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**Effects of Perceived Risk on the Acceptance of
Remote Mobile Payment Systems;
A Comparative Study Between Iran and Germany**

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ABBREVIATIONS

TAM – *Technology Acceptance Model*

PLS – *Partial Least Square*

SEM – *Structural Equation Modelling*

HTMT – *Heterotrait-Monotrait*

VIF – *Variance Inflation Factor*

SMS – *Short Message Service*

NFC – *Near Field Communication*

UK – *United Kingdom*

POS – *Point of Sale*

USA – *United States of America*

WIFI – *Wireless Fidelity*

PC – *Personal Computer*

LTE – *Long Term Evolution*

UTAUT – *Unified Theory of Acceptance and Use of Technology*

MPS – *Mobile Payment Systems*

TRA – *Theory of Reasoned Action*

WAP – *Wireless Application Protocol*

PEOU – *Perceived Ease of Use*

PU – *Perceived Usefulness*

IDT – *Innovation Diffusion Technology*

IT – *Information Technology*

SPSS – *Statistical Package for Social Sciences*

CB – *Covariance-Based*

AVE – *Average Variance Extracted*

CD – *Compact Disk*

DVD – *Digital Versatile Disk*

EWPS – *Experience with a Payment System*

INT – *Intention to Use*

UQ – *Ubiquity*

SN – *Subjective Norms*

ATT – *Attitude*

EWR – *Experience with a Retailer*

CEM – *Customer Experience Management*

CRM – *Customer Relationship Management*

DOI – *Digital Object Identifier*

et al. – *et alii*

DOI – *Diffusion of Innovation Theory*

IM – *Igbaria's Theory*

U&G – *Uses and Gratification Theory*

CHAPTER 1: INTRODUCTION

1.1 The Role of Online and Mobile Payment in E-commerce

Nowadays, the internet has connected millions of people around the world. It is easily possible to connect one corner of the world to another corner via a network. With users' enthusiasm to perform online transactions and the development of online payment systems, electronic payment systems have spread widely among online consumers.

E-commerce models and applications have been broadly applied in various contexts to enhance business environment efficiency. Online stores, as a significant part of e-commerce, need to focus entirely on security in order to improve their long-term relationship with users. To effectively implement online shopping strategies, it is necessary to set up strategies based on understanding consumer behavior, beliefs and attitudes.

Paying for a favorite article on the internet with a click of a mouse, completing a purchase through an e-mail account, and buying fashion items, books, or electronic tickets using a mobile device are all different ways for customers to pay electronically, leading to new options for transferring money. Innovative payment services are booming in order to efficiently cater to new markets based on the actual needs of users. Indeed, besides considering factors such as convenience, flexibility, and high transaction speed, different payment systems are in fierce competition with each other. The primary purpose of establishing e-payment systems is to ease the transaction processing in e-commerce between consumers and sellers. Besides the benefits of e-commerce, adopting e-payment systems might also lead to potential risks for users.

Along with technological advances and infrastructure improvements, payment systems have grown gradually to offer multiple services. The banking industry has tried to issue different types of credit cards for customers. Initially, paper-based credit card payments prevailed in the market until the 1990s when new technologies led to the complete transformation of paper-based cards into electronic systems. The historical evolution of electronic payments took place in 1918, when the Federal Reserve Bank transferred currency through the telegraph for the first time (Khan et al., 2017). Salient technological advancements coincided with e-commerce evolution and introduced a wide range of various online payment models. Different cashless e-payments, which are nowadays commonplace, were defined in the 1960s (Fatonah et al., 2018).

Along with improving the e-payment infrastructure, many electronic payment systems and payment applications then utilized this infrastructure to leverage the market. In particular, PayPal is, for many, the poster child of an advanced e-commerce payment system. Before the foundation of PayPal in 1998, Coca Cola introduced mobile purchasing in 1997, which enabled customers to select vending machines and purchase their desired drinks by sending a text message (Martins, 2015).

The launch of smartphones and mobile payment as a new attractive payment method saw the electronic payment market approached maturity. With billions of smartphones in use globally, m-commerce and specifically m-payment, intensifies the competition amongst various types of e-payment systems.

The role of the online shopping experience seems fundamental, as those online shoppers with previous experience have more trust and manage better when encountering online services than do non-shoppers who lack the required experience. Similarly, an experienced group of users is correspondingly less risk-averse with regard to the risks of online activities. However, an insecure internet connection can expose the system to various vulnerabilities such as Trojans or viruses and hacker attacks. Most importantly, hacker attacks are more likely to affect mobile networks than wired networks (Yan and Yang, 2015).

In the past decade mobile commerce has doubtlessly demonstrated its unique aspects such as ubiquity, usefulness, localization, and personalization (Wu and Wang, 2005; Wong et al., 2012; Yang and Kim, 2012). Accordingly, companies have recently tried to establish m-services such as mobile version websites to make consumers willing to engage in mobile shopping more frequently. Generally speaking, mobile shopping has developed itself as a kind of advanced m-service. It allows users to purchase products and services from online retailers via their mobile devices anytime and anywhere (Yang and Kim, 2012).

Nowadays, mobile phones are no longer treated simply as instruments to make and receive calls or send SMSs. They have evolved into a productive device to quickly find a location of a store, find ways via Google maps, buy and sell products and services, advertise, set up new businesses, and most importantly, conduct payment transactions with a vigorous growth since the past decade (Hsu et al., 2011; Hanafizadeh et al., 2014).

Mobile payment services classified as a subset of m-commerce, are specifically a form of e-commerce (Ondrus and Pigneur 2006). Mobile payment can occur over any mobile

communication device. Nevertheless, some scholars narrow down the usage of mobile payment services only to mobile phones. Therefore, mobile payments include paying for items, goods, and services, initiated or authorized, using a mobile device or tablet. Despite the more reserved adoption of mobile payments in many countries, companies have tried to advance mobile technology and reduce technical errors and barriers. It is to be expected that consumers will soon avoid traditional payment media in favor of new digital payment systems with their usability and compatibility.

Many scholars believe that mobile payment systems and retailers should increase consumers' confidence by adopting mobile payment. It helps easily reach users by offering a trustworthy platform that reduces uncertainty and perceived risks and, in return, enhances the likelihood of widespread mobile payment acceptance. The various mobile payment systems must provide a situation for consumers to deal with an acceptable level of perceived risk.

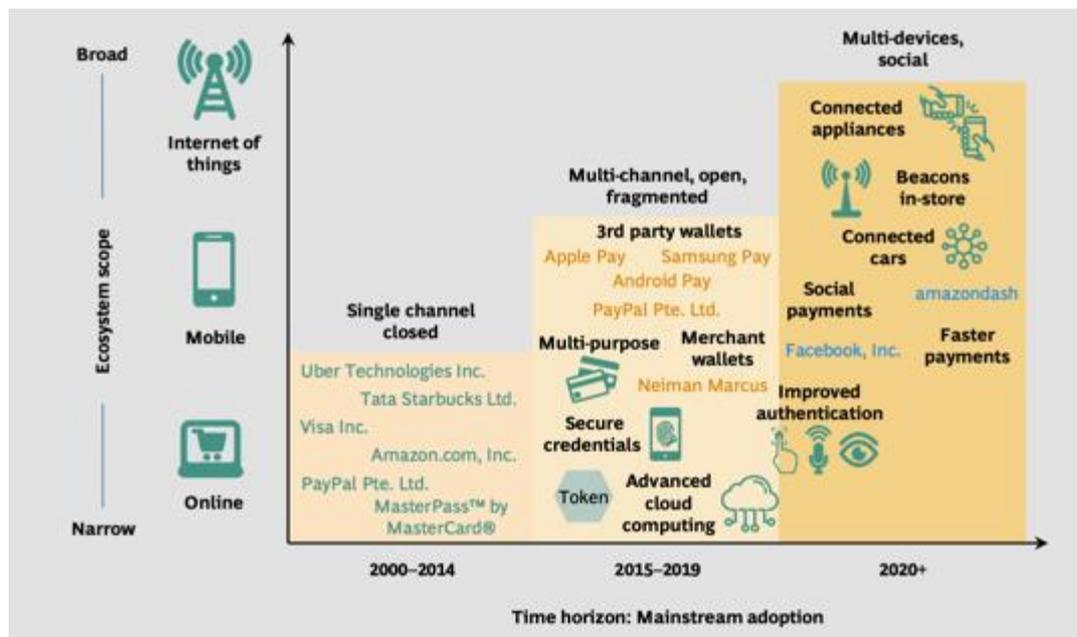
The advent of 3G enabled users to perform mobile payment activities with their internet-enabled cellphones. Although mobile payment has gained outstanding popularity in the mobile-commerce field, the infrastructures still need to be developed better and more efficiently. A considerable percentage of online payment users still prefer to use their personal computer to pay rather than cellphones, which some claim are not safe enough for conducting a payment.

Mobile devices are powerful tools in shaping the payment industry. A safe mobile payment transaction facilitates the acceptance of e-commerce. The success or failure of mobile commerce services can affect the development of e-commerce. In spite of the possible mobile payment challenges, online businesses across the world can benefit from the remote mobile payment and other forms (proximity, mobile wallet, SMS based and etc.) as well. Taking on the small transactions for small merchants represents a boost in customer acquisition for entrepreneurs. Moreover, introducing new mobile payment forms, such as the QR code, leads to an underlying growth in e-retailers' sales by driving additional consumer traffic. The convenience of paying through mobile devices can be better observed in discretionary items such as durable products, clothing, or entertainment. This helps customer online traffic to flow more efficiently. The rise in efficiency exhibits a positive impact on e-commerce growth and attracts new customers. The best scenario for mobile payment systems is to monopolize the e-commerce traffic by a salient percentage.

Figure 1 presents the evolution of consumer digital payments since the year 2000. As can be seen, digital payments stand at the beginning of a new era. From the year

2020, the scene is set to welcome a variety of innovative payment solutions such as the use of biometrics and multi-device payment as an authentication and authorization tool. Digital payments are expected to evolve rapidly from traditional methods, cash, card, and check, to more developed methods by 2020 and beyond.

Figure 1: Evolution of Consumer Digital Payment



Source: BCG (The Boston Consulting Group) (2016)

1.2 Research Purposes and Objectives

Despite the potential number of users, mobile devices, and high-speed cellular networks, concerns about mobile payment safety prevent the expected adoption. Therefore, this study aims to identify the factors that might affect a consumer's risk perception level when conducting a mobile payment transaction. Moreover, It is a comparative research between Iran and Germany. The purpose is to visualize how users can react differently towards mobile payment technology in both countries. This study will also assess the gap between the all-sufficient infrastructures of the mobile payment market and an unexpected growth rate for mobile payment.

This study's contribution extends the Technology Acceptance Model (TAM) (Davis, 1989) with motivational factors. The Technology Acceptance Model (TAM) was originally derived from the theory of reasoned action (TRA; Fishbein and Ajzen, 1975). While TRA predominantly illustrates the behavioral aspects of theory, TAM emphasizes users' propensity to accept new technology, which is more "information system-

oriented". TAM can determine and predict user preferences and attributes in accepting technology before experiencing it. This study aims to shed light on potential welfare gains for mobile payment by complementing mobile payment patterns associated with perceived risk. Moreover, the study examines the perceived risk in mobile payment along with the consideration of different cultural characteristics. Consequently, this study thrives on expanding technological and strategic business insights of mobile payment system. Most importantly, investigating consumer behavior within the context of remote mobile payment is the most fundamental part of this study. As mentioned earlier in this section, the study is implemented in two different countries, Iran and Germany. Both countries have unique specific cultural characteristics. According to Mooij and Hofstede (2010), both countries position themselves with different economic types and living standards for the residents.

Differences in mobile payment adoption in Iran and Germany might be explained by differences in the perception of value or risk. Risk perception is depicted to dramatically influence various psychological processes. At the most basic level, users in different countries might show different susceptibilities even to a specific color perception. Disparity of risk perception in Iran and Germany can result in different consequences for cognition and motivation regarding mobile payment. Furthermore, users in both countries might demonstrate different risk preferences in assessing the expected value of mobile payment systems. As an underlying factor, cross-cultural differences between Iran and Germany perhaps lead to either differences in risk attitude or in risk perception. Bontempo et al. (1997) state risk perception as a fundamental aspect of decision making in the consideration of risk and uncertainty which causes differences between individuals. It is ascertained that country-specific and cultural behavior can be directly connected to the consumers' attitude regarding online privacy concerns. Some cultural dimensions can determine the extent to which consumers feel uncertain about the level of privacy for their information.

Gong (2009) states that the differences in cultural dimensions can result in the differences in consumers' perception of risk and trust. Consumer behavior is linked with several significant factors, such those of an economic, environmental, cultural, and physiological nature. Differences in culture and national regulations help online retailers to better understand different features of consumer behavior dimensions. Culture can be also considered as a fundamental factor when comparing different countries in terms of shopping habits.

The primary and foremost objective of this study is to explore the determinants that affect consumers' perceived risk in adopting remote mobile payments. To precisely visualize the main objectives of this research, it is worth outlining the research objectives as follows:

- to enhance mobile users' understanding of the perceived risk in mobile payment;
- to represent the factors that might modify consumers' perceived risk as well as their intention to use mobile payment systems;
- to assess how motivational factors used to extend TAM (Technology Acceptance Model) affect the adoption of mobile payment systems;
- finally, to ascertain how the study's findings can be interpreted on the basis of various cultural traits.

It is crucial to examine how various uncertainties might result in differently perceived risk levels or beliefs that hinder mobile payment acceptance. By assessing the knowledge, awareness, and tolerance of the risk, it is possible to raise understanding within the population. Furthermore, members of societies can better identify potential mobile payment risks and recognize how to manage them with other motivational factors.

Looking closely at the rapid growth of mobile payment proves that a large market potential for mobile payment systems still remains to be discovered. Hence, this study specifies the factors to help users manage their perceived risk to a larger extent. The mindset or attitude of individuals towards mobile payment has an underlying effect on their behavior. Hence, it is important to explore influential factors that might reduce the level of risk or change their attitude towards mobile payment acceptance.

In this study, integration of the Technology Acceptance Model (TAM) with perceived risk and other motivational factors is expected to identify barriers to the adoption of mobile payment systems. Hence, this study aims to develop a framework with a set of complementary factors in order to predict and evaluate the adoption of mobile payment systems. As TAM can appropriately investigate the drivers of mobile payment acceptance from the perspective of users' perception, it may be well suited to extension by perceived risk.

The most interesting part of this study will be the interpretation of the findings based on Hofstede's cultural characteristics. This study aims to examine whether customers with different cultural backgrounds form different perceptions of mobile payment ac-

ceptance. It is also expected to evaluate whether users react differently to the same stimuli with respect to perceived risk towards intention to use mobile payment systems. It is likely that people's cultural orientation affects their behavioral intention and expectation regarding mobile payment adoption. Thus, the objective is to show to what extent cultural factors can influence consumers' behavioral intention towards mobile payment adoption.

Along with the research objectives, four research questions are designed to investigate the obstacles to the adoption of mobile payment systems:

1. To what extent do factors such as brand knowledge of a payment system, brand knowledge of a retailer, previous usage of a payment system, previous usage of a retailer, experience with a payment system, and experience with a retailer affect consumers' perceived risk when conducting a remote mobile payment?
2. How can an extension of TAM by other motivational factors explain consumers' level of risk perception in performing remote mobile transactions?
3. Do various cultural characteristics cause consumers to behave differently in adopting remote mobile payments?
4. Is there a significant difference between Iran and Germany with respect to the different product categories purchased by mobile payment systems?

1.3 Structure of the Thesis

The outline of the study provides a framework for an appropriate presentation of the research. The structure of the study reports the main criteria and ideas that will be clearly and concisely discussed in this research. The current study is structured as follows:

Chapter 1 Introduction

This chapter introduces and provides an overview of the impact of mobile payment in the context of e-commerce. It also describes the evolution of consumer digital payment over the years and decades. Chapter 1 undertakes a preliminary examination of the literature sources before finalizing the main research objectives. It provides an explanation as to why envisaged problems can be a matter of concern to be examined, not only from an international perspective, but also with regard to Iran and Germany. The purpose of the research discussed in this chapter is to acquire knowledge in address-

ing research questions and other certain aspects of research problems. Finally, the chapter lays out the reasoning behind both research problems and research questions.

Chapter 2 Theoretical Foundation

This chapter presents the development of mobile payment with the focus on Iran and Germany. The connection between mobile payment and consumer behavior, including the operational definitions of risk perception, appears in this chapter as well. Furthermore, it also presents the organization of the variables employed in this study to answer the research questions. Relevant literature is also used as a means to explain the theoretical basis of variables. Hofstede's cultural dimensions are described in detail in this chapter as a means to determine the role of culture in using mobile payment systems.

Chapter 3 Methodology

This chapter sheds light on the detailed specification of the methodology used in this study. Research design provides an overview of both reflective and formative structural modeling. This chapter discusses the details of the primary research components for this study including research population, research sample, and data collection method. It uses the theoretical model to develop several hypotheses. Furthermore, Partial Least Square – Structural Equation Modelling (PLS-SEM) is introduced and proposed as a means of evaluating the cause-effect interrelationships between different variables and the intention to use mobile payment systems.

Chapter 4 Results

Quantitative data analysis aims to summarize a wide range of information in order to answer the research questions in this chapter. Reliability and validity of the results are also discussed. Moreover, this chapter provides a proper comparison of results between Iran and Germany. It also presents an evaluation of the significant difference between Iran and Germany in the various product categories purchased by means of mobile payment . Finally, the hypothetical results summary for both Iran and Germany is presented to shed light on the probable variation of mobile payment adoption between the two countries.

Chapter 5 Conclusion & Discussion

This chapter interprets results in the light of the research objectives and in conjunction with other references. It also presents the main findings along with the gaps identified

and still to be addressed. At the end of the chapter is a summary of the limitations of the study and the implications for both academia and organizations.

CHAPTER 2: THEORETICAL FOUNDATION

2.1 Development of Mobile Commerce and Mobile Payment

Figure 2 shows the top 5 countries regarding the Global E-Commerce Market in 2020. With a projected market volume of US\$1,260,539m in 2021, China is expected to generate the most revenue. It is important to mention that the forecast has been adjusted to reflect the possible impact of the Covid-19 pandemic. As can be seen in Figure 2, Germany is ranked in fifth place with a value of US\$94,998m. It shows a considerable potential for the growth of e-payment methods in Germany, and specifically m-payment.

Figure 2: E-commerce Global Comparison Revenue



Source: Research Department (2020c)

Principally, e-payment is defined as all kinds of payments initiated, processed, and received electronically (Hartmann, 2006). E-payments are systems that provide necessary tools for the payment process of goods and services carried out on the internet. Wong et al. (2012) define mobile shopping as a monetary transaction utilizing an internet-enabled mobile device or tablet over a cellular network or wireless telecommunication network to buy any products or services. Yang (2010) mentions that m-shopping can be conceptualized as a personal assistant for consumers in order to optimize their shopping experience.

Several scholars define m-commerce as “e-commerce for users on the move” (Vittet-Philippe and Navarro, 2000). The fundamental value proposition that makes m-commerce and specifically m-payment distinctive is creating new choices and a new concept of freedom for customers. Mobile payment is generally referred to as payment services operated under financial rules and regulations via a mobile device. Given that

mobile payment penetration may differ from region to region and from country to country, a cross-national comparison of mobile payment usage is needed to assess the significance of culture in adopting a new technology (Laukkanen, 2017).

The use of an electronic device like a cellphone or a tablet enables people to perform a wide range of economic transactions. M-payments perform financial transactions electronically from a payer to a receiver either directly or via an interface (Mallat and Tuunainen, 2008). Mobile payment typically differentiates itself from other media in terms of technology, transaction size, location (remote or proximity), and funding mechanism. Mobile payment is considered as a medium for entities and parties or businesses in order to utilize the advantages of this medium in conducting an online transaction.

Mobile payments are spreading more and more every day. In many countries people tend to use their mobile devices even for paying a small amount of money. Despite the advantages and possibilities of mobile payments, the penetration rate still does not seem to be promising. Mobile payment has not yet succeeded in wholly gaining consumers' trust. There is a fundamental need to examine the main reasons and barriers of mobile payments. Moreover, it is important to investigate and find potential factors to reduce concerns about the perceived risk of mobile payments. It is also crucial to comprehend the extent of consumers' knowledge regarding mobile payment systems and online retailers. How these factors influence consumers' concerns is a significant question that this study will consider.

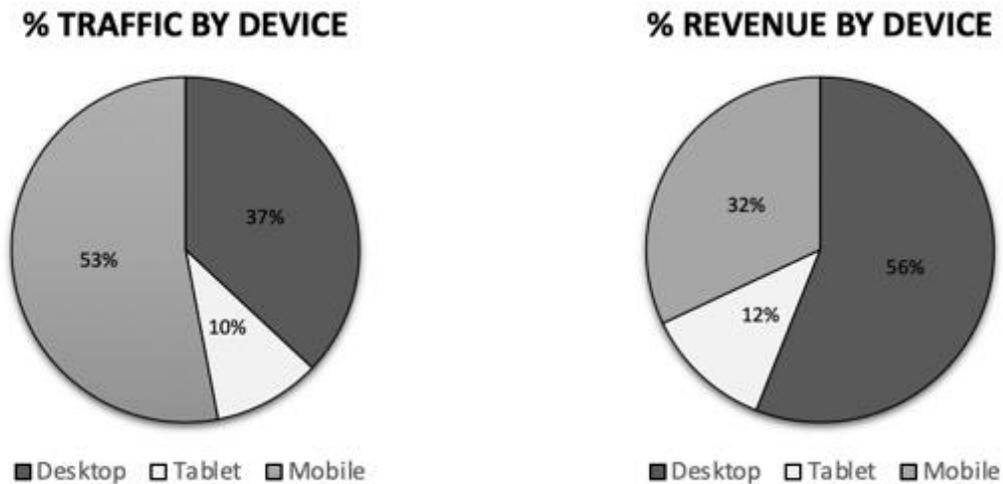
The problem in adopting mobile payment seems to be worldwide, as reported by plenty of researchers (Cobanoglu et al., 2015; Chen, 2013; Park et al., 2018). Consumers' reluctance to adopt mobile payment systems can be related to the security concerns as the most significant roadblock. Having no experience of a payment system and a retailer or using an insecure public Wi-Fi can be a cause of concern for mobile users which might lead to unpredictable consequences.

Figure 3 shows that mobile commerce traffic exceeds desktop traffic worldwide as of the end of 2019. The statistics reveal that 53% of visits to online stores occur on mobile devices. Surprisingly enough, mobile revenue with 32% still lags behind desktop revenue. To overcome the gap between the traffic and the revenue, both retailers and payment systems must create an engaging mobile experience for users.

Both payment systems and retailers play a critical role in the future of mobile payment. It is an appropriate way for users to rely on their previous experience regarding a specific retailer or a payment system. Beutin and Schadbach (2017) emphasize the role of

value proposition and user experience in "in-app mobile payment". Sometimes the popularity of a retailer can build consumers' initial trust when conducting a mobile payment transaction.

