpha (α) values of all variables in the table are above 0.70, confirming that the internal consistency of the scales is verified (Hair *et al.*, 2010). Moreover, reliability is further confirmed by referring to the Composite Reliability (CR) value, an index of above 0.70 for each construct will support the reliability. As displayed in the table, the minimum CR value is 0.83 indicating perceived usefulness of m-banking services.

Followed by Table 5, it highlights the discriminant validity examination, the mean values of the constructs and their respective standard deviations. Incorporating AVE findings in Table 4, we first verify that each construct’s AVE value is bigger than 0.5 (Hair *et al.*, 2010). Second, the squared root of the AVE values of each construct (shown in bold font in Table IV) is greater than the respective correlation coefficients, supporting that discriminant validity of the measurement model is achieved (Fornell and Larcker, 1981).

{Insert Table 4 about here}

{Insert Table 5 about here}

To identify the factors predicting m-banking usage intentions, a linear regression analysis was performed through SPSS. The results are presented in Table 6. It reveals that approximately 71% of variation in usage intentions is explained by the model, which is good in terms of the F-test result (R-square= 0.707; Adjusted R-square= 0.702; F-test= 153.665, *p*< 0.000). These figures further confirm that four antecedent constructs are related to usage intentions. Moreover, based on the statistical significance of the respective coefficients (Table 6), perceived ease of use is found to be an important predictor of usage intentions of m-banking, perceived usefulness is an important predictor of usage intentions of m-banking, and perceived risk is an important predictor of usage intentions of m-banking. Moreover, decision comfort emerged as a new important factor on m-banking usage intentions, whereas technology anxiety was found as not an important predictor of m-banking usage intention due to non-significance detected. Collinearity statistics for tolerance and VIF (Table 6) show that collinearity is not an issue (Hair *et al.*, 2017).

{Insert Table 6 about here}

# **General Discussion and Conclusion**

The present research aims to develop a model examining usage intentions of m-banking within a context of capital controls in Greece. In that respect, it explored the influence of capital controls in m-banking usage and the important drivers of m-banking usage behavior were examined. The sequential exploratory research provides comprehensive insights into m-banking usages by Greek consumers. We first explored individual perceptions on how m-banking has changed Greek consumers’ financial service needs and habits due to the restrictions of capital controls. Our qualitative findings reveal that the impose of capital controls significantly contributed to the rising usage of m-banking services and a forced change in banking habits was observed. In addition, we further interpreted a variety of concerns in penetrating m-banking usages such as perceived usefulness, ease of use, potential risks and technology anxiety. The practice of capital controls seemed to have requested bank consumers to use technology-assisted tools to satisfy their needs in a mandatory approach. This is accounted for large adoption of smartphones observed in the research context, wherein people gradually hold positive attitudes towards using m-banking applications on their smartphones. This is in line with the findings of the earlier study of Reinders *et al.* (2008). More interestingly, we found that m-banking users found it comfortable to use the technology once they got along with the banking applications and make transactions easily. Thus, more people chose to follow m-banking approaches. We thus derived an antecedent variable so-called decision comfort. We discover that both bank consumers and employees have learnt the new technology to deal with daily financial needs and transactions. We therefore examine the correlational relationships between antecedents and m-banking usage intention in the second study.

The subsequent survey results enabled us to answer the second research question by emphasizing to what extent of each antecedent impacting m-banking usage intention in Greece. The quantitative results reveal the important effects of perceived ease of use (PEU), perceived usefulness (PU), decision comfort (COMFO), and perceived risk (PERISK) on m-banking usage intentions. PU exhibits greater effect to usage intentions than that of PEU, in line with the outcomes presented by Brown *et al.* (2014). Furthermore, users value more the usefulness aspect of the respective technological interface rather than the ease of using it. Especially m-banking consumers seem to pay more attention to the outcome of using the technological interface than to the process. In addition, our quantitative findings suggest that decision comfort is an important influence of usage behavior. We can interpret that decision comfort is a positive emotion, similar to the ‘enjoyment’ (Davis *et al*., 1992) that further explains usage intentions.

***5.1 Theoretical Implications***

Our research contributes to the literature as follows. The qualitative study extends our understanding regarding the relevance of important attributes of usage behavior of m-banking including TAM constructs, perceived risks, and the technology anxiety. It confirms the influence of the latter constructs (e.g., Hohenberger *et al.*, 2017; Marriott *et al.*, 2017). Interestingly, we identify that the decision comfort also plays important role in using m-banking services.