Figure 3: Mobile-Commerce Traffic

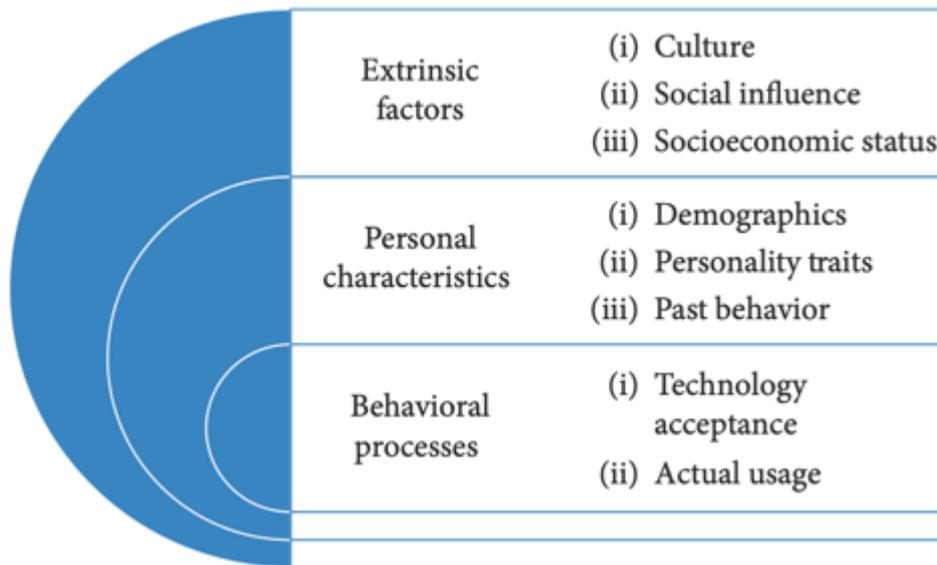


Source: Ogonowski (2019)

The main value-adding features of mobile payment can be characterized as convenience, flexibility, and ubiquity. Indeed, ubiquity is expected to differentiate m-payment from other e-payment methods. To better comprehend the necessity of recognizing driving factors in m-payment services, it is necessary to examine why and when the distinctive features of mobile payment such as flexibility and ubiquity create value for customers.

Mobile payment adoption can be viewed as a system that encompasses behavioral processes, personal characteristics, and extrinsic factors (Figure 4). The interaction among these elements shapes the behavioral tendency of an individual as to whether to adopt mobile payment systems or not. Behavioral processes as the center of this system, which include technology acceptance and actual usage, are affected by personal characteristics and extrinsic factors. Personal characteristics comprise demographics, personality traits, and behaviors such as experience and habits with mobile payment systems. Furthermore, extrinsic factors generate influence through social mechanisms such as culture, social influence, and socioeconomic status. Both personal characteristics and extrinsic factors distinguish internal, mid, and external layers, depending on the proximity to behavioral processes.

Figure 4: A System View of Mobile Payment Adoption



Source: Zhang et al. (2018)

To ensure that mobile payment systems attract more customers, different aspects of this phenomenon must be assessed in detail. Mobile payment can attract a huge number of users with its unique functionalities. Remote and proximity mobile payment are principally two different types of m-payment, defined as follows:

- Remote Transaction: like a peer to peer payment, here transactions can be conducted independently regardless of a user's location.
- Proximity Transaction: like payment at a traditional POS¹, in this category, a mobile device is connected to a POS via a Near Field Communication.

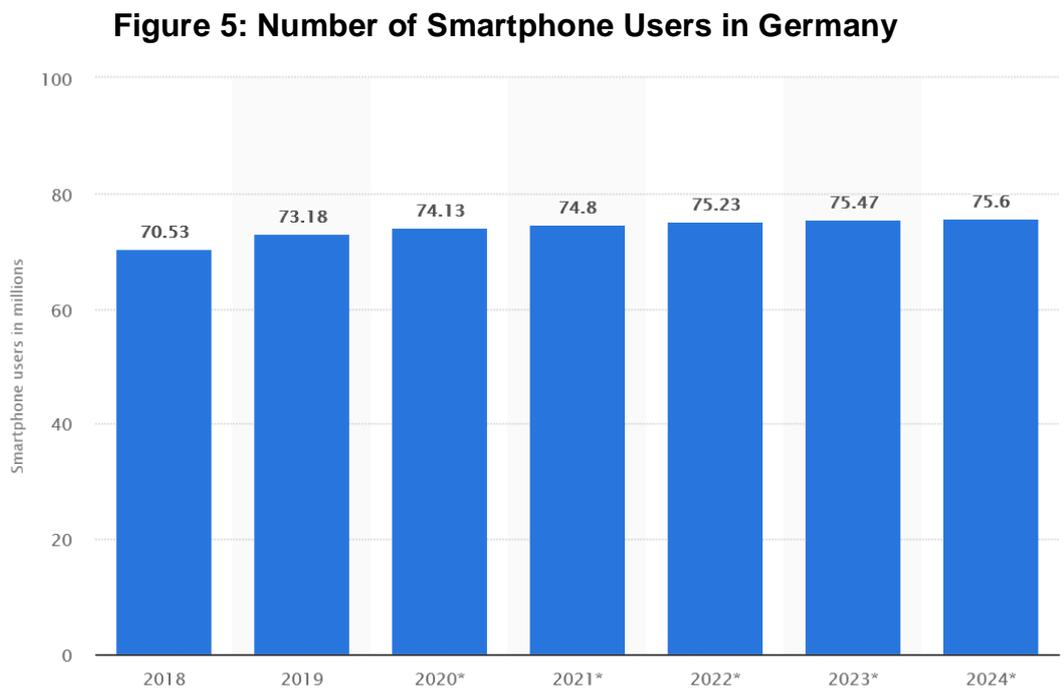
Proximity mobile payment occurs when both parties are physically close to each other. Remote mobile payment is performed when payer and payee are not necessarily physically close to each other.

Both Iran and Germany have been exhibiting an increasing rate of mobile internet usage during the past few years. According to a report (Koptuyug, 2020a) 74% of users in Germany had access to the internet via mobile devices in 2019. The statistics show an increase of 6 percent in comparison to the year before. Another report (Schmidt, 2020) indicates that, in 2019, with a penetration rate of 52%, internet access

¹ Point of Sale (POS) or Point of Purchase is the time and place where a retail transaction is completed.

via mobile devices has been more prevalent among users than via other devices such as laptop or PC.

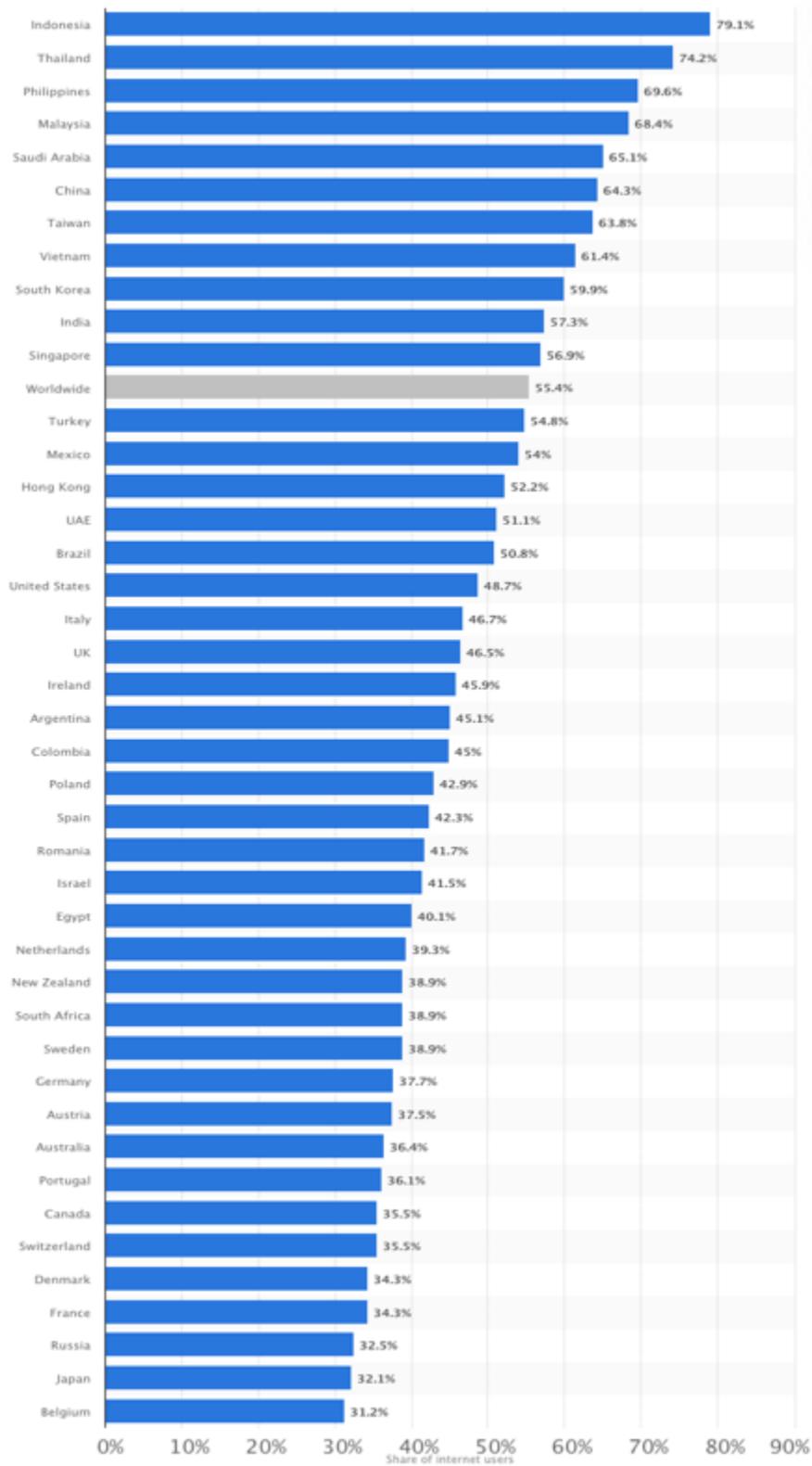
Figure 5 shows that the number of smartphone users has been continuously increasing since the year 2018 in Germany. There has been an upward trend regarding the number of smartphone users in Germany during the past years. The number of users is expected to rise from 73.18 million users in 2019 to 75.6 million users by the year 2024.



Source: Research Department (2020b)

Despite the increasing number of smartphone users in Germany, the share of the online population who bought something online via a mobile device as of the third quarter of 2020 is disappointing. As displayed in Figure 6, only 37.7% of the online population in Germany purchased something via a mobile device during the measured period which is considerably lower than the worldwide average value of 55.4%.

Figure 6: Share of Online Population Making a Purchase with a Mobile Device



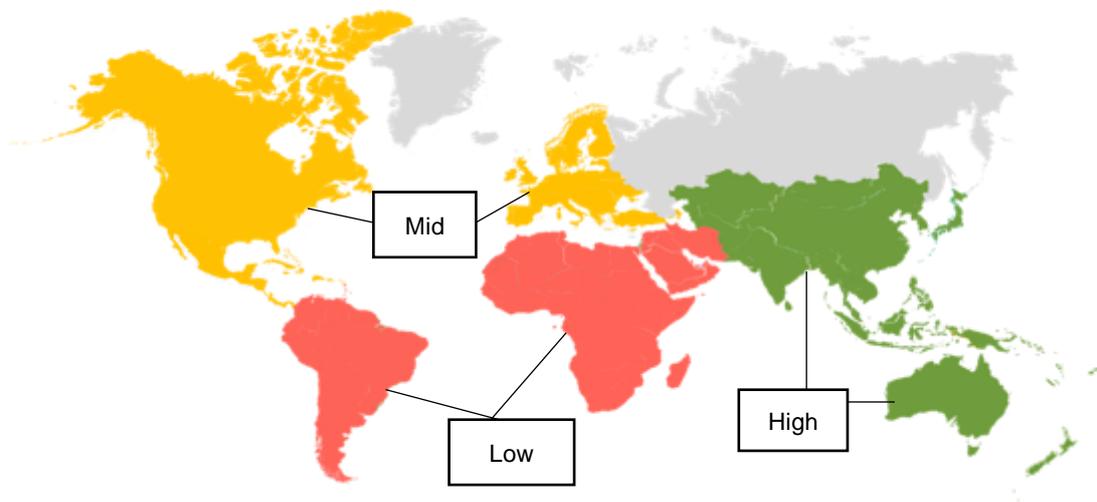
Source: Sabanoglu (2021)

Iran, with over 45 million users, ranked 12th regarding smartphone users globally by the end of 2019 (O’Dea,2020). Besides, among the Middle East countries, Iran occupies the first position in terms of the number of internet users, with a figure of over 62 million by the end of 2019 (Research Department, 2020a). Mehr News Agency, one of the most famous Iranian news agencies, reports that Iran's mobile phone penetration coefficient had reached 140% by the end of 2019 (Mehr News Agency, 2019). Moreover, it also reports the number of mobile users in 2019 as being over 116 million, whereas it had been around 93 million one year before. According to Iran’s Ministry of Communication and Information Technology, 86.42% of roads are equipped with the mobile network coverage (Mehr News Agency, 2019).

The Organization of Regulatory and Radio Communication of the Iranian Ministry of Communication and Information Technology reports that the number of smartphone users in Iran rose from 88 million and 722 thousand at the end of March 2018 to more than 93 million users by the end of March 2019. Furthermore, the penetration rate for mobile devices jumped from 109% in January 2019 to 140% in March 2020 (Mehr News Agency, 2019). One prominent application for mobile payment in Iran is for the payment of tolls on roads. Recently, the government established a new mechanism that enables drivers to pay for tolls via a wide range of mobile payment applications. This is helping to attract more customers to conduct mobile transactions.

As shown in Figure 7, the m-commerce industry is in a boom phase in the Asia-Pacific area. Countries like Japan, Australia, China, and India have become increasingly popular with respect to their e-payment models. Although cash is considered a powerful medium of transaction in several Asian countries, the demonetization act has begun in countries such as South Korea and India in order to achieve a switchover to other payment methods such as mobile payment. That is contrary to the trend in some other countries, such as Germany, which still rely to a great extent on a cash culture. Growth in mobile payment is very modest in these countries. It implies a privacy-conscious attitude in adopting new electronic payment methods.

Figure 7: Growth Rate in the Mobile Payments Market by Region (2019-2024)



Source: Mordor Intelligence (2020)

According to Figure 7, in comparison with Asia-Pacific area countries, other countries worldwide have either a medium or low mobile payment growth rate. Specifically, Iran and Germany show a low and medium growth rate concerning the mobile payment market. Hence, it is necessary to improve the mobile payment procedure in these countries.

A survey, published in 2020, shows that in Germany only some 20% of respondents like to pay with smartphone all the time (Kunst, 2020). Another report by Beutin and Harmsen (2019) on the acceptance of mobile payment in Germany, Turkey, the Netherlands, Austria, Switzerland, and Belgium shows that in Germany, only 8% of respondents are in favor of new payment methods and think that they are more secure than the other conventional methods.

Lack of infrastructures for the establishment of payment systems leads to substantial customer problems in Iran. Therefore, this may result in uncertainty, a lack of perceived security, or a reluctance towards adopting mobile payment systems. Despite the high rate of mobile internet usage, high mobile device penetration rate, high investment in the mobile payment market, and developed mobile payment market infrastructures, growth in mobile payment seems to be unsatisfactory in Iran and Germany.

Fifth generation (5G) wireless telephony is predicted to succeed the 4G/ LTE² technology. According to a report (Liu, 2020), 5G is expected to completely dominate the electronic payment market by the end of 2021. The statistics illustrate that the number of 5G connections is expected to amount to between 20 million and 100 million by the end of 2021. Several estimations predict that the figure may even reach 200 million. Thus, it is necessary to identify the barriers and solutions in order to fully utilize this technology.

As mentioned earlier in this section, mobile payment can be performed both remotely and in-store. Many research projects have been conducted on in-store mobile payment. But, only few have specifically considered the concept of remote mobile payment. Payment systems and retailers are the two major actors involved in the mobile payment procedure. A payment system or a retailer can be perceived as reliable on the basis of the consumers' previous experience. Both payment systems and retailers can affect consumers' attitude towards mobile payment usage. A positive experience with a specific retailer can alleviate the uncertainty of making a payment with a new payment system and vice versa. How the experience and knowledge about a payment system or a retailer can affect risk perception is considered as one of the main gaps in this field of study and will be assessed in this research.

2.2 Mobile Payment and Consumer Behavior

The interaction between online marketing and consumer behavior leads to a consideration of consumer behavior theories and practices (Cummins et al., 2014). In internet marketing, online consumer behavior is depicted as an appropriate gateway for the success of electronic commerce.

Consumers are rational economic users who consider the cost advantages of mobile payment most of the time. Mobile payments enable consumers to perform a transaction regardless of time and region constraints. On some occasions, mobile payment can even reduce the transaction and counter cost. Moreover, the network- platform base of a mobile payment contributes to the ease of conducting a transaction. It is interesting to consider why some consumers use mobile payment and others do not. It is also crucial to assess whether consumers are affected by cultural factors in their payment choices, specifically when comparing different countries. Chandra et al. (2010) report that consumers expect mobile payment service providers to prioritize their business plans on the basis of users' real expectations and to avoid benefiting from their vulnerabilities. Hanafizadeh et al. (2014) point out that mobile banking enhances the productivity of

² Long-Term Evolution

performance and service quality. It is therefore a fundamental issue for service providers to better understand consumer behavior. Xu et al. (2010) suggest that to better comprehend online consumer behavior, it is worthwhile to assess consumer behavior from the perspective of perceived risk. Indeed, it is necessary to investigate consumers' behavioral intention under the consideration of risk and uncertainty.

Perceived risk is a behavior derived from a consumer's belief concerning the probable adverse outcomes of a decision. Yang et al. (2015) define perceived risk in mobile payment as the possible losses consumers perceive due to the usage of mobile payment systems. Zhang and Liu (2011) describe perceived risk as a milestone while investigating factors affecting consumer purchase intention. Consumers first characterize the potential risks that might occur as a result of a purchase. If the benefits accompanied by a purchase outweigh the possible risks, users decide to place an order. They believe that the most crucial prerequisite for a purchase process is to eliminate potential risks. Beutin and Schadbach (2017) determine security concerns about privacy and personal data as the most critical issues in mobile payment.

Different online payment methods, including mobile payment, are conducted under a certain level of uncertainty. Uncertainty can be regarded as an imperfect foresight and cost associated with unexpected outcomes of a particular behavior (Williamson, 1985). Gao and Waechter (2017) also define uncertainty in mobile payment as the extent to which a user perceives mobile payment as being associated with the possibility of having security and privacy threats. Thus, for many mobile payment users the loss of privacy and personal information is a source of concern. With respect to mobile payment, uncertainty may arise with regard to both the technological and market aspects. Indeed technological and market uncertainty can be caused by the future benefits and costs of a specific behavior.

Uncertainty occurs when the consequence of a decision is unknown. The nature of the virtual environment results in a high level of sensitivity among online consumers during the purchasing process as compared to traditional shopping. The elements applied in traditional shopping to relieve consumers' uncertainty are seemingly less helpful in an online environment. Online consumers have to reveal their private information such as address, telephone number, and credit card number. Consequently, the purchasing process might become riskier. Compared to traditional shopping, where consumers are mainly passive recipients, in an online environment they are supposedly more active.

Becker and Knudsen (2005) conclude that perceived uncertainty occurs when users do not have a clear idea about the future outcomes or the relevant possibilities. This situa-

tion is most likely to happen when the relevant information is missing for the consumers to predict consequences of a purchase decision. Therefore, as online users' brand knowledge improves, a good and safe online purchase can be expected. Zhang and Liu (2011) note that Bauer (1964) was the first author who elaborated the concept of perceived risk in marketing research. He points out that consumers are more concerned about subjective risks rather than objective risks. In most cases, the generation of risk and the occurrence of uncertainty take place simultaneously. In other words, the risk results from uncertainty while uncertainty is considered as a source of risk.

To harmonize remote mobile payment with users' preferences, brand knowledge of a payment system and a retailer have to be considered. Brand knowledge of a retailer or a payment system can reduce consumers' uncertainty towards mobile payment systems. Brand knowledge of a payment system, brand knowledge of a retailer, previous usage of a payment system, and previous usage of a retailer are expected to build the basis of experience with a payment system and experience with a retailer in this study. Thus, experience with a payment system and experience with a retailer can affect the level of perceived risk in mobile payment. Moreover, the growth of mobile payment can strengthen the relationship between customer experience and marketplace success. Having insufficient knowledge and experience about mobile payment systems tends to create a sense of insecurity.

Mobile transactions demand some kinds of experience that must be real-time, seamless and personalized. Consequently, the mobile payment experience has become an underlying part of mobile commerce (Medberg and Heinonen, 2014). Komulainen and Saraniemi (2019) believe that due to inadequate focus in this regard, customer experience in mobile payment is highlighted as a prominent gap in this field of study. If perceived risk conveys a negative connotation for customers, other encouraging elements such as perceived ease of use, ubiquity, or perceived usefulness can convey a positive connotation. The positive attitude can also reinforce users' belief regarding mobile payment systems.

Trust as an effective perception can have an influence on mobile payment user behavior, in addition to other technological aspects. Mayer et al. (1995) define trust as a willingness to be involved in a vulnerability based on a positive attitude and expectation towards another party's future behavior. With the concept of trust, consumers are convinced of the ability, integrity, and benevolence of service providers. Indeed, consumers expect service providers to be concerned about their benefits and keep their prom-

ises. Moreover, not only service providers' characteristics, but also mobile technology characteristics influence users' trust in adopting mobile payment systems.

Perceived risk and uncertainty can be raised from both endogenous and exogenous factors (Littler and Melanthiou, 2006). Endogenous uncertainty might result from the constraints of the consumers' knowledge and experience related to online purchase requirements. Chevalier and Mayzlin (2006) determine exogenous uncertainty as the primary source of perceived risk and uncertainty. Indeed, it is highly dependent on consumers' perception of external environmental factors and might be influential in online purchase activities. A logical association of endogenous and exogenous uncertainty is depicted when endogenous uncertainties, such as lack of experience or brand knowledge, are noticeable during a payment transaction. The verification of a payment system provider may possibly be difficult for those lacking the required experience.

To appropriately develop mobile payment infrastructures, it is critical to engage all the players in this complex process. In many developed countries, consumers are allegedly aware of the potential value of m-payments. However, they are not willing to demand or sign up for m-payment services. Bargal et al. (2015) refer to the substantial cultural differences to explain the disparity between consumers in developing and developed countries. For example, consumers in developed countries, especially in Europe, prefer to conduct their payments with a particular familiar method. They are arguably reluctant to switch to a different payment method as it might disrupt their routine habits (Bargal et al., 2015). As adopting mobile payment systems might vary from country to country due to different cultural characteristics, the concerns about perceived risk in mobile payment adoption seem to be a global issue. The Technology Acceptance Model (TAM) can precisely and comprehensively explain users' behavior when confronting a risky situation.

The most critical issue in paying with either a mobile device or any other payment media is the concept of "Digital Safety." Technological advancement led to the evolution from 2G to 3G, then to 4G, and recently to 5G. Specifying the safest way to access the internet may be challenging. However, it is necessary to mitigate the level of risk as much as possible. Nevertheless, the riskiness of the internet is, to some extent, inevitable.

A report by The New York Times in 2018 revealed that the cellular data of a cellphone is more secure than a public Wi-Fi network. Free public Wi-Fi networks offered by various stores, hotels, airports, and shopping centers might expose a user's device to hacker attacks, targeting personal data (Biersdorfer, 2018). The report illustrates fur-

ther that personal data is encrypted when connecting to a typical mobile data network. In addition, the cellular data connection protects the authentication of identity, especially during the completion of a remote payment.

On the other hand, security of Wi-Fi networks varies fundamentally. The first scenario is to connect to a public network that is unsecured, which easily allows for personal information to be hijacked. The second scenario is a connection to an authenticated password-protected wireless network, equipped with powerful encryption and other protective features. The security of a Wi-Fi network depends mainly on its type, whether it is a free public network or a network with high-level encryption. Although mobile cellular data is generally considered to be more secure, it can be also exposed to vulnerability. Computers seem to be more vulnerable to malware infection than cell-phones. Nevertheless, the threat of mobile malware is also growing rapidly because of the prevalent smartphone usage amongst people.

The main differentiating point between smartphones and computers regarding online payment security lies in the security features of third-party browsers. Smartphones are more likely to have standard security software. Mobile phone users rely more on the manufacturer's security software supplied as part of the operating system, while computer users must independently install their own security software.

2.3 Literature Review

In order to attract consumers to use a new technology, it is crucial to give user value the uppermost priority. McDougall and Levesque (2000) define customer value as the total positive results and benefits of an incident. Indeed, customers predominantly assess the utility of a service or product by what is received and what is given. Customers adopt or reject a payment channel based on the value created by e-retailers or payment systems, compared to existing alternatives. It shows how a satisfying experience with a payment system or a retailer can play a crucial role in determining consumers' behavioral intention to adopt mobile payment in the future.

In electronic markets, companies should establish the value creation process for users differently. Hence, the differentiating point between mobile payment and other payment methods must be achieved through creating value for users. It is also necessary to provide a clear image of unique mobile payment features that are value-adding. Therefore, to leverage a payment system or a retailer, it is vital to appropriately create customer value. It is also recommended that companies should specify the distinctive risk factors of adopting mobile payment systems clearly.

Security of personal information and privacy can be considered as the two prominent factors in accepting a new payment solution like mobile payment. Security and privacy risks have already been utilized to predict consumer behavior, both in e-commerce (Featherman and Pavlou, 2003) and m-commerce (Chandra et al., 2010; Xin et al., 2013).

Pavlou (2003) describes perceived security from a consumer's perspective. It is the subjective probability regarding any commercial transaction which is expected to be not viewed or manipulated by any kind of inappropriate parties. The security of payment has always been a primary concern for consumers (Salo and Karjaluoto, 2007). Salo and Karjaluoto (2007) argue that security increases users' willingness to trust in service providers. As they perceive a safer payment environment, the intention to use will be enhanced.

In the discussion of mobile payment, situational factors are believed to moderate the relationship between consumers and attitude towards m-payment systems. Allegedly, consumers' attitude and intention are the critical factors in assessing the level of a new technology-based service acceptance (Shaikh and Karjaluoto, 2015; Schierz et al., 2010).

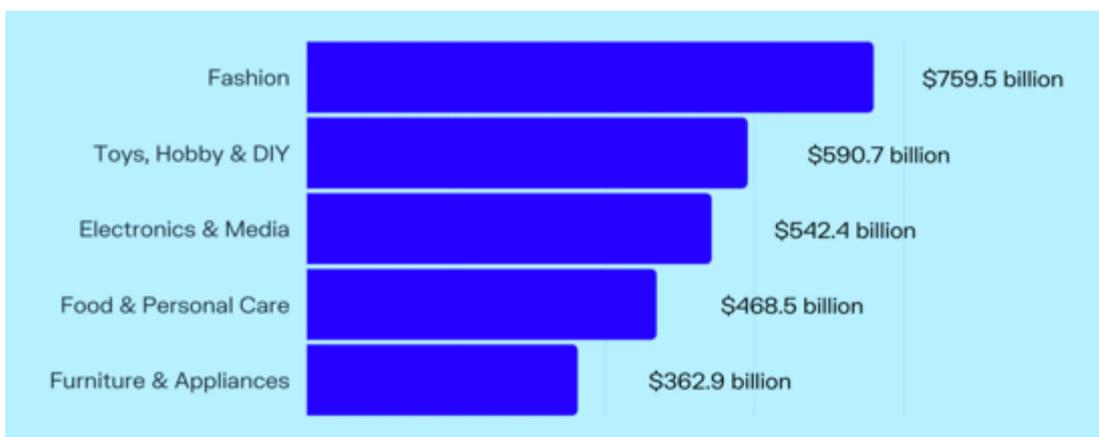
It is inferred that the motivational and risk-reducing factors are predominantly influenced by external factors (Monswé et al., 2004). Monswé et al. (2004) point to approachability and convenience as the elements that make consumers feel comfortable in dealing with an online payment. A survey (Koptyug, 2020b) shows that German consumers most often bought fashion items (48%), books (41%), and travel packages (35%) in the first quarter of 2018 using mobile payment systems. Kelly (2011) reveals that users prefer to do online shopping, using a tablet or a smartphone on the couch (50%), followed by on the bed (20%), in shopping malls (6%), at kitchen counters (5%), and on public transportation (3%). It sheds light on the ubiquity and ease of using a mobile device in different situations.

The most purchased products using a mobile device highlight products' characteristics as an underlying determinant in users' acceptance to use mobile payment systems. In particular, familiar or standardized products such as fashion items or books can provoke the intention to pay with a mobile device (Monswé et al., 2004). Besides the product characteristics, social influence can also change the intensity of risk perception in adopting mobile payment systems. The intensity of social influence in such occasions is highly dependent on individualism/ collectivism cultural characteristics. A good

perception of payment form and enjoyment may result in satisfaction and lead to a positive association with repeated mobile payment intention (Monsuwé et al., 2004).

The role of different product categories can be considerable in selecting a preferred payment method. It is likely that consumers prefer using a specific payment method to buy a specific item. Consumers may treat product categories differently as they show different feelings with regard to a particular product. Based on the heterogeneity between product categories, consumers might differentiate between low risk (search) goods and higher-risk (experience-quality) goods, when using mobile payment systems. Figure 8 presents a forecast of top online shopping product categories in 2021.

Figure 8: Top Online Shopping Categories Worldwide



Source: Based on Statista & OBERLO (2021)

As can be seen in Figure 8, fashion-related products, toys and hobbies, electronics and media, food and personal care, furniture and appliance are ranked among the top five most popular online shopping categories in 2021. On the basis of Figure 8, consumers are expected to spend over \$2,760 billion on items in these categories in 2021. In addition to the product categories displayed in Figure 8, this study also considers a number of other search-quality categories such as tickets, books, mobile apps, etc. The purpose is to better measure perceived risk in adopting mobile payment systems with respect to different product categories in societies with different cultural backgrounds. In connection with search quality, it is also worth noting that consumers can easily evaluate features and characteristics of goods and services before purchase.

A mobile device is no longer merely a means of payment; additionally, multiple financial transactions can be initiated, processed, and confirmed through this useful medium. The various criteria to encourage mobile payment growth can be presented as follows:

1. Socioeconomic conditions: It is most likely that people in countries facing barriers such as sanctions do not possess a credit card or debit card to use. Thus, undeveloped infrastructures, accompanied by the embedded fees of money-transfer-services make mobile payments look appealing (Evans and Pirchio, 2015).
2. Cost efficiency: It is predominantly evident in developing countries that most transactions are typically low in value but, on the other hand, high in volume. Therefore, mobile payment systems might look more attractive and beneficial for the bottom-of-the-pyramid population, as they might use them more frequently.
3. Diffusion of mobile phones: Duncombe (2011) states that because of the cheapness of mobile phones offered by different companies, competitive mobile market situation, and inclusiveness of mobile device financial services, mobile payments have become more favored and preferred by users. The cultural index shows that people have more than one mobile phone in a multitude of developing countries. Surprisingly enough, in sub-Saharan countries, households have more mobile connectivity than access to clean water or even sustainable electricity.
4. Convenience: Nowadays, in most countries, because of the high pace of everyday life, it is necessary to find a way of easing daily life tasks. The convenience of mobile payment means that people save time and costs in their daily tasks, specifically when they can easily benefit from a mobile payment's distinctive features compared to other payment methods.
5. New initiatives: Several new initiatives from international organizations such as World-Bank can effectively promote and facilitate the adoption of mobile payment systems. Famous companies and Research & Development departments worldwide have always supported new projects that investigate the adoption of new technologies.

On the other hand, some factors can limit further mobile payment growth:

1. Regulations and restrictions: It is probably the most detrimental factor that deflects the growth of mobile payment usage. Evans and Pirchio (2015) emphasize the fundamental role of banks that insist on positioning in the center of ecosystems which might limit mobile payment growth. Unfortunately, the issue is that most mobile payment-related legislations do not correspond with technological advancements.

2. Limited collaboration: In most cases, collaboration must occur between banks and mobile payment systems by providing supporting tools from the government in order to prevent a roadblock (Au and Kauffman, 2008).
3. Underdeveloped ecosystems: Harmful elements such as poor designed infrastructures, lack of standards, or lack of sufficient equipment in telecommunication networks might undermine the prevalence of mobile payment systems (Duncombe and Boateng, 2009).
4. Security problems: Karnouskos and Fokus (2004) illustrate that users in developing countries are more likely to be victims of cybercriminals. Because of the growing number of hacking attacks, users can be exposed to cybercriminals throughout the world. Moreover, the shortage of adequate legal frameworks and an enforcement mechanism in developing countries can be more devastating in cybercrime. Generally speaking, regardless of the type of country economy, the lack of knowledge regarding mobile payment systems and security issues can affect users.

Alqatan et al. (2012), Au and Kauffman (2008) state that, as consumers' perception towards mobile payment security increases, they expect a higher level of security controls by mobile service providers. Rehman and Coughlan (2011) assume that security is a real challenge for mobile payment service providers since it influences the mindset of consumers. Yeh and Li (2009) visualize perceived risk as a significant obstacle in creating the initial trust relationship to increase mobile payment usage. Alqatan et al. point out that m-commerce is more likely to be exposed to security risk elements than e-commerce. They argue that it can be due to a weak link between parties in mobile payment. As Kim et al. (2010) and Xin et al. (2013) mention, financial or monetary loss is depicted as a considerable dimension of perceived risk, which most of the time reduces users' intention to conduct a mobile payment transaction.

As service providers have access to consumers' account details and financial information, good protection of personal information against transaction loss is always expected. Chandra et al. (2010) emphasize the persistence of financial risk in mobile payments, which still cannot be eliminated due to the lack of appropriate safeguards and the required infrastructure for encryption mechanisms .

According to Alqatan et al. (2012), fear of financial loss can lead to reluctance towards mobile payment usage. Interestingly, they point to the weak encryption of transmitted

data in a mobile device and WAP³ services. Therefore, it is necessary to prevent unauthorized access to personal information and control transaction data security. Kim et al. (2010), Yeh and Li (2009) emphasize mobile device functionality, design features, and privacy-related issues in consumers' intention to adopt mobile payment.

In contrast to Alqatan et al. (2012) who believe in a higher level of perceived risk in m-commerce and specifically mobile payments, Amoroso and Magnier-Watanabe (2012) illustrate that m-commerce security concerns are somehow similarly perceived to those in e-commerce. Alqatan et al. relate the additional perceived risks of a mobile payment to the mobile network malfunctioning, expected interruptions, mobile device technicalities, and, most importantly, poor connection between the associated parties in a mobile payment transaction.

Scholars mostly consider security risks and privacy risks together, when discussing perceived risk in m-payment (Chandra et al., 2010; Veijalainen, 2007; Xin et al., 2013). Veijalainen (2007) emphasizes the difference between privacy and security. Privacy is referred to consumers' concerns about unauthorized usage of their personal information in an inappropriate manner. Indeed, unauthorized usage encompasses the disclosure or misuse of a consumer's private or financial details without the required permission from him or her when engaging in online activities such as mobile payment (Salo and Karjaluoto, 2007). Security risk is mainly described as a risk of a financial loss with respect to a payment event.

Privacy and security risks play a fundamental role in predicting consumer behavior. They are both predominantly expressed as considerable concerns by users in adopting mobile payment systems (Au and Kauffman, 2008; Xin et al., 2013). Without having experience regarding a payment system or a retailer, a sense of vulnerability is more likely to impress consumers who have insufficient familiarity with external parties of a mobile payment. Mobile payment providers are responsible for protecting consumer privacy. The differences between privacy risk in mobile payment systems and other electronic payment methods can be derived from specific device-based features in mobile payment.

In order to provide a background for the current study, Table 1 summarizes details about a number of studies implemented in this field.

³ Wireless Application Protocol (WAP) is a technical standard for accessing information over a mobile wireless network.

Table 1: Background of the Study

Author	Variables	Method	Results	Research Gap
Khosravi et al. (2016)	Market size, cost structure, revenue structure, regulatory situation, consumer culture and meme, service life cycle, mobile ticketing and billing	Mixed Method	The service related to mobile ticketing and billing are the best opportunities.	Mobile ticketing in Iran
Simon and Victor (1994)	Physical risk, performance risk, psychological risk, financial risk, time-loss risk, and payment method	Quantitative Survey	All selected payment methods (cash, pay at point-of-sale, and credit card) have low psychological risk. Pay at point-of sale has the lowest physical risk, credit card has the lowest psychological risk and highest time-loss risk, cash has the highest physical risk and lowest performance risk.	Gap between theory and practice of users' real-life concerns
Phonthanukitithaworn et al. (2016a)	Compatibility, subjective norm, perceived trust, perceived risk, and intention	Quantitative Survey	Perceived usefulness, perceived ease of use, and perceived cost don't have a direct effect on behavioral intention.	Explaining consumer intention to adopt new technological services amongst people who have not yet adopted it
Cobanoglu et al. (2015)	Perceived usefulness, perceived ease of use, perceived security, subjective norm, perceived compatibility with lifestyle, previous experience with mobile payment, and intention to use	Quantitative Survey	Compatibility with lifestyle is the strongest predictor of consumers' intention to adopt mobile payment, followed by perceived usefulness, subjective norm, security, and previous experience.	Key determinants of consumers' acceptance of mobile payment
Shin et al. (2014)	Economic cost, security, convenience, and mobile payment frequency	Quantitative Survey	Mobile security has the strongest influence on mobile payment frequency in both countries.	Exploring a dominate method in mobile payment
Yan and Yang (2015)	Perceived ease of use, perceived usefulness, structural assurance, ubiquity, trust, and usage intention	Quantitative Survey	Perceived ease of use, perceived usefulness, structure assurance, and ubiquity have significant effect on users' trust.	Considering trust to facilitate adoption and usage of mobile payment services

Source: Own design

Author	Variables	Method	Results	Research Gap
Gao and Waechter (2015)	Perceived system quality, perceived information quality, perceived service quality, perceived uncertainty, perceived asset specificity, perceived ability, perceived integrity, perceived benevolence, perceived benefit, perceived convenience, initial trust, and usage intention	Quantitative Survey	Perceived information quality, perceived system quality, and perceived service quality are positively related to initial trust. Perceived uncertainty has a negative effect on initial trust.	Understand users' initial trust in mobile payment by integrating ISS and TCE model
Mohammadi (2015)	Perceived ease of use, perceived usefulness, attitude, perceived image, self-efficiency, and intention to use	Quantitative Survey	System compatibility is the main factor affecting users' attitude toward use of mobile banking. Perceived usefulness mediates the relationship between ease of use and users' attitude.	The role of individual drivers like self-efficiency and social drivers like perceived image in developing countries
Thakur and Mala (2014)	Adoption readiness, perceived risk, personal innovativeness, and intention to use	Mixed Method	The influence of innovativeness on behavioral intention for usage is higher on users as compared to non-users.	Expanding knowledge and propounding interesting empirical evidence of the model among different consumer groups
Williams et al. (2017)	Perceived usefulness, perceived ease of use, trust, perceived risk, compatibility, and intention to adopt m-payment	Quantitative Survey	Perceived usefulness has positive effect on intention. Perceived ease of use doesn't have effect on intention to use. Trust was found not to significantly influence consumers' intention.	A multi-dimensional treatment of perceived risk in mobile payment
Schierz et al. (2010)	Perceived compatibility, perceived security, perceived usefulness, perceived ease of use, individual mobility, subjective norm, attitude towards use, and intention to use	Quantitative Survey	The empirical results show strong support for the effect of compatibility, individual mobility, and subjective norm.	Lack of hypothesis-testing studies on mobile payment acceptance

Author	Variables	Method	Results	Research Gap
Slade et al. (2015)	Performance expectancy, effort expectancy, social influence, innovativeness, perceived risk, trust in system, and behavioral intention	Quantitative Survey	Performance expectancy, social influence, innovativeness, and perceived risk significantly influence nonusers' intention to adopt m-payment, whereas effort expectancy didn't.	Exploring the variation between different mobile payment solution with the usage of UTAUT
Hanafizadeh et al. (2014)	Perceived usefulness, perceived ease of use, trust, perceived cost of use, perceived risk, need for personal interaction, credibility, compatibility with lifestyle and needs, and intention to use	Quantitative Survey	All the variables successfully explain adoption of mobile banking among Iranian users.	A need for personal interaction to do banking transactions or mobile banking
Hampshire (2017)	Perceived trust, perceived risk, perceived usefulness, perceived ease of use, personal characteristic, attitude towards usage, and system usage	Mixed Method	Perceived trust positively influences perceived usefulness and mitigates perceived risk. Perceived risk negatively influences perceived usefulness. Perceived usefulness significantly and positively influences UK consumer attitude.	Quantitative and qualitative empirical data on UK consumer perspectives of risk, trust, and perceived usefulness of mobile payments using sequential mixed methods
Hillman et al. (2011)	Habitual routines, perceived ease of use, perceived usefulness, gamification, entertainment, social perception, regulatory avoidance, and usability	Qualitative Survey	Designing mobile payment services around routines and habits aids in a positive user experience.	Collecting empirical data on mobile payment usage from those who had already adopted mobile payment as well as those who were using it for the first time

Author	Variables	Method	Results	Research Gap
Ramadan and Aita (2018)	Satisfaction, experience, customer expectation, brand loyalty, and purchase intention	Mixed Method	Satisfaction with the quality of mobile payment applications increases use experience as well as customer's expectation. Therefore, loyalty and purchase intention are both positively affected.	Exploring mobile payment consumers' usage behavior from nine countries of Arab world
Roy and Moorthi (2017)	Technology readiness, perceived ubiquity, perceived usefulness, perceived ease of use, privacy, and m-commerce adoption	Quantitative Survey	Significant effect of technology readiness on perceived ubiquity, perceived usefulness, and perceived ease of use.	Development and validation of a model that has attitudinal variables related to m-commerce adoption
McDougall and Levesque (2000)	Core quality, relational quality, perceived value, switching intentions, loyalty intentions, and customer satisfaction	Quantitative Survey	Core service quality and perceived value are the most important drivers of customer satisfaction with relational service quality a significant but less important driver.	Examining the relative contribution of perceived value and two service quality determinants, core and relational, towards customer satisfaction and future intentions
Featherman and Pavlou (2003)	Overall risk, performance risk, financial risk, privacy risk, time risk, psychological risk, social risk, perceived risk, perceived usefulness, perceived ease of use, and adoption intention	Quantitative Survey	E-service adoption is adversely affected primarily by performance-based risk perceptions, and perceived ease of use of the e-service reduced these risk concerns.	Including measures of negative utility (potential losses) attributable to e-service adoption
Chandra et al. (2010)	Perceived reputation, perceived opportunism, perceived environmental risk, perceived structural assurance, trust, perceived usefulness, perceived ease of use, age, gender, mobile internet, internet banking, and adoption intention	Mixed Method	Consumer trust in a mobile payment system does not have a significant relationship with perceived usefulness. Reputation of mobile service provider is identified as an important trust building factor in the context of mobile payment adoption.	Highlighting the key role of consumer trust in facilitating mobile payment adoption

Author	Variables	Method	Results	Research Gap
Xin et al. (2013)	Perceived reputation, perceived opportunism, perceived reputation of mobile payment vendor, perceived opportunism of mobile payment vendor, trust, gender, experience, ethnicity, and adoption intention	Quantitative Method	trust is a crucial factor of consumers' intention to adopt mobile payment. Also, characteristics of the mobile service provider, mobile payment vendor and mobile technology influence the development of trust on mobile payment.	Extending trust-theoretic model by adding the characteristics of the mobile payment vendor as another set of trust-building elements
Pavlou (2003)	Actual transaction, intention to transact, perceived risk, trust, perceived usefulness, and perceived ease of use	Quantitative Method	Trust and perceived usefulness are significant predictors of intention to transact and behavioral intention, respectively. However, perceived ease of use has a non-significant effect on intentions to transact.. Finally, perceived risk is strongly related to intention to transact.	Integrating the variables associated with behavioral and environmental uncertainty (trust and perceived risk) with technology acceptance constructs into a coherent and parsimonious model that jointly predicts consumer acceptance of e-commerce
Salo and Karjaluoto (2007)	Reputation, disposition to trust, situational normality, structural assurance, website quality, perceived risk, behavioral trust intentions, and trust attitude	Quantitative Survey	The results suggest that the actual outcome of trust-enhancing methods in online environment should be the development of long-term trusted customer relationships.	The study synthesises online trust literature and it presents an integrative trust model
Shaikh and Karjaluoto (2015)	Perceived ease of use, perceived usefulness, trust, Compatibility, attitude, credibility, social influence, perceived behavioral control, perceived cost, relative advantage, and risk	Mixed Method	The findings indicate that the m-banking adoption literature is fragmented, though it commonly relies on the technology acceptance model and its modifications, revealing that compatibility, perceived usefulness and attitude are the most significant drivers of intentions to adopt m-banking services.	Addressing the use of m-banking applications via smartphones or tablets

Author	Variables	Method	Results	Research Gap
Monsuwé et al. (2004)	Perceived usefulness, perceived ease of use, enjoyment, attitude, situational factors, consumer traits, trust, product characteristics, and previous experience	Quantitative Survey	Attitude toward online shopping and intention to shop online are not only affected by ease of use, usefulness, and enjoyment, but also by exogenous factors like consumer traits, situational factors, product characteristics, previous online shopping experience, and trust in online shopping.	Extending TAM by exogenous factors such as enjoyment and product characteristics
Evans and Pirchio (2015)	Mobile money payment intention, growth rate, market structure, regulation, and success factors	Mixed Method	The study finds in particular an insistence that banks play a central role in the mobile money scheme in 22 countries, which is fatal to igniting mobile money schemes.	Focusing on poor countries in order to determine the role of mobile money schemes for creating financial services
Duncombe (2011)	Mobile phone intervention, providers with intervention, providers without intervention, unit of assessment	Mixed Method	Experience influences on the development of mobile payment.	Suggesting some key building blocks of mobile development which should be central to guiding selection of research approaches
Au and Kauffman (2008)	Level of impact, monetary and fiscal policies, switching costs, quality of service, network externalities, accessibility, and technology value	Mixed Method	The results shed light on the appropriateness of economic theory to interpret past developments of mobile payment. Also, the role of m-payment innovation producers and mobile payment services consumers, as well as selling and network intermediaries are identified.	Analyzing the mobile payment development from the different stakeholders' points of view
Veijalainen (2007)	Node autonomy, trust, heterogeneity, security, and privacy	Mixed Method	Autonomy, trust, and heterogeneity can be related within the same model in a natural way. Furthermore, security and privacy are also closely related with trust.	Introducing a semiformal behavior-based model in order to describe more exactly what autonomy means and how is it related with heterogeneity and trust

Author	Variables	Method	Results	Research Gap
Alqatan et al (2012)	Familiarity with m-commerce, calculation-based, structural assurance, compatibility, propensity to trust, security, trust in m-commerce, and behavioral intention	Quantitative Method	Trust in m-commerce, propensity to trust, and security are the most important predictors of behavioral intention towards mobile commerce.	Examining the effect of trust in mobile payment adoption in Small and Medium-sized Tourism Enterprises (SMTEs)
Amoroso and Magnier-Watanabe (2012)	Mobile consumer adoption, perceived ease of use, perceived usefulness, attitude, facilitating conditions, perceived value, perceived security and privacy, social influence, trust, behavioral intention, perceived risk, and attractiveness of alternatives	Quantitative Method	Cultural factors play an important role in the adoption of the mobile wallet. The success of mobile payments and mobile wallets largely depends on considering the mobile industry from an ecosystem perspective, where consumers represent only one actor, albeit crucial, and merchants, mobile payment providers, technology providers, financial institution, and the role of government must equally be taken into account.	Extending the existing frameworks in the literature by including attractiveness of alternatives and by proposing relationships between the key constructs
Kim et al. (2010)	Personal innovativeness, m-payment knowledge, mobility, reachability, compatibility, intention to use, and convenience	Mixed Method	the results indicate that the strong predictors of the intention to use mobile payment are perceived ease of use and perceived usefulness. The compatibility of mobile payment is not the primary reason in the decision to adopt it.	Extending the TAM with both user-centric factors and system characteristics
Yeh and Li (2009)	Customer trust towards the vendor, customer satisfaction, interactivity, customisation, usefulness, ease of use, responsiveness, and brand image	Quantitative Method	The results show that despite customisation, brand image and satisfaction all directly affecting customer trust towards the vendor in m-commerce, customisation and brand image equally had a stronger direct effect on trust formation. In addition, interactivity and responsiveness have no direct impact, but have an indirect impact via satisfaction on trust towards the vendor.	Contributing a theoretical understanding of factors that activate the development of trust towards the vendor. Moreover, the study verifies the effects of satisfaction and proposed quality factors on customer confidence in m-commerce

Observing the research gaps from previous studies determines that the mobile payment has not yet examined from some fundamental perspectives. It is inferred that payment systems and retailers, as the main players in mobile payment technology, have not yet considered in this field of research. Furthermore, the effect of cultural characteristics have not yet applied in the context of remote mobile payments. In addition, the current study identifies the significant difference among various product categories in different cultures as another considerable gap to be covered.