Our empirical study shows that the technology anxiety is not an important dimension to explain m-banking usage behavior. However, we contribute to the adoption of innovations research by confirming the relevance of specific TAM constructs, such as perceive risk and decision comfort on usage intentions. Moreover, to the best of our knowledge, this is the first research acknowledging that capital controls, as the research context, have forced bank consumers to adopt and use m-banking for their financial needs.

In this vein, our findings contribute to the under-explored literature of forced use (Heidenrich and Talke, 2020), indicating that through the forced use of technology and when an alternative exists, consumers may develop positive attitudes towards the technological interface. Finally, the model developed through the subsequent survey to explain usage behavior, shows high explanatory power, where the hypothesized influences are confirmed except for technology anxiety.

***5.2 Practical Implications***

We offer straightforward managerial implications for the bank managers. Due to the implementation of capital controls, banking consumers have changed their behaviors and attitudes in line with mobile banking advances. Bank managers should consistently recognize the important factors concerning their retail services. Specifically, the effects of perceived ease of use, perceived usefulness, decision comfort, and perceived risk should be enhanced in their marketing strategy. Banking sector managers should accommodate consumers’ individual needs and understand their confusions in adopting future technologies to solve financial issues. Not only the technological aspects, but also users’ psychological attributes should be accommodated, as more and more bank consumers evaluate the online alternatives and interfaces especially their viewpoints on m-banking user experience. It is also evident that mandatory usage of technological services may act as a form of trial. That said, consumers may realize the benefits of the respective technology through the forced usage, nurture positive attitudes and consider it for continuous usage. In that respect, banks should constantly monitor and eliminate the different risks and offer positive experiences that activate positive emotions, thus addressing consumers’ perceptions of decision comfort. This should be managed through their m-banking apps and the respective m-banking link in their website constantly.

1. **Limitations and Future Research**

Our research of course embraces limitations while indicating future research directions. The respective effects on usage intentions may be different in the absence of capital controls. Moreover, there was not any examination of the possible links between the constructs involved. A subsequent study may address the latter limitation with the examination of possible moderator and mediator effects on usage intentions. Concerning the qualitative interviews, the home place of each participant being interviewed may create biases (21 different scenarios). However, it was considered and proved to be an effective method of qualitative data collection, considering the difficulty of calling all consumers and employees participated at the same location. Sample respondents might be biased towards younger ages with higher income than the average. About 48% of sample respondents are from the young age group of adults with a bank account (18-25-year-old) and median value of age is 26-35. This may limit results more applicable to young bank consumers, however there is research evidence that m-banking users are more likely to present the latter profile, where all studies agree on the age factor (e.g., Laukkanen, 2016; Verissimo, 2016). The online banking service of m-banking was examined with no reference to its specific applications such as mobile payments (e.g., Karjaluoto *et al.,* 2021).

Several research inquiries could be initiated based on our empirical findings from two studies. The study may be replicated during current restrictions of Covid-19, as post-pandemic situation might have forced consumers towards digital platforms to get the different services to a large extent. A similar study could examine the importance of the respective constructs in conditions of no external forces. The research context of such a study could examine specific m-banking application and/or financial services used, as well as a smartphone application in another service offering such as the retailing of fashion apparel. Moreover, decision comfort and its links should be further examined, especially within the context of usage behavior of any service offerings. The finding of which technology anxiety does not explain m-banking usage intentions could be further examined, for instance, by examining the influence of technology anxiety at different phases of the adoption process. In addition, an experiment research could be encouraged comparing the case that force consumers to adopt a technological innovation, especially in situations where there is an alternative, may result in positive attitudes towards this innovation. This would potentially provide new evidence in the examination of resistance behavior.

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**Appendix 1:** Interview Guide.