2.4 The Role of Culture in Consumer Behaviour

Culture is a fundamental determinant of adoption of mobile payment systems. It will be broadly discussed as an underlying part of this study. It is necessary to examine cultural characteristics in different societies which might affect the adoption of mobile payment systems.

Culture is basically defined as a set of different values, behaviors, mindsets, ideas, and other meaningful symbols that contributes to the way in which members of society deal with different issues and evaluate different scenarios. Mooij and Hofstede (2010) define culture as a collective programming of the mind that can distinguish members of a society or a group from other societies or groups. To express the cultural values, Hofstede (2011) refers to the word culture as both the hardware and software of culture. Those characteristics referred to the hardware imply a global and homogenous consumer culture. On the other hand, software perspectives of a culture shed light on the understanding of differences in creating values. It can shape the basis of differences in attitudes, behaviors, emotions, motives, etc. In order to understand the effect of culture in consumer behavior, it is important to integrate cultural values as a component of human behavior, not as an environmental factor.

Cultural differences can provide appropriate measures for positioning and improving services. A cross-cultural study can identify and compare both similarities and differences among different countries. The properties of individuals in comparative studies are observed within a country or a culture. Whether consumers in Iran and Germany behave differently regarding the intention to use mobile payment systems or not, can be explained by a cultural disparity. It is ascertained that a country's culture is a critical behavioral characteristic in investigating systematic differences in consumer behavior (Lynn et al., 1993). Despite the globalization phenomenon, consumers tend to behave on the basis of the habits, tastes, values, and norms that are more common in a region or a country. Each country has its unique values; contradictions are therefore expected

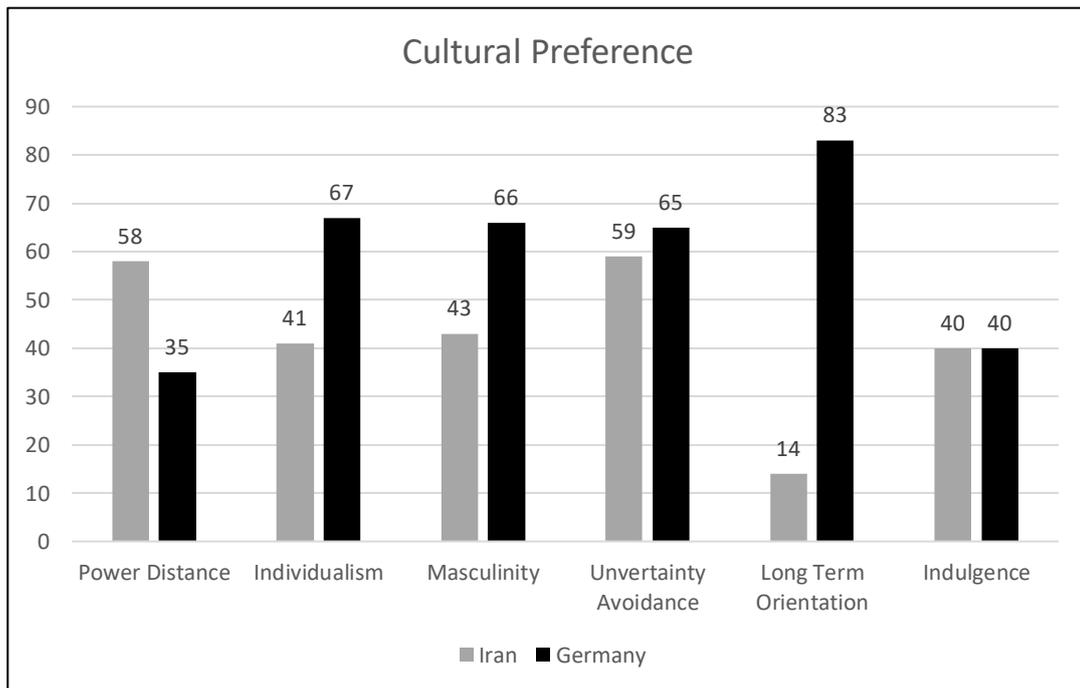
when comparing different countries. In comparison to personal characteristics, such as demographics and personal traits, extrinsic factors such as cultural index have not been studied such depth in the literature dealing with remote mobile payment. Although cultural characteristics have been rarely considered in remote mobile payment studies, their impact on technology adoption and consumer behavior is inevitable.

Hsu et al. (2013) point to Hofstede's national cultural model as the single most influential conceptual framework for cross-cultural studies. Hofstede (2011) conducted very comprehensive studies regarding the cultural differences among countries throughout the world. Ultimately, he determines the six significant dimensions of national cultures as follows:

- 1. Power distance**
- 2. Individualism/collectivism**
- 3. Masculinity/femininity**
- 4. Uncertainty avoidance**
- 5. Long-term orientation/short-term orientation**
- 6. Indulgence/restraint**

As the study aims to compare Iran and Germany regarding the attitude towards conducting remote mobile payments, Figure 9 shows a comparison of different cultural characteristics between the two countries.

Figure 9: Cultural Preferences; Iran vs. Germany



Source: Hofstede Insight

Power Distance

Power distance deals with the fact that all society members do not possess an equal position. It expresses attitudes of people with the same cultural background regarding the assumption of inequality. Mooij and Hofstede (2010) define the power distance as the extent to which a less-powerful member of a society or an organization expects disparity of power distribution based on a hierarchical structure. Srite and Karahanna (2006) applied power distance in the context of mobile payment. They state that people experience power distance in their culture to adopt the same mindset as their supervisors. If people observe that superiors conduct a mobile payment, they are likely to consider adopting the same behavior as they think that superiors always take the right decisions.

An average score of 58 proves the structure of hierarchy in Iran. Everybody in society and organizations has his or her specified place and the inherent inequality plays a vital role in creating such a hierarchical society. In this society, subordinates receive an order from a boss or top manager and no further justification is needed. In contrast to Iran's centralization, Germany is considered as a decentralized country with a visible dominance of a citizens' middle-class group. With a score of 35, Germany identifies itself as a lower power distance country.

Individualism

The fundamental aspect addressed by individualism/collectivism is the degree that a society appreciates and maintains the interdependence amongst its members. It has predominantly to do with whether members of a society define themselves as "I" or "We." In societies where people mostly appreciate individualistic values, most attentions and preferences are only assigned to a person or the family. In individualistic countries, people strive to achieve their personal goals by setting their work schedules to best suit their lifestyle. They are, in fact, less concerned about the opinions of other members of their social environment (Hofstede, 2011).

In contrast, in collectivist societies, the word "loyalty" plays a remarkable role in taking better care of society members as "in groups." Furthermore, in collectivistic countries, people are more willing to be influenced by social norms, beliefs, and other salient values of the "in-group" rather than personal characteristics. Lu et al. (2017) illustrate that the probability of complying with mobile payment users in a collectivistic society towards continuous usage is relatively high.

As Figure 9 shows, Iran scores 41 in this regard, leading it to be considered a collectivistic country. In such a society, long-term commitment and a close relationship among groups identify them like a family. In collectivistic cultures, loyalty acts somehow beyond the other societal rules and regulations. Moreover, loyalty creates a healthy relationship amongst members and induces them to also be responsible for the other fellow members of a group or an organization. In a collectivistic culture, the term "Management" implies how to manage a group; that is why in such cultures an offense will, in most cases, bring shame and disgrace (Mooij and Hofstede, 2010).

On the other hand, Germany is genuinely depicted as an individualistic country, scoring 67. Families are built on the basis of a parent-child relationship without paying that much attention to other family members. Hofstede (2011) states that in individualistic cultures people only view their personal preferences as a way of showing their loyalty and their sense of responsibility. It is common in such cultures to express opinions frankly and to be direct to others in communications. With a belief of "honest, even it hurts," members of individualistic countries provide an opportunity for their counterparts to learn from their mistakes.

Masculinity

Another aspect of the cultural comparison between Iran and Germany is related to masculinity or femininity. Receiving a high score in this regard (masculine) determines that a society is based on prosperity, competition, and achievement. This process begins at school and accompanies the people throughout their organizational life. In contrast, a low score on this dimension (feminine) illustrates that people with this cultural value appreciate taking care of others, and the quality of life is important to them. In a feminine society, the better the quality of life, the more life is perceived as successful, and it is considered admirable to be part of a society. The fundamental issue that differentiates a masculine from a feminine culture is the motivation to either be the best (masculine) or value what you do (feminine). A relatively low score of 43 on this dimension visualizes Iran as a feminine society in which people prominently take "well-being" into consideration (Mooij and Hofstede, 2010).

In feminine societies, the favored incentives are free time and flexibility, aiming to make life more comfortable. In contrast to a feminine society where managers strive for consensus, in masculine cultures managers tend to be decisive and assertive due to the propensity to manifest a status. With a score of 66, Germany is assumed to be a masculine society. In a country with masculine cultural values, people put a salient focus on performance to highlight their self-esteem, as the primary purpose in such societies is to "live in order to work."

Srite (2006) states that individuals with feminine cultural values might take technology more into consideration since the main focus is on the quality of life. In contrast, people who espouse masculine cultural values tend to adopt the technology in order to use it to perform organizational tasks. Blut et al. (2016) emphasize the stronger influence of consumers' experience on technology acceptance in masculine societies compared to feminine. As a result, countries that score more on the masculinity dimension seem to be more task-oriented and require technology only as part of their working lives. Pookulangara and Koesler (2011) show that mobile payment users who carry feminine cultural values are more likely to be influenced by the social norms in terms of repeated mobile payment usage than those with masculine values.

Uncertainty Avoidance

The dimension uncertainty avoidance concerns the extent to which the future is predictable for members of a society. When the consequence of a task is not clear for people, anxiety might be caused by ambiguous decisions. There are different ways in

different cultures to cope with such anxiety in decision making. Therefore, the extent that members of a society are affected by ambiguity of the future or feel threatened by the consequences of a new situation is expected to be embedded in uncertainty avoidance. Uncertainty avoidance stands out as one of the most significant cultural characteristics. Benbasat et al. (2008) point out that among different cultural characteristics explained by Hofstede, uncertainty avoidance is the most significant element that might cause disparity of consumer behavior towards both e-commerce and m-commerce.

One of the most visible facets of uncertainty avoidance is to determine how people avoid positioning in ambiguous situations because of uncertain beliefs. Iran's score of 59 implies that the tendency to avoid uncertainty is somehow observable in the country. On the other hand, Germany's score of 65 shows that the country ranks among the countries avoiding uncertainty (Hofstede, 2011). In countries that espouse uncertainty avoidance, cultural values, precision, and punctuality are norms among members who perceive security as a significant stimulus in maintaining motivation in daily life. Following the philosophical heritage of Kant, Hegel, and Fichte, people who embrace uncertainty avoidance values, tend to consider deductive rather than inductive approaches in matters of chance. Consequently, in such societies, people take details at the highest level into consideration in order to create certainty. It is then inferred that in a country such as Germany, with a low score on power distance, people strive to rely more on their expertise to compensate for the lack of certainty.

Benbasat et al. (2008) believe that uncertainty avoidance can reduce the level of trust in both e-commerce and m-commerce. Mooij and Hofstede (2010) reveal that people from high uncertainty avoidance cultures do not easily tolerate uncertainty and ambiguity in decisions. They set up specific rules and regulations for their lives based on the fundamental needs in the decision-making process and behavioral intentions as well. It is also worth noting that the tendency for change in countries with a higher level of uncertainty avoidance is low. Given that mobile payment did not emerge a long time ago, users always perceive a certain degree of uncertainty whenever a new method is introduced to the market.

People with various uncertainty avoidance precedents can react differently as they might be resistant to replacing their current payment method with a new method. Those consumers with a higher level of uncertainty avoidance, who are less tolerant of switching to mobile payment, may require a higher level of standards and security assurance in this respect. On the other hand, societies with lower uncertainty avoidance are considered greater risk-takers, and their behavior in decision-making tends to have more

innovational facets and entrepreneurial spirit. According to Mooij and Hofstede (2010) a culture with a lower uncertainty avoidance index exhibits greater tolerance for risk concerning the adoption of new technologies, as people in such countries tend to be more innovative and entrepreneurial.

Long-term Orientation

Long-term orientation is another cultural characteristic explained by Hofstede. Long-term orientation is concerned with efforts that every society carries out not only to value its past, but also to connect the past with challenges of the present and future. Normative societies that predominantly score low on this dimension seem to concentrate on their past by valuing the time-honored traditions. On the other hand, countries that score high in this regard follow a more pragmatic approach in order to thrive in modern education as an appropriate way to be prepared for future challenges.

According to Figure 9, Iran's low score of 14 on long-term orientation shows the dominance of a normative culture. In such cultures people tend to achieve quick results by focusing on real-time needs. Furthermore, truth is a great point of concern for members of these societies. Those countries that score low on long term orientation cannot ignore the traditions. They show an inconsiderable propensity to plan for the future. In contrast to Iran's low score of 14, Germany's high score of 83 indicates the dominance of a pragmatic orientation in the society. People consider the truth on the basis of different situations. Moreover, they are less concerned with the traditions and have a great enthusiasm in investing time and effort to achieve better results. Hung and Chou (2014) report that uncertainty avoidance, individualism, and long-term orientation significantly affect perceived usefulness and ease of use in mobile commerce acceptance in Taiwan and Malaysia. In short-term oriented cultures, people always value the norms regardless of circumstances. In an opposite view, in long-term-oriented cultures, norms are occasionally adopted only as a means of adapting to circumstances.

Zhang and Maruping (2008) state that people with long-term orientation seek information about adopting new technologies for their present needs. Moreover, they intend to determine the potentiality of the technology for their future needs. Phonthanukitithaworn et al. (2015) assert that mobile payment is likely to be viewed with caution in societies espousing long-term orientation. Therefore, people in such societies consider mobile payment more likely to be an unattractive and an unnecessary option.

Indulgence

It is always a place of concern to investigate the degree of sociability among the people. Consequently, indulgence is presented to measure the extent that a person can control desires and impulses in a society. Indeed, human beings need to become involved in socialization to strengthen the maturity and morality of their characteristics. Cultures that firmly control desires are characterized as restrained, and a culture with a weak control on desires is described as an indulgent culture. Iran and Germany interestingly acquire both a low score of 40 on this cultural dimension. Therefore, it shows that both countries seem to be restrained in nature. People who espouse restrained cultural values tend to be pessimistic about controlling their ambitions, in contrast to the indulgent societies. Moreover, in such societies, people are heavily restrained by social norms and think that indulging their desires is inappropriate.

2.5 Technology Acceptance Model (TAM)

As a result of dynamic development of technologies, it is worthwhile to investigate how consumers react to changes when accepting new technologies. The acceptance of new technologies is created on the basis of various factors such as the availability of technology, convenience as well as the real needs, wants and security of consumers (Lai, 2017). The opportunity of establishing new technologies is so important that a remarkable number of scholars have already addressed substantial criteria of a new technology adoption (Dapp et al., 2012; Lai, 2016; Lai and Zainal, 2015).

There are various theories used in both practical and academic settings to predict the use of a new technology. It is significant to consider the successful diffusion of an information and communication technology. The field of theories and models to investigate the user acceptance are broad. Some of the most useful technology acceptance and adoption models are presented in Table 2:

Table 2: Technology Acceptance Theories

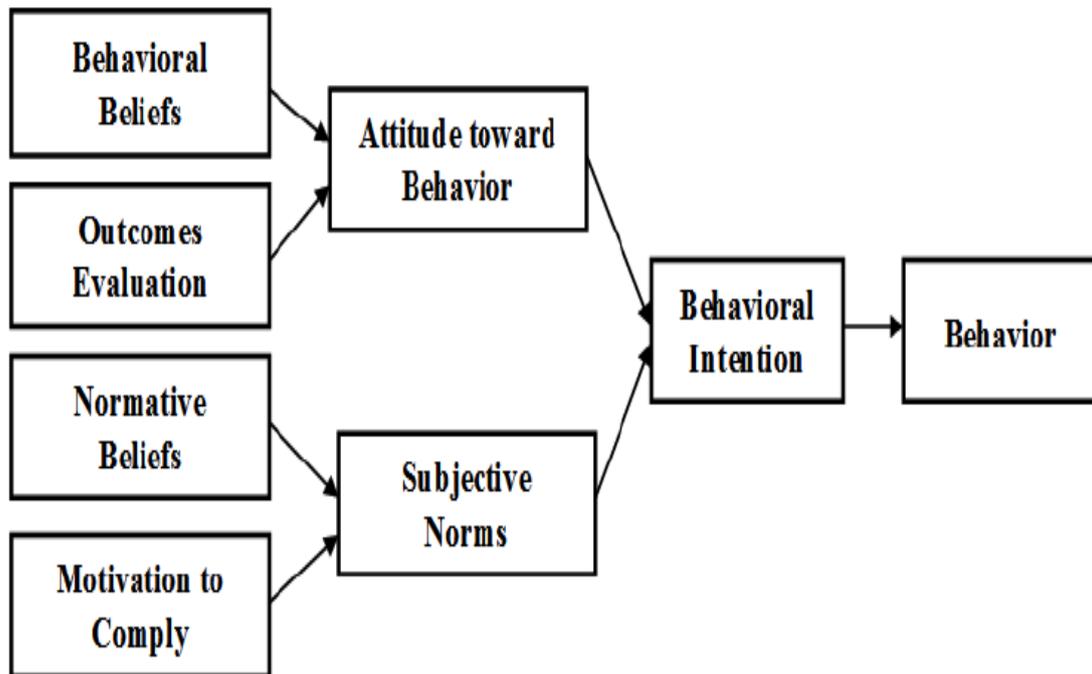
Theory	Description
Diffusion of Innovation Theory (DOI)	Diffusion of Innovation Theory examines the effectiveness of time, communication channels, innovation, and social systems on spreading new ideas in a diversity of innovations. In this model, an appropriate integration of adopter characteristics, characteristics of an innovation, and innovation decision process is provided (Rogers, 2003).
Theory of Reasoned Action (TRA)	Theory of Reasoned Action (TRA) is considered as a foundation to investigate individuals' IT usage behavior (Fishbein and Ajzen, 1975). In this model, human behavior including volitional, systematic, and rational, are explained and predicted through three major cognitive components comprising attitude, social norms, and intention.
Theory of Planned Behavior (TPB)	As an extension of the Theory of Reasoned Action, Theory of Planned Behavior (TPB) introduces perceived behavioral control to determine the availability and significance of opportunities and skills (Ajzen, 1991). TPB assumes that individual's behavior is affected by behavioral intention.
Technology Acceptance Model (TAM)	Davis (1989) introduced the Technology Acceptance Model (TAM) to explain users' motivation in adopting new technologies. For this purpose, Davis integrated perceived usefulness, perceive ease of use, attitude, and other external variables.
Igbaria's Model (IM)	Igbaria's model suggests that both extrinsic and intrinsic motivators can have an influence on the acceptance or rejection of a new technology (Igbaria et al., 1994). In this model perceived fun and perceived usefulness are represented as intrinsic and extrinsic motivators, respectively. Both factors are expected to influence behavior and attitude.
Uses and Gratification Theory (U&G)	Katz et al. (1974) introduced the Uses and Gratification Theory in order to ascertain why people become involved in certain communication media rather than others. The model focuses mainly on social and psychological aspects of consumers. Moreover, motivations, behavioral usage, and gratifications/satisfaction form the main constructs of the model.
Unified Theory of Acceptance and Use of Technology (UTAUT)	After comparing different theories in terms of sociology, psychology, and communications, UTAUT was introduced to examine the acceptance of information systems (Venkatesh et al., 2003). Four significant constructs, namely, effort expectancy, performance expectancy, social influence, and facilitating conditions along with four significant moderators, namely, gender, experience, age, and voluntariness of use shape the model.

The present study is based on the Technology Acceptance Model. The Technology Acceptance Model (TAM) was first introduced by Davis in 1986. It was designed as an adaptation of the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB). Indeed, both theories represent the origins of TAM. As explained in this section, Fishbein and Ajzen (1975) introduced the Theory of Reasoned Action to specify the factors determining consumers' behavioral intention based on their attitudes. The Theory of Reasoned Action has been applied in many research projects in order to predict behavioral intention. Sheppard et al. (1988) note that the model is suitable to identify strategies for changing behavior. The Theory of Reasoned Action implies that performing a behavior can lead to a particular outcome.

Fishbein and Ajzen (1975) divide belief, as part of the behavioral intention, into two distinct components; behavioral and normative. The behavioral beliefs are postulated to be important in shaping attitude towards a behavior. Whereas, normative beliefs affect subjective norms towards a behavior.

The Theory of Reasoned Action is shown in Figure 10. Fishbein and Ajzen (1975) define "attitude" as an overall evaluation regarding a subject. They created a rational linkage among the terms "belief," subject, and different attributes. A positive attitude will contribute to the acceptance of new technologies by increasing the intention to use. It is also expected that attitude will facilitate engagement with new technologies. Fishbein and Ajzen define subjective norm as the influence to perform a specific behavior that a person perceives from people who are important to him or her. External variables, considered to extend the Theory of Reasoned Action, can only affect the intention through attitude or subjective norms. The relevant significance of attitudinal and normative components of behavioral intention might vary according to particular behaviors and situations (Fishbein and Ajzen, 1975). Sheppard et al. (1988) point out two problems in applying the Theory of Reasoned Action. Firstly, it is problematic to predict a behavior from intention. A variety of other factors might affect the performance of a behavior. Secondly, a specific provision in the model characterizes neither the probability of failing to perform a behavior nor the consequences of such failure in distinguishing a person's intention. The Theory of Reasoned Action is shown as follows in Figure 10.

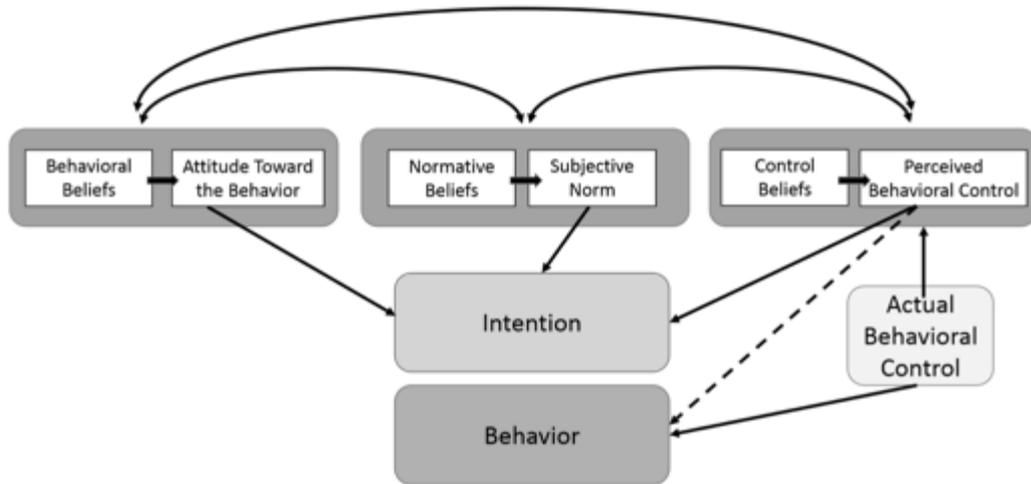
Figure 10: Theory of Reasoned Action



Source: Based on Fishbein and Ajzen (1975)

To achieve a balance between the aspects of behavior and attitude in the conceptual model, Ajzen (1985) added a new element to the original theory. The new element highlights the concept of perceived behavioral control. Consequently, adding the new element introduced a new theory known as the Theory of Planned Behavior. TPB is an extension of the TRA, used to address the inadequacies of it. In particular, Fishbein and Ajzen (1975) identified the inability of the TRA to deal with those behaviors with incomplete volitional control. According to TPB, a person's intent to perform a behavior characterizes the person's performance of a particular behavior. Furthermore, the intent itself is determined by attitude, subjective norms, and perception about the target behavior. Ajzen points out that attitude, either positive or negative, originates from normative beliefs and motivation to comply. Moreover, perceived behavioral control is assessed through the individual's possession of the resources needed to engage in a specific behavior. TPB also visualizes a direct link between perceived behavioral control and behavioral achievement. It shows that those with more confidence in their capabilities are more likely to succeed regarding a behavioral intention. The main purpose of the theory is to predict the effect of those behaviors, which are not under an individual's volitional control (Ajzen, 1985). Figure 11 displays the configuration of the Theory of Planned Behavior.

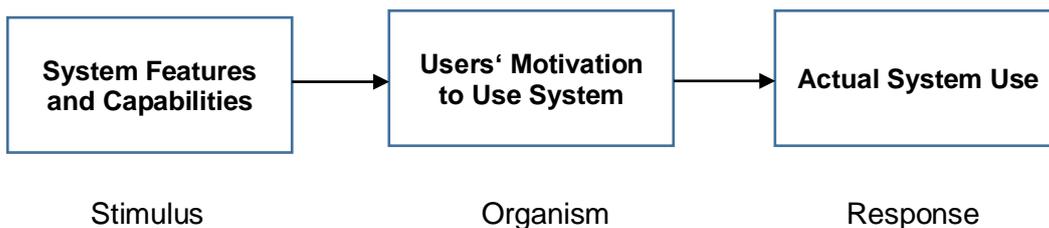
Figure 11: Theory of Planned Behavior



Source: Based on Ajzen (1985)

Davis (1989) first suggested that actual usage of a system can be explained by user motivation. Moreover, actual usage of a system is, in turn, affected by an external stimulus. Most importantly, an external stimulus must consist of an actual system's features and capabilities (Figure 12). Davis further refined his conceptual model by proposing the TAM. He suggested that users' motivation can be predicted by three factors in the model: perceived ease of use, perceived usefulness, and attitude.

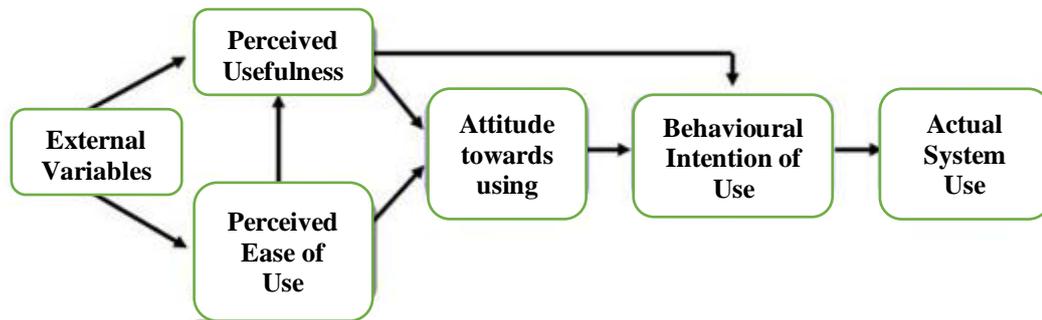
Figure 12: System Usage



Source: Adopted from Davis (1989)

The Technology Acceptance Model (TAM), displayed in Figure 13, is an applicable model for investigating users' acceptance of information systems and technologies. In 1989, Davis employed TAM in order to conceptualize computer usage behavior among different users.

Figure 13: Technology Acceptance Model (TAM)



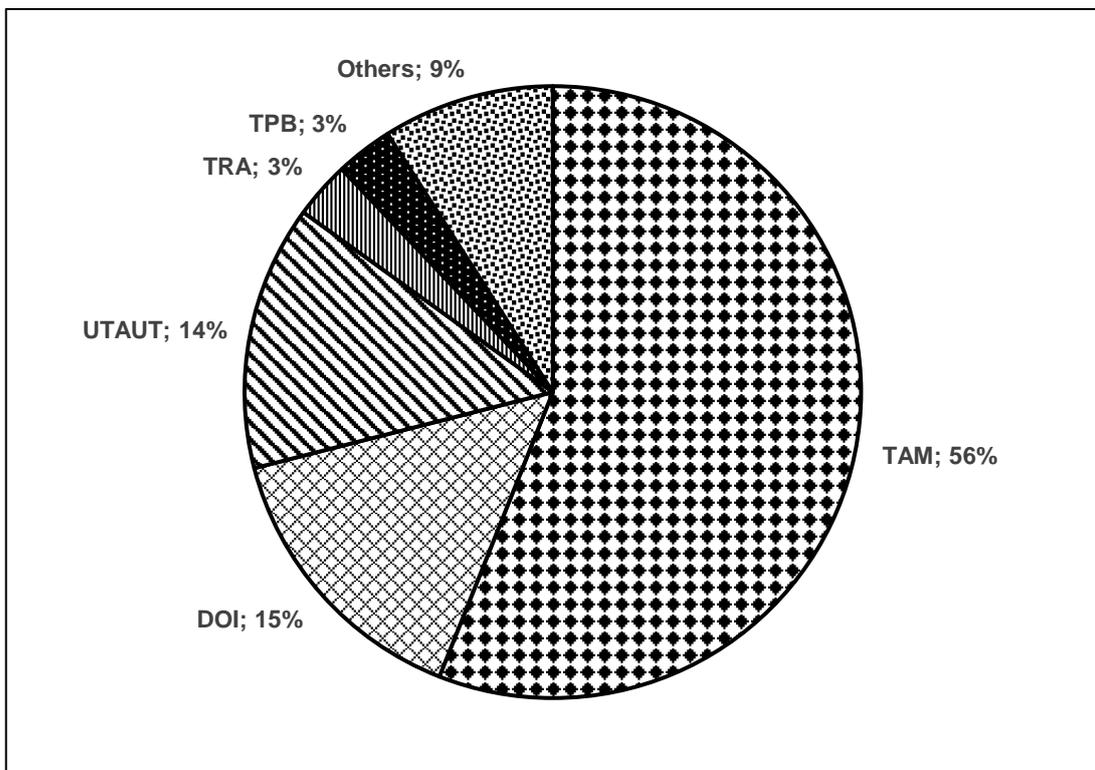
Source: Based on Davis (1989)

TAM presumes an intervening role of two variables, namely perceived ease of use and perceived usefulness in a relationship between external variables and actual system use. TAM has a leading role in predicting and explaining users' behavior towards a technology. Davis (1989) shows users' acceptance of a specific technology as a result of perceived ease of use (PEOU) and perceived usefulness (PU). Perceived usefulness (PU) is described as "the extent a person thinks that utilizing a particular system or technology will considerably enhance his or her job performance and result in better outcomes." Perceived ease of use (PEOU) refers to "the degree of a system or a technology to create ease and effortlessness" (Davis, 1989). Davis points out the intention to use in the model as "a subjective probability that a person might perform a particular behavior." He hypothesizes attitude as the core determinant of his conceptual model to characterize whether a consumer will use or reject a system. The attitude is influenced by two major beliefs; perceived ease of use and perceived usefulness. Moreover, Davis shows a direct influence of perceived ease of use on perceived usefulness. Both perceived ease of use and perceived usefulness are deemed to be directly affected by other external motivational factors. Perceived ease of use enhances the users' intention to conduct mobile transactions more regularly (Schierz et al., 2010). Similarly, perceived usefulness is a factor that facilitates the acceptance of mobile payment adoption (Kim et al., 2010).

In a study examining the criteria of the Technology Acceptance Model in mobile payment systems, Phonthanukitithaworn et al. (2015) deduce that a majority of the studies regarding mobile payment have utilized one theory or a combination of different theories in order to explain theoretical frameworks. Surprisingly enough, Figure 14 shows that the Technology Acceptance Model is the most frequently used theory in studies. The Diffusion of Innovations Theory and Unified Theory of Acceptance and Use of Technology are ranked in second and third place. According to Figure 14, the Theory

of Reasoned Action as well as Theory of Planned Behavior have been rarely employed by scholars. Finally, the least used theories labeled as “Others” in this figure, include Attribution Theory, Cognitive Style Theory, Hofstede's Cultural Dimensions, Technology Readiness, Valance Theory, and Value-Based Acceptance Model. Chong et al. (2012) also state that TAM and Diffusion of Innovation Theory have to be considered as the two main innovation adoption theories that are frequently applied by scholars in conjunction with information technology adoption.

Figure 14: Most Frequently Applied Theories in Mobile Payment System Studies



Source: Adopted from Phonthanakitithaworn et al. (2015)

TAM is a widespread model in technology acceptance and use; therefore, it will be employed in this research to explain the possible motivators or inhibitors of using mobile payment systems. Wei et al. (2009) also emphasize the use of TAM in mobile payments and mobile commerce. Liébana-Cabanillas et al. (2017) mention that TAM has already been employed by numerous scholars in a wide range of fields such as online services (Liao et al., 2007), mobile payments (Ervasti and Helaakoski, 2010), mobile ticketing (Mallat et al., 2009), and healthcare information systems (Pai and Huang, 2011).

Davis (1989) believes that despite some revisions, TAM is still considered as the most robust, influential, and rigorous model in connection with consumers' intentional behavior regarding acceptance of a new technology. For the purpose of explaining theoretical frameworks, Liébana-Cabanillas et al. (2017) provide a list of various mobile payment studies that have adopted TAM as a preferred theory in relation to the study objectives (Schierz et al., 2010; Chandra et al., 2010; Kim et al., 2010; Liébana-Cabanillas et al., 2014; Ramos-de-Luna et al., 2015; Liébana-Cabanillas et al., 2015).

Phonthanakitithaworn et al. (2015) indicate that TAM is an appropriate model to predict users' intention to adopt new technologies. Pavlou (2003) relates the advantage and appropriateness of TAM in investigating technology acceptance to its conciseness and empirical solidity as well as the combination of perceived ease of use and perceived usefulness. However, TAM does not involve all relevant factors that might impact consumers' adoption of different technologies (Cobanoglu et al., 2015). Legris et al. (2003) emphasize the fundamental role of external variables to clarify TAM's primary purpose of predicting acceptance of a technology. Davis (1989) also sheds light on the effectiveness and significance of adding different external variables to improve the model's predicting power considerably. Mathieson (1991) believes that it is insufficient to consider only perceived usefulness and perceived ease of use when predicting consumers' intention to adopt a particular system or technology. Schierz et al. (2010) extended TAM by several other relevant factors to investigate the acceptance of mobile payment in Germany.

The Technology Acceptance Model has been also criticized by some scholars because of its non-consideration of consumers' characteristics (McMaster and Wastell, 2005). In this regard, considering cultural characteristics related to a new technology adoption becomes crucial. Therefore, Hofstede's cultural dimensions can support TAM to predict the acceptance of mobile payment systems. Hence, different behavioral intentions to adopt a new payment method can be explained by different cultural characteristics.

2.6 Development of the Model

Theoretical frameworks help provide the structure for describing a study philosophically, methodologically, epistemologically, and analytically. A theoretical framework is a primary research foundation that assists researchers in situating and contextualizing different theories into a study. Indeed, a theoretical framework sets a guideline to choose an appropriate research design and a data analysis plan.

It is always significant to develop an appropriate model assisting scientists to reinforce the reality. Moreover, model development represents an aid in describing, predicting, and testing complex systems or problems. Model development usually provides a distinctive framework for conducting research. Indeed, a model provides an appropriate abstraction and a mental framework by simplifying the representation of real-world phenomena. To ensure the model's robustness and transparency, TAM plays an essential role in this study. To create connections between research and society, the factor experience is introduced in order to mediate the interrelationships of action and reaction in terms of perceived risk in remote mobile payment. Therefore, we have to look more closely at users' experience as a determinant of mobile payment adoption.

Based on the review of literature on various conceptual models regarding mobile payment, there is a gap in the information regarding separately addressing the influence of experience with a payment system or a retailer on the acceptance of mobile payment. The sources present in the literature offer a general consideration of experience as a risk-reducing factor in the context of mobile payment (Gao and Waechter, 2017; Heinenon, 2004). Indeed, a need exists for an approach to dissect the concept of experience in terms of different payment systems and retailers as the major players in mobile-commerce. This will lead to the development of a research model considering factors related to service, social aspects and technology as well. The identified need has been also mentioned while defining the research objectives in section 1.2.

The research model of the current study comprises nine factors, which are measured with multiple items, as will be broadly explained in section 3.4. In order to ensure the validity of the content, items were adopted from extant literature. As the study is carried out in Iran and Germany, all items were translated from English into the Persian and German languages. Three types of variables, including dependent, independent, and mediating variables, are employed in the current research model to validate the study's designed hypotheses. Intention to use is considered as the main dependent variable. Experience with a payment system, experience with a retailer, attitude, subjective norms, perceived ease of use, and ubiquity form the independent variables of the research model. Perceived usefulness and perceived risk also play the role of mediating variables in the model. It is worth noting that both direct and indirect effects on attitude are addressed are when considering perceived ease of use and ubiquity. Similarly, the same procedure is applied with regard to examining the effect of experience with a payment system and experience with a retailer on intention to use mobile payment.

It is necessary to mention that the research model has been developed in line with the research problems and research objectives explained in section 1.2. Brand knowledge of a payment system, brand knowledge of a retailer, previous usage of a payment system, and previous usage of a retailer help in this study to better operationalize experience with a payment system and experience with a retailer. Subjective norms also help in cross-cultural studies to better explain differences in behavioral intention. The reason for choosing ubiquity is also to segregate mobile payment from other means of electronic payment.

2.6.1 Technology Acceptance Model & Perceived Risk

In order to develop a valid and credible conceptual model and achieve accurate results, it is essential to combine an appropriate theory and variables. As broadly discussed in section 2.5, the Technology Acceptance Model (TAM) is employed in this study to form the theoretical framework. One of the study's main contributions is to include additional relevant factors to TAM and extend it by including perceived risk.

Since the focus of this study is on mobile payment systems, the integration of TAM and perceived risk can comprehensively examine the risk perception in conducting mobile payment. The main purpose of the study is also to evaluate the relationship between perceived risk and intention to use mobile payment systems. Perceived risk was represented by numerous scholars as a fundamental factor which supports TAM in investigating the adoption of mobile banking (Chung and Kwon, 2009; Luo et al., 2010). However, it is vital for the relatively new variables, such as perceived risk and integrated TAM, to be operationally consistent with previously described variables, such as perceived usefulness and perceived ease of use. Fishbein and Ajzen (1975) assert that the new variables aiming to extend a model must be compatible with the model's existing variables.

Perceived risk deals with a task-specific decision which is bounded by mobile-payment systems in this study. Similarly, perceived usefulness and perceived ease of use deal with a technology-acceptance decision in a given system. It is important to mention that perceived risk, perceived usefulness, and perceived ease of use take place at a specific single point in time. Although objective reality might play a role in the context of mobile payment, the role of perceived risk in a subjective interpretation of risk is inevitable. Similarly, perceived usefulness and perceived ease of use influence users' subjective assessment of usefulness and ease of use of a specific technology. Finally, without specifying detailed information about a specific system, perceived risk, perceived use-

fulness, and perceived ease of use measure general beliefs and are at the same level of abstraction.

Employing perceived risk and other trust-oriented factors seems a reasonable extension of TAM in a mobile transaction context. Moreover, to better understand and predict consumer's behavioral intention to adopt mobile payment, plenty of research has suggested an integration of TAM with other constructs such as perceived risk, ubiquity, personal innovativeness, perceived security, perceived cost of use, and compatibility (Hanafizadeh et al., 2014; Hsu et al., 2011). According to TAM, a consumer's adoption behavior is characterized by utilizing a particular system or technology. Here the underlying role of brand knowledge, previous usage, and experience are highlighted more intensely in order to securely deal with a system.

Customer experience refers to the formation of experience through the interaction between a customer and a service provider (Heinonen, 2004). Venkatesh et al. (2012) also define experience as a reflection of possible opportunities to make consumers willing to use the target technology. McKnight et al. (2002) also define previous experience as a measurement of the quality of a prior task.

Different attitudes regarding mobile payments can result in users having different behavioral intentions. The way in which a positive or a negative experience connected to a mobile payment transaction is perceived leads to different decision-making behaviors that determine whether to conduct a mobile transaction or not. In some cases, a backlash against mobile payment systems might be due to mobile service providers engaging in unethical behaviors. An example would be whether a mobile service provider is likely to disclose a customer's information without any advance notification. A similar scenario occurred in March 2021 with regard to Facebook, when half a billion accounts were breached. Such incidents can result in a financial loss or privacy violation for consumers. Both positive and negative experiences with a mobile payment transaction can be related to a payment system or a retailer. A negative experience in conducting a mobile payment will block consumers' tendency to continue using mobile payment systems.

Gao and Waechter (2017) state that the lack of previous mobile payment experience can cause a specific level of perceived risk and uncertainty when conducting a mobile payment for the first time. Inherent uncertainty, risk and a lack of previous experience can lead to user's sensing a loss of control in the mobile payment environment. Consumers appreciate the values created by experience through an interaction with mobile service providers and rely on those values in continuing mobile payment usage (Hei-

nonen, 2004). In mobile payment, interaction occurs between users and a mobile payment system or a retailer which strongly influences users' experience.

The more users perceive compatibility and gain experience in mobile payments, the more their uncertainty is reduced. Perceived risk as a specified form of uncertainty originates from a negative experience of using mobile payment system technology. McKnight et al. (1998) illustrate that a mobile service provider's reputation will build trust in mobile payment when previous experience with a mobile service provider does not exist.

For mobile payment providers, it is crucial to establish a platform enabling a mobile payment experience that exhibits data security and a good level of privacy protection. Consequently, applying suitable strategies and tactics leads to a positive confirmation for users regarding mobile payment and enhances post-usage willingness (Lu et al., 2017). Security-related issues and privacy concerns, on the one hand, and negative previous experience in adopting mobile payment, on the other, can lead to higher uncertainty and distrust in mobile payment.

Characteristics related to trust and risk perception towards a new technology can be predominantly triggered by cultural background, psychological characteristics, or experience. There have been many types of research concerning the influential role of consumer's previous experience in mobile payment or other relevant mobile technologies (Alqatan et al., 2012; Salo and Karjaluoto, 2007). Siau and Shen (2003) ascertain that a positive experience might effectively act as a strong signal for reducing the potential of perceived risk.

Brands are considered as useful and fundamental tools to set up a logical and persuasive relationship with customers. A brand is visualized as an emotional and psychological relationship between an organization and a consumer, which can occasionally inspire consumers' feelings, thoughts, and psychological aspects (Karam and Saydam, 2015). Brands can influence customers' decision-making process. Kotler and Keller (2009) infer that a brand contributes to the differentiation of a specific product or service from others. In particular, a brand can powerfully convey a sense of trustworthiness along with a bulk of required information to consumers (Sappington and Wernerfelt, 1985). Sappington and Wernerfelt (1985) demonstrate that a brand name can serve as a gateway to reduce the level of uncertainty regarding a decision.

In adopting a specific product, service, or technology, consumers go through a systematic process, including several phases, such as knowledge, persuasion, decision, and

confirmation. In order to measure brand knowledge, both brand awareness and brand image must be evaluated. One way to measure brand knowledge is through brand recognition, where consumers are requested to distinguish a wide range of different brands.

Brand awareness can be defined as consumers' capability and capacity to recognize one particular brand amongst others. Keller (1993) divides brand awareness into "brand recognition" and "brand recall." Brand awareness, as a significant component of brand knowledge, has a fundamental role in consumer decision-making. It enhances the likelihood of taking a brand more and more into consideration to strengthen the brand association when adopting a new technology such as mobile payment.

Arslan and Altuna (2010) define brand image as a positive or a negative feeling about a brand that immediately and unexpectedly comes into a consumer's mind. Lee et al. (2011) characterize brand image as a personal reflection of unique characteristics which differentiate a specific brand from others. Karam and Saydam (2015) emphasize the role of brand image in helping consumers to gain experience. The foundation of brand image formation can be related to the knowledge and perception of a brand.

Alimen and Cerit (2010) define brand knowledge on the basis of evaluated brand-related information, as a degree of individualistic inference maintained about a brand in a consumer's memory. The respective personal inference can be predominantly related to the consumer's notions, brand awareness, and brand image. Alimen and Cerit clarify that the brand knowledge of consumers may affect a wide range of information such as awareness, beliefs, attitudes, attributes, feelings, thoughts, and experiences. It is worth stating that brand knowledge is depicted in some studies as a leading indicator of risk or trust for consumers (Keller and Lehmann, 2005). Moreover, consumers in different countries might react in culturally different ways to brand knowledge. Keller (2003) states that a retailer brand gives a sense of confidence to users. It is worth noting that brand knowledge of a payment system and brand knowledge of a retailer can mutually interact to have a complementary effect on each other. In other words, when a consumer has no prior experience regarding a payment system or a retailer, brand knowledge can compensate for the lack of experience in this regard.

The relationship between brand knowledge and perceived risk in mobile payment studies is salient. It is important to know that brands have an impact on the knowledge systems carried by consumers in their minds. Moreover, brand knowledge can be also perceived as part of a psycho-social-cultural context (Fournier, 1998). In particular, consumers are more likely to become engaged in certain types of relationships with

brands in a similar way to the personal relationships that they form with other people (Esch et al., 2006).

Previous usage of a payment system or previous usage of a retailer include every aspect of services that either a retailer or a payment system offers during the process of paying with a mobile device. It forms an overall overview about a retailer or a payment system in a customer's mind. In other words, previous usage predominately highlights various service features, usability, and, most importantly, reliability when adopting a particular payment system or a retailer. Previous usage of a payment system or a retailer applies where a customer has previously employed a specific payment system or a retailer to perform a mobile payment transaction.