Main questions:

1. Are you aware of the legal restrictions applied to banking by the capital controls?

2. How have capital controls affected your banking needs?

3. Have the capital controls forced you to change your banking habits and how?

4. Is m-banking more compatible with the capital controls, and in what way?

5. How have capital controls affected the use of m-banking?

6. How have capital controls affected the type of financial services you use through your mobile?

**Appendix 2:** Measurement items(1: strongly disagree to 7: strongly agree)

|  |  |  |
| --- | --- | --- |
| **Variable** | **Items** | **Codes** |
| **Perceived ease of use (PEU)**  **(**Venkatesh *et al.*, 2012**)** | Learning to use mobile banking was easy for me.  My interaction with mobile banking is clear and understandable.  I find mobile banking easy to use.  It was easy for me to become skillful at using mobile banking. | Ease1  Ease2  Ease3  Ease4 |
| **Perceived usefulness (PU)**  **(**Curran and Meuter, 2005**)** | Mobile banking is useful in conducting my banking transactions.  Mobile banking makes my banking transactions more effective.  Mobile banking makes my banking transactions easier. | Useful1 Useful2  Useful3 |
| **Perceived risk (PERISK)**  **(**Curran and Meuter, 2005**)** | I feel secure conducting my banking transactions using the mobile.  I feel safe conducting my banking transactions using the mobile.  I know that the mobile will handle my transactions correctly.  There is little danger that anything will go wrong when I use the mobile. | Risk1  Risk2  Risk3  Risk4 |
| **Technological Anxiety (ANX)**  **(**Meuter *et al*., 2005; Venkatesh *et al*., 2003**)** | I feel concerned about using mobile banking.  It scares me to think that I could lose a lot of information using mobile banking by hitting the wrong key.  Mobile banking somewhat fears me.  I hesitate to use mobile banking for fear of making mistakes I cannot correct. | Anxiety 1  Anxiety 2  Anxiety 3  Anxiety 4 |
| **Decision comfort (COMFO)**  **(**Parker *et al.*, 2016**)** | I am comfortable with choosing mobile banking.  I feel good about choosing mobile banking.  I am experiencing positive emotions about choosing mobile banking.  Whether or not it is “the best choice,” I am okay with choosing mobile banking.  Although I don’t know if mobile banking is the best, I feel perfectly comfortable with choice I made. | Comfort1  Comfort2  Comfort3  Comfort4  Comfort5 |
| **Usage intention (INT)**  **(**Baptista and Oliveira, 2015**)** | I intend to continue using mobile banking in the future.  I will always try to use mobile banking in my daily life.  I plan to continue to use mobile banking frequently. | Intention 1  Intention 2  Intention 3 |

Here is Table 2 of qualitative coding process, please add to the Table file. I already amended table numbers in the text.

Table Qualitative coding process

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **1st order codes (consumers and bank employees’ insights)** | **2nd order codes** | | | **Aggregated themes** |
| Aware of capital controls, it affects families and the way people live. | → | | | **Restrictions of the Capital Controls** |
| People withdraw limited amount of cash from ATM rather the whole amount of their liabilities. |
| Limit your money transfers;  It has been inconvenient in most cases. |
| Capital controls create problems with payment. |
| Bank employees cannot support or assist customers for their financial needs. |
| Started using mobile banking;  Changed my banking habits that all of transactions are on mobile phone. | → | *Increased use of m-banking* | → | **Behavioral Changes in Banking Habits** |
| Since capital controls, mostly use credit card service due to limit cash withdrawals;  Have changed overall financing habits and rely on using card outside. | → | *Increased use of credit card service* |
| Bank employees used less cash and switched to e-banking because they are already familiar with Internet banking internally. | → | *Increased use of e-banking* |
| M-banking is more compatible;  Consumers could manage transactions more easily;  It is user-friendly;  M-banking provides easy accessibilities. | → | *Perceived ease of use* | → | **Rising Adoptions of Mobile Banking** |
| M-banking is very useful;  No need to queue in physical store because it’s quite convenient;  M-banking provides various functions. | → | *Perceived usefulness* |
| Money transfer to wrong correspondence;  Online security is uncertain;  Online transaction security issue. | → | *Perceived risk* |
| Not confident in approaching a new technology;  Not familiar with using smartphones and other mobile apps;  Worry about no assistance when signing up m-banking app for the first time. | → | *Technology anxiety* |
| Bank employees feel accustomed to using m-banking due to prior experience;  Young consumers feel compatible in adopting m-banking apps on smartphones;  Free transactions and easy procedures help users’ m-banking usage experience;  Using m-banking gets more comfortable and straightforward. | → | *Decision comfort* |