Consumers aim to evaluate features and specifications of their usage. Both retailers and payment systems must pay great attention to customers' previous usage with regard to their services. Previous usage of a payment system or retailer is directly associated with customer experience in this regard. Both concepts can lead to the acceptance or rejection of a payment system or a retailer. As the previous usage of a technology has a salient influence on formation of experience, a logical correlation between the previous usage of a payment system or a retailer with perceived risk can be assumed in the context of mobile payment.

Previous usage can affect perceived risk by closing the gap between customers' expectations and their real experience concerning a payment system or a retailer. This gap also helps consumers with respect to the level of risk perception in conducting a mobile payment transaction regularly or not. Since customers instinctively evaluate their previous usage, a possible judgment regarding the respective payment system or retailer can be expected.

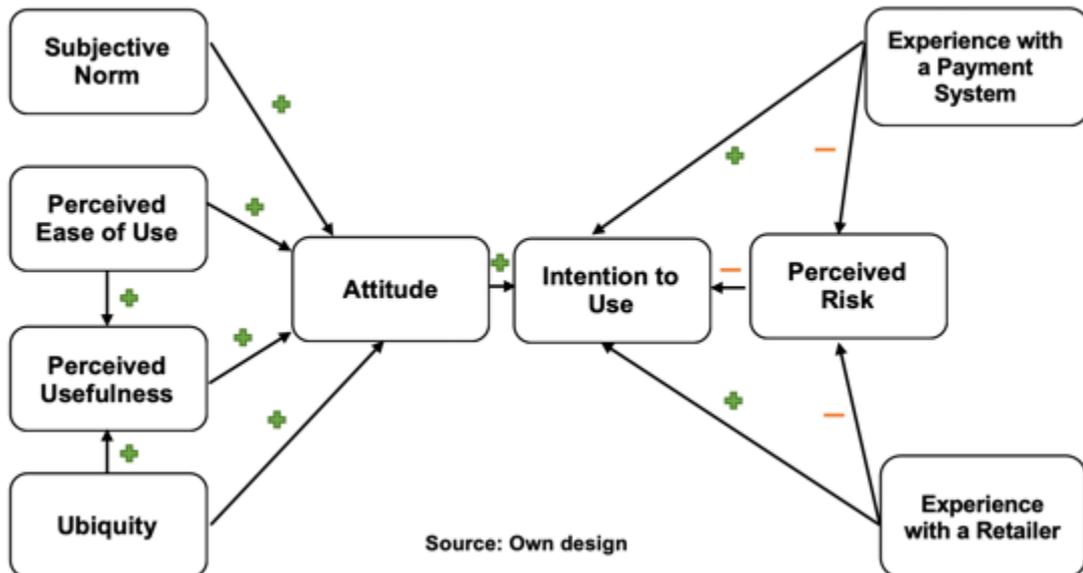
2.6.2 Constructs Employed in the Model

As presented in Figure 15, the current study's theoretical framework is based on the TAM, but includes several extensions and modifications by the author. On the basis of the research problem, the research significance, and research questions, an appropriate theoretical framework is designed to explain the purpose of the research, as mentioned in section 1.2.

After assessing the main concerns for the present study, nine key variables were identified as relevant in explaining the usage of mobile payment systems: *experience with a payment system*, *experience with a retailer*, *perceived risk*, *intention to use*, *attitude*,

ubiquity, subjective norm, perceived ease of use, and eventually perceived usefulness. A vast level of considerations has been undertaken in order to choose the appropriate constructs and variables. The model shows the relationships among the variables as a basis for the development of hypotheses.

Figure 15: Theoretical Framework



Intention to Use (Dependent Variable)

Ramadan and Aita (2018) define intention to use as the probability that a consumer is willing and ready to use a service or a technology. Therefore, an increase in intention to use will enhance the probability of adopting that specific service or technology. A considerable proportion of intention to use can be assigned to a consumer's interest in an issue. Indeed, intention to use signifies whether customers prefer to adopt a particular method over others or not (Ramadan and Aita, 2018). Ramadan and Aita (2018) also describe intention to use in the context of mobile payment as a combination of both consumers' interest and the possibility of conducting a mobile payment transaction. In other words, intention to use determines the likelihood of users adopting a mobile payment system as a preferred method of payment (Kim and Eunju, 2012). Kim and Eunju (2012) demonstrate an association between intention to use and attitude or preference concerning a particular brand or method. The more positive attitude in this regard leads to higher levels of intention to adopt new technologies.

Concerning the relationship between experience and intention to use in mobile payment, it is worth noting that users predominantly tend to rely on their memory in order to recall an experience with a payment system or a retailer, before conducting a transaction (Park and Stoel, 2005). This reliance can also be derived either from previous usage of a payment system/retailer or brand knowledge of that payment system/retailer. Here the fundamental issue is that experience, previous usage, and brand knowledge of a payment system or a retailer interconnect with each other like a chain to provoke the intention to use mobile payment or other new technologies. Therefore, it is expected that a greater reliance on experience with a payment system or a retailer results in a lower perception of risk and a high intention to use mobile payment systems.

Attitude

Attitude is defined as a positive or negative feeling of individuals regarding technology usage. Fishbein and Ajzen (1975) relate users' decisions about a new technology firmly to positive or negative convictions towards using that particular technology. Following a similar situation, Amoroso and Magnier-Watanabe (2012) state that generating and sustaining a positive attitude towards adopting mobile payment systems necessitate appropriate infrastructures to provide consumers' basic requirements.

Attitude as a fundamental determinant of technology or service adoption has been analyzed in numerous studies; it exhibits a mediating role in an indirect relationship between a wide range of different consumer-related variables and intention to use (Baily et al., 2017). Chiu et al. (2005) illustrate that various factors, such as perceived ease of use and perceived usefulness influence the intention of making an online purchase indirectly and through attitude.

A positive attitude can lower the barriers in adoption and, correspondingly, strengthens the intention to utilize mobile payment systems (Schierz et al., 2010). Therefore, it is expected that attitude will exert a direct effect on intention to use mobile payment systems (Yoon and Kim, 2013; Liébana-Cabanillas et al., 2017). Hence, we hypothesize that attitude has a significant positive influence on intention to use:

H1: The higher the attitude towards a mobile payment, the higher is the intention to use.

Perceived Ease of Use

As perceived ease of use directly opposes the complexity of a technology, it can be defined as the ease of starting a technology or a service for adopters in any adoption stage. Moreover, it is also considered as a key variable regarding the adoption of mobile payment technology, influencing both early and late adopters (Kim et al., 2010). Laukkanen and Lauronen (2005) explain the low adoption rate of various payment systems such as mobile banking due to the possible problems concerning the usability of the respective applications as a service. Hence, it is not user-friendly to start a new service accompanied by usage barriers (Ram and Sheth, 1989). Arvidsson (2014) illustrates that perceived ease of use of mobile payment systems is expected to lead to a positive attitude towards the adoption of mobile payment. Deb and David (2014) mention that perceived ease of use is positively and significantly associated with attitude towards mobile banking in India. Amoroso and Magnier-Wantabe (2012) describe perceived ease of use as a fundamental factor in mobile payment systems that facilitates users' mental or physical efforts. Perceived ease of use and, most importantly, its influential aspects such as self-efficiency, instrumentality, and utility, lead to its direct relationship with perceived usefulness (Muñoz-Leiva et al., 2012). Sharma et al. (2009) also assert a strong correlation between perceived usefulness and perceived ease of use. Hence, we hypothesize that perceived ease of use has a significant positive influence on attitude and perceived usefulness:

H2_a: The higher the perceived ease of use, the higher is the attitude towards a mobile payment.

H2_b: The higher the perceived ease of use, the higher is the perceived usefulness.

Perceived Usefulness

As mentioned earlier in section 2.5, Davis (1989) defines perceived usefulness as the degree to which a person believes that utilizing a particular system or technology will considerably enhance his or her job performance and result in better outcomes. In the context of the current study, perceived usefulness greatly improves consumers' attitude towards intention to adopt mobile payment systems.

Several studies in technology adoption have consistently emphasized the influence of perceived usefulness on attitude in online and mobile banking (Chong et al., 2010; Mohammadi, 2015). Teo et al. (2008) describe perceived usefulness as an antecedent of

attitude with the former having a considerable impact on the latter. Krishanan et al. (2016) also demonstrate a direct relationship between perceived usefulness and attitude. Indeed, a clear perception of the advantages of mobile payment tends to generate a positive attitude and intention towards adopting mobile payment by the consumers.

An association between perceived ease of use and perceived usefulness has been investigated in several studies. Revels et al. (2010) show that perceived ease of use is a critical predictor of perceived usefulness in a context of Australian mobile sector services. Furthermore, Amin et al. (2014) establish a direct positive relationship between perceived ease of use and perceived usefulness regarding mobile payment systems. Mohammadi (2015) infers the mediating effect of perceived usefulness in a relationship between ubiquity and users' attitude in a study about mobile banking loyalty in Iran. In order to differentiate the mobile payment from other methods of online payments, it is of a great importance to assess whether the ubiquitous feature of a mobile payment can be mediated by usefulness and results in a positive attitude towards this technology. Yap and Hii, (2009) also ascertain that the indirect impact of perceived ease of use on attitude through the mediating role of perceived usefulness is greater than the direct effect of perceived ease of use on attitude towards the use of mobile commerce in Malaysia. Hence, we hypothesize that perceived usefulness has a significant positive influence on attitude and mediates the relationship between ubiquity and attitude.

H3_a: The higher the perceived usefulness, the higher is the attitude towards a mobile payment.

H3_b: Perceived usefulness mediates the relationship between the ubiquity and the attitude towards a mobile payment.

Ubiquity

Yan and Yang (2015) define ubiquity as a fundamental factor enabling users to access mobile payment systems at any time and from anywhere with mobile terminals and networks. Ubiquity enables users to conduct mobile payments regardless of spatial and temporal constraints. Mobile payment is assumed to rise as the first unique and ubiquitous payment scenario, delivering considerable value and attention to both users and merchants. Abrahao et al. (2016) refer the mobile telecommunication services as a kind of portable and ubiquitous technology, which are always accessible for consumers. Shaw (2014) also mentions that ubiquity represents the main advantage of paying with a mobile device. Rezaei dolat Abadi et al. (2013) suggest that mobile service pro-

viders must highlight some features exclusively assigned to mobile payment such as cost-saving, ubiquity, flexibility, and mobility. Among a few studies exclusively focusing on remote mobile payment, Kumar and Rabara (2010) emphasize the significance of ubiquity, accessibility, personalization, and convenience as the unique characteristics of mobile payment. In addition, Zhou (2013) also conceptualizes ubiquity and flexibility as the main benefits of mobile payment services that facilitate a real-time payment method for both consumers and merchants.

Yan and Yang (2015) integrated ubiquity as an additional determinant into the Technology Acceptance Model (TAM) to examine mobile payment adoption from a trust perspective. Moreover, Yan and Yang believe that ubiquity differentiates between mobile payment and other online payment methods. Thus, they refer to ubiquity as the main advantage of mobile payment that enables users to conduct mobile transactions anytime from anywhere. Also, Yan and Yang believe that due to probable uncertainties, unique characteristics of mobile payments such as ubiquity seem to be vital when investigating users' adoption.

Slade et al. (2014) specify ubiquity as a considerable advantage of a mobile device to be used for payment. Shaw (2014) states that ubiquity as a significant advantage of mobile payment can facilitate mobile payment service adoption for users by providing convenience and value to them. In recent years, ubiquity as a feature of a mobile device has resulted in mobile technology becoming established in nearly every aspect of online marketing (Wong et al., 2012; Yang and Kim, 2012).

Yadav et al. (2016) differentiate between m-commerce and e-commerce because of the ubiquity, immediacy, and real-time support of data retrieval that m-commerce offers anytime and anywhere. Park et al. (2018) point to ubiquity, convenience, usefulness, mobility, reachability, and compatibility as the main determinants of mobile payment adoption. Hourahine and Howard (2004) reveal that over two-thirds of financial transactions through traditional channels failed due to the lack of a ubiquity feature. Hence, it is worthwhile to investigate the effect of ubiquity as an underlying feature of a mobile device on the perceived usefulness of adopting mobile payment systems. Kim et al. (2010) confirm that perceived usefulness can be explained by ubiquity as a significant predictor in mobile payment studies. Prior research also demonstrate that ubiquity in mobile payment can improve consumers' utility and enhance their general attitude (Watson et al., 2002). Hence, we hypothesize that ubiquity has a significant positive influence on attitude and perceived usefulness.

H4_a: The higher the ubiquity, the higher is the attitude towards a mobile payment.

H4_b: The higher the ubiquity, the higher is the perceived usefulness.

Subjective Norms

In the context of mobile payment, subjective norm refers to the degree of mobile payment desirability perceived by consumers in a social environment (Schierz et al., 2010). Venkatesh and Davis (2000) illustrate that in an examination of the impact of subjective norms, it is essential to differentiate between mandatory and voluntary usage of innovative systems.

Subjective norm is conceptualized as a fundamental determinant of behavioral intention which is considered as a part of many underlying research theories. As the main component of different research theories, such as the Theory of Reasoned Action, and the Theory of Planned Behavior, subjective norms play a fundamental role in predicting consumers' behavior. Therefore, subjective norm is assessed as one of the external motivational factors in this study to measure the effect of social influence on mobile payment adoption. Garcia et al. (2005) point to subjective norm as a salient factor that highlights the motivation of consumers to base their behavior on a reference group's desires.

Wu et al. (2011) illustrate that a person's intention to have a particular set of behaviors is simultaneously affected by attitude and subjective norms. They also identify a direct relationship between subjective norms, perceived usefulness, and intention to use a technology. In alignment with Venkatesh and Davis' (2000) findings, subjective norm is supposed to have no significant effect on attitude and intention to use a technology in a voluntary environment. In contrast, subjective norm is more likely to significantly to have an influence on behavioral intention to use a technology in a mandatory environment.

Yap and Hii (2009) demonstrate no significant influence of subjective norm on attitude towards mobile commerce services. On the other hand, Fink (2005) employed subjective norm in a study as a cultural factor that can be used to examine the adoption of a new technology in societies that exhibit high power distance. Lee and Green (1991) as well as Phonthanakitithaworn et al. (2015) analyzed the relationship between subjective norm and an espoused value of individualism/collectivism. As collectivism emphasizes solidarity, loyalty, and conflict avoidance, collectivist cultures are most likely to be affected by subjective norm. Phonthanakitithaworn et al. demonstrate that people in

collectivist societies are more likely to adopt new technologies, as their attitude is in line with social structures or groups of people. Hence, a parallel line between collectivist cultures and subjective norm is expected to occur. Ramos-de-Luna et al. (2015) also show a significant relationship between subjective norms and attitude within a context of in-store mobile payments. Finally, Bananuka et al. (2019) assert the mediating role of attitude between subjective norm and intention to the use of Islamic banking in Uganda. Hence, we hypothesize that subjective norm has a significant positive influence on attitude:

H5: The higher the subjective norm, the higher is the attitude towards a mobile payment.

Perceived Risk

Perceived risk in mobile payment is defined as the degree to which mobile service customers perceive themselves to be exposed to certain types of probable risks such as those connected with financial, social, psychological, physical, or time (Zhang et al., 2012). Chen (2013) defines perceived risk in an online-based context as the perception of potential risk in utilizing an open online infrastructure in exchange for private information. Bauer (1964) first introduced perceived risk in relation to consumer behavior to utilize this concept in predicting information seeking, brand loyalty, and pre-purchase deliberations. It is crucial to examine the mediating effect of perceived risk as a barrier to mobile payment adoption through underlying factors such as experience with a retailer and experience with a payment system. Perceived risk can be described as unexpected outcomes or uncertain consequences that might be incurred as a result of mobile payment usage. Many previous studies employed perceived risk as a predictor of either purchase or usage intention (Chu and Lu, 2007; Lee and Lin, 2005; Phau and Poon, 2000). Luo et al. (2010) identify perceived risk as the second most significant predictor of behavioral intention. Thus, it is very important to explore the effect of perceived risk on intention to use mobile payment systems, specifically from different cultural background perspectives.

Yang (2015) refers to the possible losses of using mobile payments which can be perceived as a result of uncertainty and undesirable consequences such as financial loss, privacy violation, inappropriate performance, psychological anxiety, and time wasting. Cozzarin and Dimitrov (2017) estimate that perceived risk has more of an influence on mobile users' decision-making than that of PC users. Wu and Wang (2005) represent a statistically significant relationship between perceived risk and intention to use mobile payment in Taiwan. Gewald et al. (2006) interestingly illustrate that the risk perception

of consumers in the context of mobile payment transactions might increase due to the nature of a mobile device. Luarn and Lin (2005) report that perceived security risks are more considerable in transferring money using a mobile device. As brand knowledge of a retailer or a payment system increases, the perceived risk of consumers regarding mobile payment will be subsequently reduced (Chen, 2013).

Slade et al. (2014) point to perceived risk as an underlying and crucial factor in the mobile payment environment, which can be affected by financial and security concerns. Alqatan et al. (2012) characterize additional uncertainty concerns and risks of mobile payment such as possible malfunctioning and interruption of mobile networks, technical problems with mobile devices and, most importantly, a weak connection between the associated parties involved in the payment process. Xin et al. (2013) believe that the probable risk perception of electronic payments can make consumers doubtful about the respective technology and its ability to deliver the expected services accurately. Koenig-Lewis et al. (2015) believe that providing an enjoyable experience in a mobile payment transaction can mitigate the level of perceived risk. Hence, we hypothesize that perceived risk has a significant negative influence on intention to use and mediates the relationships of experience with a payment system and experience with a retailer with intention to use:

H6_a: The higher the perceived risk, the lower is the intention to use.

H6_b: Perceived risk mediates the relationship between the experience with a payment system and the intention to use.

H6_c: Perceived risk mediates the relationship between the experience with a retailer and the intention to use.

Experience with a Payment System

Cobanoglu et al. (2015) examined the acceptance of mobile payment by consumers in the restaurant industry. They demonstrate that previous experience is positively associated with mobile payment acceptance. Nevertheless, the study found that the impact of previous experience on intention to use was not perceived as being as vital as other factors such as compatibility with lifestyle, perceived usefulness, subjective norm, and security. Many studies focused only on trust as the main element in examining the factors that influence the level of risk perception among consumers' in adopting a remote mobile payment system. Guillén et al. (2016) conclude that a user's positive experience with a mobile payment system in the past will have a decisive influence on future be-

haviors. It shows that a higher level of experience results in a higher level of acceptance.

Chandra et al. (2010) ascertain that the more experience users have with mobile internet, the greater will be their engagement with mobile payment systems. Consumers who have previous experience with a mobile payment system rely more on perceived reputation to continue using that mobile payment system. On the other hand, consumers without experience shape their initial trust predominantly on the basis of their uncertainty avoidance level. Hence, consumers with different cultural backgrounds who are not greatly experienced might react differently in this regard. Xin et al. (2013) state that users with no mobile payment experience may be reluctant to conduct a mobile payment transaction. According to Stanforth et al. (2000), experience with a specific payment method or channel affects the perceived risk associated with using that method or channel in the future. Stanforth et al. explain that the experience gained increases consumer confidence in this process. Evans (2014) also indicates that positive or negative experience has a positive or negative impact on an individual's perceived risk. Hence, we hypothesize that experience with a payment system has a significant negative influence and a significant positive influence on perceived risk and intention to use, respectively:

H7_a: The higher the experience with a mobile payment system, the lower is the perceived risk.

H7_b: The higher the experience with a mobile payment system, the higher is the intention to use.

Experience with a Retailer

Exploring the experience with a retailer as a salient factor has not yet received adequate attention. It helps to conceptualize a retailer's impact as one of the main foundations of a mobile payment procedure. Experience with online retailers is mainly derived from customers' perceptions and expectations regarding an e-retailer (Pappas et al., 2014). Klaus (2013) describes customers' online experience with a retailer as a mental perception regarding interaction with an online retailer's value proposition. Additionally, Klaus determines outcomes such as emotions, benefits, and intention derived from these mental perceptions.

The existing literature shows that certain types of risk experienced by consumers about a retailer during the shopping process can affect shopping behavior (Park and Jun,

2003). Dabrynin and Zhang (2019) ascertain that experience with websites can be firmly and negatively associated with perceived risk. Rose et al. (2011) report that repurchase intention is one of the significant consequences of enhanced user experience with online retailers. Luo et al. (2010) also infer that users' experience derived from an interaction between them and online companies, can positively influence the customer decision-making process. Bilgihan et al. (2016) characterize intention to repurchase as one of the salient outcomes of the online consumer experience with companies in mobile commerce. Hence, we hypothesize that experience with a retailer has a significant negative influence and a significant positive influence on perceived risk and intention to use, respectively:

H8_a: The higher the experience with a retailer, the lower is the perceived risk.

H8_b: The higher the experience with a retailer, the higher is the intention to use.

2.7 Hypothesis Development

After explaining the relationships among the main constructs of this study's research model in previous section, this section now goes on to develop the hypotheses. Therefore, to conclude this chapter, Table 3 presents the study's designed hypotheses based on the theoretical framework.

Table 3: Summary of Hypotheses

Variable	Hypothesis
Attitude	H1: The higher the attitude towards a mobile payment, the higher is the intention to use.
Perceived Ease of Use	H2 _a : The higher the perceived ease of use, the higher is the attitude towards a mobile payment. H2 _b : The higher the perceived ease of use, the higher is the perceived usefulness.
Perceived Usefulness	H3 _a : The higher the perceived usefulness, the higher is the attitude towards a mobile payment. H3 _b : Perceived usefulness mediates the relationship between the ubiquity and the attitude towards a mobile payment.
Ubiquity	H4 _a : The higher the ubiquity, the higher is the attitude towards a mobile payment. H4 _b : The higher the ubiquity, the higher is the perceived usefulness.
Subjective Norm	H5: The higher the subjective norm, the higher is the attitude towards a mobile payment.
Perceived Risk	H6 _a : The higher the perceived risk, the lower is the intention to use. H6 _b : Perceived risk mediates the relationship between the experience with a payment system and the intention to use. H6 _c : Perceived risk mediates the relationship between the experience with a retailer and the intention to use.
Experience with a Payment System	H7 _a : The higher the experience with a mobile payment system, the lower is the perceived risk. H7 _b : The higher the experience with a mobile payment system, the higher is the intention to use.
Experience with a Retailer	H8 _a : The higher the experience with a retailer, the lower is the perceived risk. H8 _b : The higher the experience with a retailer, the higher is the intention to use.

Source: Own design

CHAPTER 3: RESEARCH DESIGN

3.1 Preliminary Consideration

This chapter provides information on the research methodology used in this study. The chapter starts by introducing the research methodology. Then it presents appropriate research methods to properly design the research methodology. It is worth noting that a significant effort is required to distinguish between research methodology and research method, although many researchers prefer to use the two interchangeably (Goundar, 2012). Basically, this chapter presents the various steps adopted to explore the research problem and the logical interpretation behind them. It is vital to find appropriate research methods and research techniques for the study. Applying the appropriate research methods and techniques necessitates knowing what precisely these methods imply.

A combination of systematic analysis and research objectives results in finding solutions to scientific and social problems. A research project discovers hidden truths and expands knowledge about phenomena. Notably, a remarkable and necessary aspect of research is a possible contribution to the existing knowledge. A systematic process of collecting, analyzing, and interpreting information occurs in research in order to fulfill research objectives and answer research questions.

Research methodology offers a way to correctly and systematically solve research problems. It is also characterized as a way of studying and implementing research scientifically. The appropriateness of the methodologies plays a fundamental role in extracting significant results when analyzing research problems. Methodology is a general research strategy that outlines specific criteria embedded in a research project. Furthermore, the methodology must also be highlighted by identifying its methods. In order to correctly design research methodology, the concepts of methodology and methods must be well presented. Goundar (2012) states that research methodology helps researchers utilize fundamental methods by which a research proceeds. Hence, the formation of research methodology is based on employing different methods and techniques to accomplish the research.

Research methods are principally all the methods including procedures, algorithms, schemes, etc. used in a research project in order to fulfill research objectives and achieve valid results. Research methods are planned and scientific and encompass statistical approaches, experimental studies, theoretical procedures, etc. Research

methods specify samples, collect data, and find solutions for research problems. In addition, the research method specifies suitable methods that need to be performed in research operations. Without the appropriate use of research methods, it is unlikely that any information of quality will be gathered and that any future strategies will be recommended.

Research design is a strategic action that plays a fundamental role in connecting research questions and the implementation of a research project. Indeed, research design provides a guidance for the arrangement of conditions required for the collection and analysis of data. Most importantly, a well-designed method of observation distinguishes research from other types of observation. Designing research ensures the fulfillment of particular purposes. Moreover, it determines which resources are available to execute a study. Research design is presented in this chapter to provide the mainstream of the current study in a manner suitable to properly address the research questions.

3.2 Research Method

Structural Equation Modeling (SEM) is considered as a general model of many statistical models, such as multiple regression, factor analysis, analysis of variance, analysis of covariance, path analysis, etc. In fact, SEM includes a set of multivariate statistical approaches to empirical data. As an appropriate approach to data analysis, SEM combines regression equations and factor analysis. Regression models, as an underlying component of SEM, assess hypotheses with respect to the strength and direction of relationships among variables. Indeed, SEM distinguishes regression relations not only among latent variables, but also between observed and latent variables. SEM is a comprehensive and flexible approach for analyzing a hypothetical model. It is comprehensive because it is a multivariate analysis method which is mainly derived from multiple regression analysis methods. It is flexible because of the ability to identify and estimate both direct and indirect effects between variables. In sum, SEM offers many remarkable applications to research in social work.

In line with the development of quantitative research and its impact on social science and business research, SEM has emerged to revolutionize business analysis as a robust multivariate analysis technique, combining both features of principal components and regression analysis (Hair et al., 2012a). A primary goal of SEM is to analyze research hypotheses regarding observed means, covariances, and variances of a set of selected variables (Bowen and Guo, 2012). Bowen and Guo (2012) state that SEM is

the most appropriate approach for identifying causal relationships when compared with any other regression or factor analytic procedures. The hypothesized relationships in the model are reflected by arrows in SEM illustrations, based on theory and previous research.

SEM is a valuable tool for simultaneous regression equations. It can be used in mediation models so that one variable can serve as both an independent and dependent variable. It is worth noting that SEM provides estimates of both direct and indirect relationships among variables. It is mostly applied when a researcher wants to determine not only the suitability of predictors in explaining criterion variables, but also the most significant predictors.

Partial Least Square Structural Equation Modeling (PLS-SEM) has continuously gained importance amongst various analytical methods. Nowadays, there is an increasing reliance and acceptance of new statistical analysis tools amongst scholars. PLS-SEM's distinctive methodological features have turned it into a salient alternative to the previously popular CB-SEM (Covariance-Based Structural Equation Modeling) approach. In particular, PLS-SEM has several advantages over CB-SEM when encountering various phenomena in social science. Among these advantages, it is noted that when sample sizes are small or when a complex research model with a large number of indicators and several model relationships are depicted, the usage of PLS-SEM is recommended.

The interest that PLS-SEM arouses in business research and specifically in marketing research is much more prominent than the sustained success it has enjoyed in other important disciplines such as chemistry, medicine, or biology (Vinzi et al., 2010). As a variance-based approach to SEM, PLS-SEM is greatly appreciated for its ability to predict the significance of relationships amongst latent variables and indicators and to estimate both composites and factors (Henseler et al., 2016). PLS-SEM can be applied to many fields of marketing research as a suitable method to deal with latent variables, either in formative measurements or reflective measurements. It is also an appropriate method for the analysis of cause-effect relationships. Hair et al. (2012a), Rigdon (2012), and Reinartz et al. (2009) illustrate that significant issues such as operationalization as well as measurement model specifications can act as a promotive criterion for a more frequent usage of PLS-SEM.

Using PLS-SEM gives a higher degree of statistical power compared to CB-SEM (Reinartz et al., 2009). This characteristic even corresponds with the estimation of common factor model data as assumed by CB-SEM (Sarstedt et al., 2016). Indeed, statistical power refers to the ability of PLS-SEM to significantly identify relationships

when they are feasible in the population (Sarstedt et al., 2016). The higher statistical power of PLS-SEM is more useful for exploratory research. However, it can be applied in both exploratory and confirmatory research. PLS-SEM facilitates the examination of less developed or still developing theories, as a prominent statistical implication. In addition, PLS-SEM enables a researcher to test for predictive relevance of different latent variables. It helps not only to introduce new latent variables, indicators, or inner relations, but also to omit such elements.

Recent publications on PLS-SEM using hierarchical modeling (Becker et al., 2012; Akter et al., 2011), heterotrait-monotrait ratio of correlations (HTMT) for discriminant validity (Henseler et al., 2015), interaction effects (Fassott et al., 2016), consistent PLS (PLSc) to examine factor models (Dijkstra and Henseler, 2015b), overall model fit using bootstrapping (Dijkstra and Henseler, 2015a), and finally model specification (Sarstedt et al., 2016) shed light on the importance of the PLS-SEM technique by giving proof of its applicability.

One of the main characteristics of PLS-SEM compared to covariance-based methods of analysis is that it can estimate complex research models, comprising a large number of latent variables and indicators even with a small sample size (Chin et al., 2008). Robust relationship prediction in a context of small sample size along with directly estimating associations amongst latent variables and indicators in complex models are distinctive methodological features of PLS-SEM. These features enable it to surpass covariance-based SEM in some ways as a robust and reliable alternative for complex modeling (Henseler et al., 2009; Hair et al., 2012a).

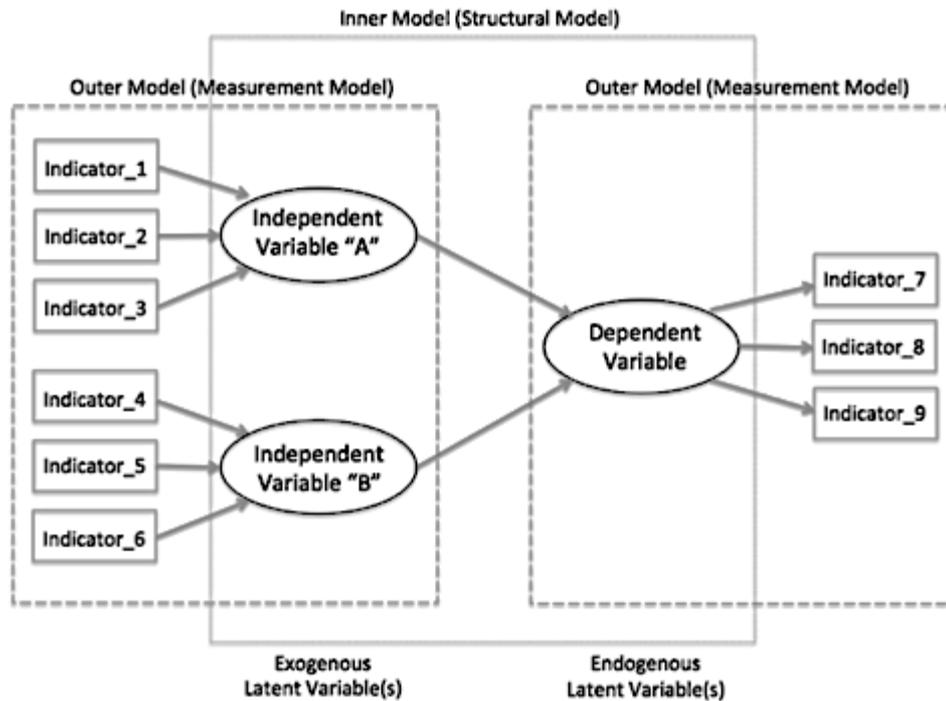
As in PLS-SEM no assumption about data distribution is required, therefore it is useful for structural equation modeling in applied research projects, with limited participant and non-normal data distribution. The dominant reason for applying PLS-SEM is no longer simply non-normality and small sample size. Maximizing the explained variance endogenous variables, large numbers of latent variables, number of interaction terms, relationships identification, second-order constructs, multiple criterion variables, multiple interdependent relationships, mediation and moderation effects are the most important statistical implications of PLS-SEM. Furthermore, it is superior to CB-SEM in producing a single determinant score for the SEM composite of each observation. In CB-SEM, R^2 is defined as a proportion of common variance explained; whereas, in PLS-SEM, R^2 refers to a proportion of total variance explained. Thus, PLS-SEM is expected to be the preferred method, when the objective is to predict and explain a phenomenon.

As an initial stage to start the data analysis section in PLS-SEM, it is vital to prepare a diagram which illustrates research hypotheses and displays relationships among constructs that have to be examined. Within the context of PLS-SEM, this diagram typically refers to a path model. Hair et al. (2014) define a path model as a specific diagram that connects variables/constructs with the help of an intended theory or theories to indicate the developed hypotheses visually. SEM models are predominantly presented in the form of path models. The path models shed light on a summary of theoretically proposed relationships among latent variables and indicators. Path models encompass key figures and arrows and represent causal effects in this study.

When a path model is developed, the sequence of the model is from left to right. As a consequence, all independent variables are positioned on the left side, whereas any variable on the right side is assumed to be dependent. Therefore, variables on the left side aim to predict variables on the right side. Some variables can simultaneously act as an independent variable, mediating variable, and dependent variable or a combination of these options. If latent variables serve only as independent variables, they are called exogenous latent variables. When latent variables serve as dependent variables, or as both dependent and independent variables, they are called endogenous variables (Hair et al., 2014). In other words, any single latent variable that has only single-headed arrows going out from it, is exogenous. In contrast, in the case of an endogenous variable, it is possible to have either single-headed arrows going into and out of it or only going into it.

Two underlying elements create path models: structural models and measurement models. Structural model or inner-model in PLS-SEM characterizes the relationship between the latent variables. On the other hand, measurement models shed light on the relationships between the latent variables and their measures/indicators (Hair et al., 2014). The structural theory indicates how latent variables are related to each other in PLS-SEM; in other words, it represents an overview of constructs and path relationships in the structural model. The structural model's design necessitates an appropriate sequence of constructs based on the researcher's knowledge and experience. Figure 16 illustrates a path model with its explained specifications.

Figure 16: Specifications of a Path Model

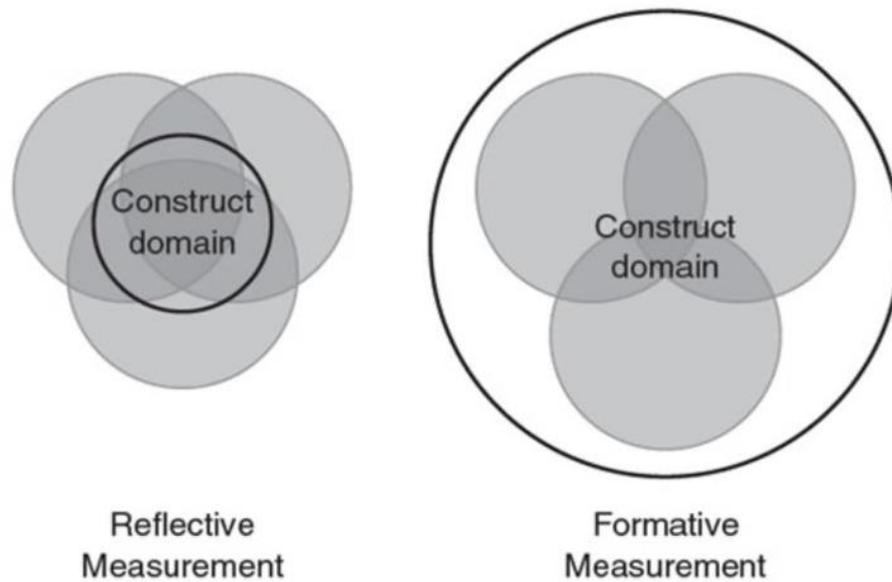


Source: Based on Hair et al. (2014)

When constructs are developed, it is necessary to consider two fundamental measurement specifications, namely reflective measurement and formative measurement. A reflective measurement model has a long tradition in social science, which is based on classical test theory. According to classical test theory, measures shed light on the effect of an underlying construct. As a result, causality is depicted from the construct to its measures. A reflective model implies that the same construct causes all reflective indicators. In this regard, all the indicators associated with a specific construct must show a high correlation level. As all individual items assigned to a construct must be interchangeable, any change in the evaluation of a latent variable simultaneously leads to a change in its indicators.

In contrast, formative measurement models are assumed to create a relationship from measures to constructs. In other words, causal indicators which form a construct, are considered as linear combinations. The main characteristic of formative indicators is that they are, in contrast to reflective indicators, not interchangeable. Therefore, each formative indicator highlights a distinctive and specific aspect of a construct's domain. In this study, the structural model is designed on the basis of a reflective measurement model, as the relationship is directed from the constructs to their measures. Figure 17 represents an overview of the difference between reflective and formative measures.

Figure 17: Difference between Reflective and Formative Measures



Source: Based on Hair et al. (2014)

3.3 Data Collection

Conducting a research needs considerable effort in following the correct methods. Appropriate rules lead to accurate results being obtained. A researcher must consider respondents' dignity as the top priority by ensuring the confidentiality of the information gathered. Hence, the confidentiality and anonymity of respondents are the most fundamental ethical priorities of this study. It is designed to protect subjects' privacy while collecting, analyzing and reporting the results. It is also expected to respect participants' rights by taking appropriate precautions during the various stages of the research.

The proposed research method for this study is a survey with standardized questionnaire. The idea of conducting a survey is to gain understanding about a social problem. It aims to identify a particular category of population and collect information from them. A survey with a standardized questionnaire is expected to be a suitable method for this study, as the study's objectives are mainly concerned with the social environment characteristics, cultural characteristics, opinion, and attitude of groups of people towards mobile payment systems in Iran and Germany. Both countries vary in some ways in terms of consumer behavior and cultural characteristics, which is expected to help interpret the findings. Thus, this study aims to clearly describe, explain, and validate risk perception in adopting mobile payment systems in the countries with different cultural backgrounds and values.

A survey with standardized questionnaire helps in this study to test the designed hypotheses about perceived risk in adopting mobile payment systems. It results in a statement as to whether a hypothesis is accepted or rejected. Basically, employing a questionnaire necessitates the use of quantitative data in research. The advantages of using quantitative data over qualitative allow a broad comparability of results. Type of data, quantitative or qualitative, needed for a specific research purpose, is derived to a large extent from research questions. To formulate research design in quantitative studies, operationalization of the constructs is also crucial. In this quantitative survey we pose a set of predetermined questions to the research sample, as will be explained in section 3.4. The study aims to gain details about users' behavioral intention based on different cultural backgrounds in Iran and Germany. Most importantly, the potential of a quantitative survey to gain a representative image of a sample's attitudes and characteristics increases the hope for more generalized findings.

As explained in Chapter 2 (Theoretical Foundation), there is a need for administrative facts on the adoption of mobile payment systems. The progress of any field of knowledge can be predominantly related to the ability of researchers to test different theories in order to enhance the understanding of causality. Therefore, it is necessary to explore the cause and effect of a phenomenon in an appropriate manner. This study aims to investigate a cause-effect relationship on major aspects of mobile payment technology with the help of a survey.

The study applies SEM as a causal approach to determine if perceived risk has an effect on intention to use mobile payment systems. In keeping with the research questions and research objectives, a causal type of study is chosen to distinguish the cause and effect of the variables in the conceptual model. Indeed, a causal approach helps assess the level of risk perception in mobile payment acceptance in Iran and Germany. The main aim in a causal research project is to understand which variables are the cause and which ones are the effect. Moreover, it is of importance in determining the predicted nature of relationships between causal variables and the effect. In other words, in a causal approach it is also expected to measure the significance of an effect. These objectives help make causal research more scientific than other approaches. Consequently, this study aims to identify whether the variables of the research model can either directly or indirectly cause an effect on intention to use mobile payment systems or not. A researcher must also formulate a study through different points in time, either in a cross-sectional or longitudinal manner. As the current study aspires to investigate a particular phenomenon regarding mobile payment at a specific period, a cross-sectional study is chosen.

3.3.1 Population

The need to collect primary data necessitates a clear definition of the population and the units of analysis that constitute this population. The population is directly associated with units of analysis concerning a particular problem statement and a specified period in which the research is conducted. It is usually impossible to analyze all members of a specific population; thus, “samples” provide a shortcut allowing inferences to be made about the population. To better conceptualize the population of the study, we reflect on the ideal research participants’ characteristics. Eligibility criteria specify to what extent a participant is qualified to participate in the research and define both inclusion and exclusion criteria (Majid, 2018). Eligibility criteria determination must occur before the start of data collection.

Inclusion criteria are considered the main characteristics of a population of interest (Kamangar and Islami, 2013). As one of the main objectives of the current study is to compare mobile payment adoption in Iran and Germany on the basis of different cultural characteristics, being Iranian or German is considered as a main inclusion criterion for the target population. It helps ensure the accuracy and validity of how the findings for cultural index are interpreted. Possession of a smartphone is another essential inclusion criterion for selecting the right population in this study. On the other hand, exclusion criteria distinguish characteristics that interfere with data collection (Kamangar and Islami, 2013). Most importantly, choosing inclusion and exclusion criteria must be accompanied by a rational idea, supporting the appropriateness of each element.

In order to target the right population for this study, no specific technological prerequisite for mobile payment is considered. The study's respective population either has previous experience in this regard or has not yet conducted a mobile payment transaction. The idea to include the two mentioned groups of people in the population enables intention to use to be measured as the dependent variable from two different perspectives. Firstly, from those who already have experience of conducting a mobile payment transaction, by force or as a habit. Secondly, measuring the intention to use of new users for whom the concept of mobile payment is new and challenging. This helps in assessing the effectiveness and significance of the proposed independent variables.

As it is a comparative study between Iran and Germany, two sets of respondents are considered for the data collection. This study uses students at Bachelor and Master level as active individuals belonging to each society's young generation. Students are becoming more and more involved in online activities, because of educational purpose

and habit; consequently, they were pre-identified for this study as an appropriate unit of analysis due to their role as opinion leaders and early adopters of media innovations.

3.3.2 Sampling

It is necessary to choosing a sample that is appropriate to the questions posed by the research. Sampling represents a subset of the population of a study. Generalizability as a principal purpose of research findings is characterized to a large extent by the sampling method.

As mentioned in previous sections, the choice of students results from the convenience and reachability of students for this study. They actively use smartphones for a diverse range of daily purposes. In this sense, sampling design of the study is a non-probability sampling method. Through the non-probability sampling method, it is possible to assess mobile payment as a newly-established phenomenon which enables valuable insights to be generated. Non-probability sampling is considered less expensive and easy to apply. Although the findings from a non-probability study cannot represent the entire population, they reveal important insights into the decision-making and behavioral intention concerning mobile payment systems. The principal aim of collecting data is to obtain the most reliable and accurate results that can be appropriately generalized. However, in most cases, it is not possible to use every subject of a population because of the limitations of each specific population. That is the rationale behind adopting the right sampling design and techniques.

Convenience sampling, which is also used in this study, is considered as one of the commonly used types of non-probability or non-random sampling methods. In convenience sampling, members of a target population must presumably meet some specific criteria. These criteria encompass easy accessibility, willingness to participate, geographical proximity, and accessibility at a specific period (Dörnyei, 2007). Ackoff (1953) indicates that convenience sampling typically tends to be a desirable sampling technique, specifically among students, as they are often readily and easily accessible. Furthermore, this method is also less expensive and time-consuming compared to other sampling methods. Etikan (2016) declares that elements might be chosen near to where a researcher is trying to conduct the data collection process for a convenience sampling method.

As the primary purpose of this study is to explain the adoption of mobile payment systems with a special focus on differences between Iran and Germany, the chosen sample is expected to be acceptable. Indeed, university students tend to be more exposed

to new technologies than the general public population of a society. They are also frequent users of mobile devices and more innovative in adopting new technologies as well. Faqih and Jaradat (2015) point to university students as the fastest adopters of mobile-related technologies. Most importantly, major mobile marketing industries have referred to university students as one of the most fundamental and underlying target markets (Choi et al., 2008; Jurisic and Azevedo, 2011).

Lucas (2003) and Calder et al. (1981) believe that in studies of theory application, as the objective is to develop theories dealing with underlying human behavior, students represent a legitimate sample choice. On the other hand, the opponents argue that there is a problem concerning the representative character of students in general. Ashraf and Merunka (2016) emphasize the appropriateness of a sample of students from the demographical and psychological perspective of possible significant differences. Moreover, Ashraf and Merunka state that most individuals in the age groups of university students are economically active. They also ascertain that nearly 95% of the studies published by European marketing journals using student samples were able to provide claims of generalization with an assumption that their findings were similar to those of other consumers. This implies that the adoption of student samples does not automatically invalidate results. Most importantly, Basil (1996) argues that representativeness is difficult to establish. Although it is desirable, it is not a necessary condition regarding theory testing. It is also worth noting that the issue of relevance between a research topic and the sample must be also considered. By choosing stimuli that are relevant to students (using a mobile device), this study applies an appropriate concept of sample-to-stimuli fit.

In order to generalize research findings with respect to an entire population, an adequate sample size must be formulated. Generally, a large number of participants helps to avoid sampling errors and biases. In defining the sample size, it is necessary to consider the heterogeneity of a population's heterogeneity and the researchers' aims. The higher the heterogeneity, the higher will be the variance in a population (Ashraf and Merunka, 2016). Thus, a larger sample size will be needed. Although a large sample size is not always the best option for acquiring more reliable results, it may reduce sampling error, but at a decreasing rate. One of the most significant issues in ensuring the reliability and accuracy of research findings is to precisely determine the number of samples supposedly sufficient for the research to proceed to the end.

Based on a careful assessment and consideration of various elements such as research objectives, cost, time, and other constraints, a total sample size of 400 re-

spondents, 200 respondents in Iran and 200 respondents in Germany, was determined for this study. Furthermore, the study used social media networks (Facebook, University forums, WhatsApp, and e-mails) through designing and sending the link of the questionnaire to the students, exclusively at Bachelor or Master levels. As the study is interpreted based on the cultural characteristics, a filtering question was included at the beginning of the online questionnaire in order to only target Iranian and German students. If a respondent states to be Iranian or German, then she/ he is asked to continue with the remaining parts of the online questionnaire. The sampling process was carried out through sending e-mails or instant messages to friends and social groups or posting the link of the questionnaire in specific universities' forums. It is worth noting that only Bachelor and Master students studying at a university at the time of data collection were considered as the desirable samples. Helmut-Schmidt University, University of the Federal Armed Forces Hamburg, Technical University of Berlin, Bielefeld University, University of Bonn, Braunschweig University of Technology, University of Düsseldorf, University of Göttingen, University of Hamburg, and the bbw University of Applied Sciences were considered to collect the data in Germany. Azad University Arak Branch, Azad University Tehran Branch, Amirkabir University of Technology, University of Science and Culture, Isfahan University of Art, Sharif University, and Beheshti University were also considered to collect the data in Iran. Moreover, the data collection both in Iran and Germany took place in two periods of time; Summer 2019 and Winter – Spring 2021.

The selected sample size is large enough to allow for further investigation. As a rule of thumb for determining sample size, Roscoe (1975) proposes that sample sizes larger than 30 and less than 500 are considered appropriate for almost all types of research. Moreover, he states that in multivariate research, the sample size should be established as a size at least ten times – preferably even more – as large as the number of predictors in a study.

3.4 Operationalization and Questionnaire Development

Operationalization helps bring a research process forward as one of the most critical phases in a research project. Indeed, moving from identifying concepts to conceptualizing and then to operationalizing them is a fundamental matter of increasing specificity. When implementing an operationalization, three different steps must be considered:

1. The variables need to be measured.
2. The measurements need to be used appropriately.

3. The measurements, based on research objectives, have to be interpreted.

Operationalization of variables provides a foundation for the measurement of variables measurement in order to determine a respondent's level of satisfaction or dissatisfaction regarding a specific behavior. It leads, in turn, to accuracy and reliability of results. In this step, the constructs of the variables have to be defined in a way that determines what exactly must be measured. When the measurement of variables is designed, it is crucial to include different perceptions regarding a variable.

During operationalization of the constructs in this study, great attention was paid to understanding the concept of a theoretical framework by adopting valid measurements both in Iran and Germany. Therefore, measurement was performed on a 5-point Likert scale. Joshi et al. (2015) define the Likert scale as a set of particular statements considered for a real or hypothetical situation in a research project. A 5-point Likert scale is used in the current study to ask participants about their level of agreement regarding their intention to use mobile payment systems. The scale ranges from Strongly Disagree to Strongly Agree, with the given constructs.

There has always been a debate amongst scholars about preference for the 5-point Likert scale over the 7-point. The choice of selecting either a 5-point or a 7-point response category pertains directly to research objectives. Buttle (1996) emphasizes the effectiveness of using a 5-point Likert scale as it increases the response rate as well as response quality by reducing respondents' "frustration level." Moreover, a 5-point Likert scale seems to be more comprehensible to respondents and prevents them from becoming confused when expressing their points of view.

Based on the purpose of the study and the research objectives, different items were selected to appropriately measure the study's constructs. All the items except one, regarding the perceived risk and the differentiation of remote mobile payment from other methods, were adopted from previous research. This is customary in academic research, as the scales have already been tested in various circumstances and different fields of study. Although the items in the questionnaire were adopted from previous literature, there is no doubt concerning their accuracy and standardization. Nevertheless, assessment of the reliability of a questionnaire is critical. Consequently, it is vital to examine the questionnaire in order to determine its "suitability" and "reliability." In particular, "internal consistency reliability" is the first criterion that typically has to be evaluated before the analysis takes place.

The traditional way to examine internal consistency reliability is Cronbach's alpha. It estimates the reliability of questionnaire on the basis of the intercorrelations between the indicator variables observed'. PLS-SEM prioritizes internal consistency based on each the reliability of each indicator towards its related construct. Furthermore, Cronbach's alpha is assumed to be sensitive to the number of items on the scale and underestimates the reliability of internal consistency. Hence, scholars observe Cronbach's alpha as a more conservative measurement criterion of internal consistency reliability. Applying PLS-SEM in this study enables a different measure of internal consistency reliability to be utilized, which is referred to as "composite reliability." Composite reliability is considered technically more appropriate in measuring indicator reliability due to the limitations of Cronbach's alpha. Indeed, this method of reliability measurement highlights different outer loading values of indicator variables. It varies between 0 and 1, with a higher value implying that there is a higher level of reliability.

The questionnaire is the main instrument to collect data in this study. Various socio-demographic questions concerning the selected variables were employed to measure intention to use mobile payment systems and their antecedents, for example, risk perception. In quantitative studies, questionnaires are considered as the main means of primary data collection. A questionnaire helps collect quantitative data in a standardized way and enables a researcher to conduct further analysis with a set of internally consistent and coherent data. The most important aspect is that in designing a questionnaire a definite purpose corresponding to the research objectives must be visualized. Expertise, skill, creativity, and experience of a researcher play a fundamental role in designing a questionnaire. However, it is also necessary to follow the appropriate guidelines for the questionnaire development process to avoid major mistakes.

Collecting data with a questionnaire facilitates the observation of consumer trends by creating new strategies regarding a phenomenon, particularly in mobile payment technology. Analyzing the data obtained from a questionnaire and writing reports enable consumer behavior to be predicted and research questions to be answered. In this study, identical questionnaires in Persian and German languages were distributed in Iran and Germany; a great effort was made in designing the questions to keep the questionnaire simple in both languages and prevent potential misunderstanding.

Four substantial elements, related to the research objectives and the problem statement, namely, brand knowledge of a payment system, brand knowledge of a retailer, previous usage of a payment system, and previous usage of a retailer were used to measure experience with a payment system and experience with a retailer in depth. By

analyzing the relationships between the four elements mentioned and perceived risk, this study will reveal to what extent these factors impact on the intensity of perceived risk when conducting a remote mobile payment. Cultural differences and translation issues related to the current study are also salient and are inherent considerations of which researchers must always be aware.

As is customary for scholarly research, the questionnaire for the study' was developed in a systematic process. Firstly, all the required information relating to the components of the research problem, research questions, and proposed research hypotheses were specified. Secondly, to avoid ambiguously obtaining information, the right general and technical questions were considered for each construct. Thirdly, only those items that directly address the research problem were included in the questionnaire. Fourthly, in some cases, to avoid confusion among respondents, we chose to inquire about a concept, not in one question, but in separate questions. Lastly, due to a variety of circumstances, refusal to answer the questions by respondents might occur; this study was designed to avoid excessively sensitive questions or questions that require too much effort for respondents to answer. Even when individuals are willing to participate in a survey in principle, cooperation might vanish if too much effort is involved in answering some of the items or the questions are too sensitive.

A set of 48 questions was developed to examine the research objectives. As described in section 2.6.2, the theoretical framework of this research includes nine selected independent and dependent variables. In the development of the questionnaire structure, both multiple-choice questions and Likert scale questions have been embedded. As mentioned earlier in this section, a five-point Likert scale was employed in this study to measure the constructs, ranging from Strongly Disagree to Strongly Agree, where 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, and 5= Strongly Agree.

The questionnaire comprises three different sections. It starts with four questions on demographic factors. Afterward, it continues with six specific questions on consumer habits relating to mobile payment. Finally, the remaining items cover additional detailed information on the variables, described in the model in section 2.6.2. It is worth noting that the selected payment systems or retailers in terms of the previous usage in the questionnaire are randomized into the respective scales to measure experience with a payment system and experience with a retailer. Table 4 shows the scales used for operationalization of the constructs in this study.

Table 4: Scales for Constructs

Construct	Scale	Author(s)
Experience with a Payment System	<ol style="list-style-type: none"> 1. When conducting a mobile payment with, I feel that I know very little about 2. When conducting a mobile payment with, I feel that I am experienced with 3. When conducting a mobile payment with, I feel that I am uninformed about 4. I consider myself as an expert user in dealing with 	<p>Jamal and Naser (2002) Fang et al. (2014)</p>
Experience with a Retailer	<ol style="list-style-type: none"> 1. When purchasing from, I feel that I know very little about 2. When purchasing from, I feel that I am experienced with 3. When purchasing from, I feel that I am uninformed about 4. I consider myself as an expert user in dealing with 	<p>Jamal and Naser (2002) Fang et al. (2014)</p>
Perceived Risk	<ol style="list-style-type: none"> 1. I believe that mobile technology provides a robust and safe environment to perform a mobile payment 2. I believe that the overall riskiness of mobile payment systems is high 3. I believe that the monetary information that I provide on a mobile device while conducting a payment is well protected from hackers and penetrators 4. I have privacy concerns regarding conducting any mobile payments 5. I believe that using mobile cellular data (3G, 4G, or 5G) or being connected to a free public Wi-Fi has the potentiality to put a mobile phone at the hacking risk 	<p>Chandra et al. (2010)</p> <p>Chen and Barnes (2007)</p> <p>Connolly and Bannister (2007)</p> <p>Self-designed</p>
Intention to Use	<ol style="list-style-type: none"> 1. Given a chance, I intend to adopt mobile payment systems more often in the future 2. Given a chance, I predict that I will frequently use mobile payment systems in the future 3. I would strongly recommend others to use mobile payment systems 	<p>Chandra et al. (2010)</p>

Source: Own design

Construct	Scale	Author(s)
Attitude	<ol style="list-style-type: none"> 1. I think that using mobile payment is a good idea for any purchase 2. I think that using mobile payment systems is beneficial for me 3. I have a positive perception of using mobile payment systems 	Cheong et al. (2004)
Subjective Norms	<ol style="list-style-type: none"> 1. When I am not sure to carry out a mobile payment transaction, I would observe the behavior of other people in this regard 2. I would avoid conducting a mobile payment when I recognize those people who are important to me also conduct no mobile payment 3. People who influence my behavior expect me to use mobile payment services 	Nguyen et al. (2016)
Perceived Ease of Use	<ol style="list-style-type: none"> 1. Learning to use mobile payment systems would be easy for me 2. It would be easy to get a mobile payment system to do what I want to do 3. My interaction with the mobile payment system would be clear and understandable 4. It would be easy for me to become skillful in using mobile payment systems 5. Overall, I find mobile payment systems to be easy to use 	Chandra et al. (2010)
Perceived Usefulness	<ol style="list-style-type: none"> 1. Using mobile payment systems would enable me to accomplish financial tasks and payments quickly 2. Using mobile payment systems would enhance my effectiveness in making payments 3. Using mobile payment systems would make it easier for me to manage and conduct payments 4. Overall, I find that mobile payment systems are useful for making payments 	Chandra et al. (2010)
Ubiquity	<ol style="list-style-type: none"> 1. I believe that mobile payment is independent of time 2. I believe that mobile payment is independent of place 3. I can use mobile payment anytime and anywhere 	Daştan and Gürler (2016)

It is also significant to mention that both “UniPark” and “Google Docs” were used in this study to create an online questionnaire. Complete questionnaires for the German and the Iranian sample are shown in the Appendix.

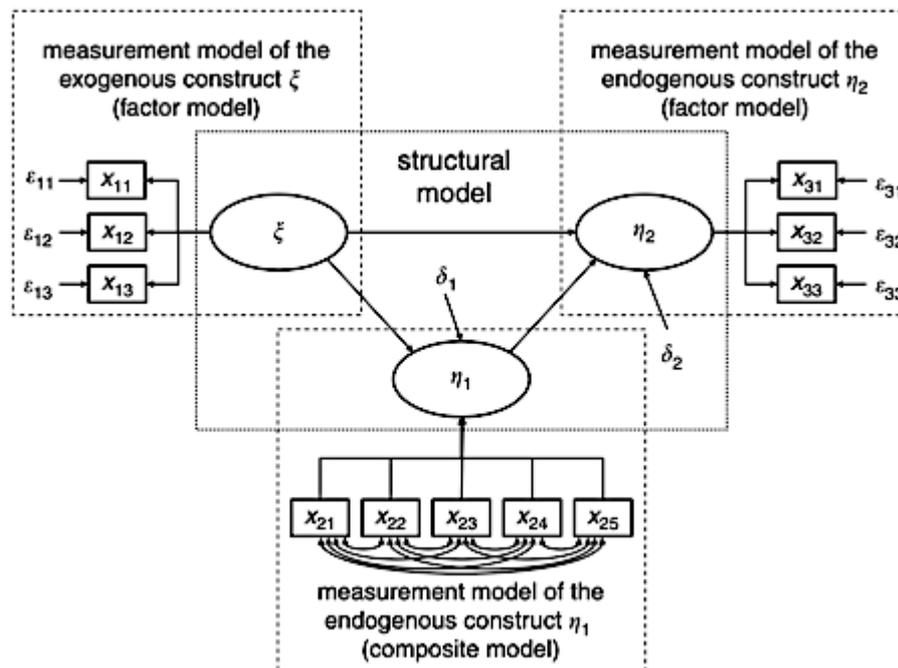
3.5 Data Analysis

Over the last century, statistical analysis has always been an essential tool for discovering novel findings in various fields of studies for social science researchers. Statistical methods have been dramatically expanded during the recent years with the advent of more readily applicable computer hardware and software. In particular, the widespread access to a broad range of methods and user-friendly interfaces has made statistical methods more fascinating. Developing more complex research model associations in social science disciplines necessitates more sophisticated methods of multivariate data analysis. To analyze and interpret the data collected in an appropriate manner, both SPSS and SmartPLS are employed in this study. The main prerequisite of a questionnaire is to protect the privacy of respondents so that their identity is kept confidential. Thus, it is important to observe ethical considerations when analyzing data and publishing results.

The central part of this study’s analysis is carried out by the most widely applied PLS-SEM software, namely Smart PLS 3. Ringle and Sarstedt (2016) illustrate that the Technology Acceptance Model (TAM) and its extensions are popular models for PLS-SEM applications in management information systems research. Henseler et al. (2016) refer to the bootstrap-based test of overall model fit, consistent PLS (PLSc) to estimate factor models, and the heterotrait-monotrait ratio of correlations (HTMT), a new criterion to assess discriminant validity, as the substantial contributions of PLS-SEM to various fields of research. Indeed, PLS path modeling is considered to be a full-fledged SEM method. It can handle both factor and composite models for construct measurements.

According to Henseler et al. (2016), the factor model hypothesizes that the variance of a set of different indicators is expected to be explained by the existence of one unobserved variable as well as individual random error. In Figure 18, the exogenous construct ξ and the endogenous construct η are shown as factors. On the other hand, a linear combination of indicators form composites. The composite model holds an assumption that all the covariation between indicators is explained by a common factor (Henseler et al., 2016).

Figure 18: PLS Path Model



Source: Adopted from Henseler et al. (2016)

Ringle and Sarstedt (2016) determine the estimation of PLS path model parameters in four steps: first, an iterative algorithm to characterize each construct's composite score; second, a correction for attenuation of factor models; third, parameter estimation; and, finally, bootstrapping for inference testing. PLS path modeling necessitates metric data for a dependent variable. Nevertheless, Henseler et al. (2016) state that quasi-metric data from multi-point scales such as Likert scales or semantic differential scales should also be acceptable, as long as the scale points are equidistant. The bootstrap-based method can be applied for the purpose of assessing factor models. Indeed, testing overall model fit indicates whether the data are coherent with the factor model or not. Henseler et al. show that bootstrapping also represents a confirmatory factor analysis.

Multivariate analysis refers to the application of statistical methods in order to analyze multiple variables simultaneously. Hair et al. (2014) determine some of the major types of statistical methods connected to a multivariate data analysis, as displayed in Table 5.

Table 5: Organization of Multivariate Methods

	Primarily Exploratory	Primarily Confirmatory
First-generation techniques	<ul style="list-style-type: none"> ❖ Cluster analysis ❖ Exploratory factor analysis ❖ Multidimensional scaling 	<ul style="list-style-type: none"> ❖ Analysis of variance ❖ Logistic regression ❖ Multiple regression ❖ Confirmatory factor analysis
Second-generation techniques	<ul style="list-style-type: none"> ❖ Partial least squares structural equation modeling (PLS-SEM) 	<ul style="list-style-type: none"> ❖ Covariance-based structural equation modeling (CB-SEM)

Source: Hair et al. (2014)

First-generation techniques are often used by social scientists as their preferred statistical methods. According to the nature of research questions, these methods can be applied to confirm a pre-established theory or demonstrate new data patterns and relationships.

Although PLS-SEM positions itself under second-generation techniques and as primarily exploratory, confirmatory and exploratory distinction is therefore not always as clear as it seems. As a matter of fact, by adopting a regression analysis, the aim is to select as many independent and dependent variables as desired to examine pre-established theories and concepts. The main goal of using regression analysis is to test the theories or concepts mentioned. Thus, techniques can also be used to explore whether other additional and independent motivational variables can add value to an extension of the concept which is being tested. Firstly, by assessing the findings, it is ascertained that specific independent variables are statistically significant predictors of a dependent variable (more confirmatory). Secondly, it can also be revealed from the findings that independent variables are, relatively speaking, better predictors of a dependent variable (more exploratory) (Hair et al., 2014).

This study utilizes the beneficial characteristics of PLS-SEM, as it supports both exploratory and confirmatory research. These features are in line with the objectives of

this study. In addition, there has also been an upward trend in adopting second-generation techniques such as PLS-SEM in order to overcome the weaknesses of first-generation methods over the past few decades (Hair et al., 2014).

PLS-SEM's main characteristics focus on explaining the variance of independent variables by assessing a research model. In this regard, several scholars have already approved the effectiveness and evolvement of PLS-SEM as a practical statistical modeling technique (Henseler et al., 2012; Henseler et al., 2009; Rigdon, 2013). The use of PLS-SEM across a variety of disciplines has also been stated by many researchers (Hair et al., 2012b; Ringle et al., 2012; Sarstedt et al., 2014).

Convergent Validity

To ensure the correctness of results, it is fundamental to examine validity of data. Hair et al. (2014) define convergent validity as the extent to which a measure of a specified construct is positively correlated with the alternative measures of the same construct. In particular, when using PLS-SEM, indicators of a reflective construct are predominantly treated as different alternatives, aiming to measure the same construct. The research model in this study is also based on a reflective measurement model; therefore, items that form each specific reflective construct must converge or share a high proportion of variance on the respective construct.

Convergent validity of reflective constructs is evaluated through the outer loadings of the indicators' and, most importantly, the average variance extracted (AVE). It is defined as the grand mean value of the squared loadings of the indicators assigned to a specific construct (Hair et al., 2014). An AVE value of 0.50 or higher implies that a construct can explain more than half of the variance of its indicators' (Hair et al., 2014). A high value for the outer loadings on a specific construct also implies that the associated indicators of the construct have much in common. Each value of outer loading refers to the indicator reliability. A common rule of thumb requires the standardized outer loadings to be 0.708 or higher, as all outer loadings of indicators' should also be statistically significant (Hair et al., 2014). It is inferred that the value of 0.70 is also close enough to 0.708 to be treated as acceptable (Hair et al., 2014). It is fundamental to distinguish the extent to which the variation in an item is explained by its related construct. Moreover, as an established rule of thumb, each latent variable should explain a substantial proportion of each indicator's variance, usually referred to as at least 50% (Henseler et al., 2016).

The structural path model in Smart PLS is designed so as to treat every single indicator of a reflective construct as a distinctive approach in order to measure the same construct. Consequently, all indicators assigned to a specific reflective construct must converge with a high proportion of variance. However, both average variance extracted (AVE) and outer loadings of the indicators are employed by PLS-SEM to assess the level of convergent validity. The AVE for standardized data is calculated as the mean of the squared loadings of each indicator with respect to a construct as follows (Sarstedt et al., 2017):

$$AVE = \frac{(\sum_{k=1}^K l_k^2)}{K},$$

Where l_k is symbolized as the standardized outer loading of the indicator variable k of a particular construct which is measured with K indicators.

The size of outer loading characterizes to what extent all items assigned to a specific construct have something in common. In other words, high outer loadings on a construct imply that the associated indicators certainly have much in common (Henseler et al., 2016). Regardless of the exact size of outer loadings, the outer loadings of all indicators at a minimum must remain statistically significant.

Discriminant Validity

Discriminant validity is defined as the extent to which a construct differs from other constructs (Hair et al., 2014). Indeed, discriminant validity at a construct level characterizes to what extent a construct in a research model is genuinely distinctive from other constructs through empirical standards. Establishing discriminant validity sheds light on a construct's uniqueness and emphasizes its capability to capture a phenomenon not represented by other model constructs. The primary purpose behind establishing discriminant validity is to guarantee that all the selected constructs are unique. Moreover, constructs can be also differentiated from each other because they capture a phenomenon not represented by other constructs in a research model. In order to characterize the discriminant validity, scholars traditionally consider two approaches. The "cross-loadings" are typically the first approach to examine the indicators' discriminant validity in a model. In particular, in cross-loadings, the procedure is designed so that an indicator's outer loading on its associated construct should always be greater than any of its correlations on other existing constructs.

The Fornell-Larcker criterion is the second approach included in PLS-SEM to assess discriminant validity. The Fornell-Larcker criterion compares AVE value square root with the latent variable correlations. Hair et al. (2014) state that the square root of each construct's AVE should be specifically greater than its highest correlation with any other construct. Evaluating the Fornell-Larcker criterion results ensure that the AVE of a construct is larger than the squared correlation of that AVE with any other constructs. The logical statement behind assessing the Fornell-Larcker method explains how a particular construct connected with its associated indicators should share more variance than with a combination of those associated indicators and any other constructs. In order to distinguish whether all the indicators contribute significantly and substantially to a path model or not, it is crucial to assess the sign and the magnitude of indicator weights and their significance as well. In particular, when indicators weights show unexpected signs, it can be due to multicollinearity. Therefore, it is necessary to assess the variance inflation factor (VIF) of indicators. In order to examine the significance of the coefficient for a path, it is recommended that it be quantified. This can be accomplished by assessing the effect size f^2 , which will be broadly explained in the next chapter. It is worth noting that both indirect effects and total effects are important for the evaluation of mediation and factor analysis, respectively.

Henseler et al. (2015) illustrate that neither the Fornell-Larcker criterion nor the cross-loadings assessment allows users of variance-based SEM to properly assess the discriminant validity of measures. As a remedy for this critical issue, Henseler et al. propose the heterotrait-monotrait ratio of correlations (HTMT), a new approach when examining discriminant validity in variance-based SEM.

Hair et al. (2014) describe HTMT as the mean of all correlations for indicators across the construct relative to the mean of the average correlations of indicators developed to measure the same construct. Sarstedt et al. (2017) define HTMT of the constructs Y_i and Y_j with regard to K_i and K_j indicators, respectively, as follows:

$$\begin{aligned}
& \text{HTMT}_{ij} \\
&= \frac{1}{K_i K_j} \sum_{g=1}^{K_i} \sum_{h=1}^{K_i} r_{ig,jh} \\
&\div \left(\frac{2}{K_i(K_i - 1)} \cdot \sum_{g=1}^{K_i-1} \sum_{h=g+1}^{K_i} r_{ig,ih} \cdot \frac{2}{K_j(K_j - 1)} \cdot \sum_{g=1}^{K_j-1} \sum_{h=g+1}^{K_j} r_{jg,jh} \right)^{\frac{1}{2}}
\end{aligned}$$

Sarstedt et al. (2017) state that $r_{ig,jh}$ represents the correlations of the respective indicators, not only within, but also across the measurement models of latent variables Y_i and Y_j . In order to assess the discriminant validity, the current study also applies the heterotrait-monotrait ratio (HTMT) of the correlations.

High HTMT values are considered to be problematic. Although the exact threshold level of HTMT is debatable, it is inferred to be the value of 0.85. Henseler et al. (2015) also suggest a threshold value of 0.90 to be applicable if the constructs of a path model are conceptually very similar. In this case, an HTMT value above 0.90 has a lack of discriminant validity.

Reliability

Internal consistency is typically evaluated through Cronbach's alpha. By assessing Cronbach's alpha, it is possible to estimate the reliability based on the observed indicator variables' intercorrelations. There are allegedly distinctive differences in assessing reliability through Cronbach's alpha and PLS-SEM (Hair et al., 2014). When evaluating the reliability through Cronbach's alpha, it is assumed that all the indicators have equal outer loadings on the construct. In contrast, PLS-SEM tends to prioritize the indicators based on their particular individual reliability. Sarstedt et al. (2017) define Cronbach's alpha in its standardized form as follows:

$$\text{Cronbach's } \alpha = \frac{K \cdot \bar{r}}{[1 + (K - 1) \cdot \bar{r}]}$$

Here, K represents a construct's number of indicators. The average non-redundant indicator correlation coefficient is also shown by \bar{r} . Cronbach's alpha is highly sensitive to the number of items assigned to each construct. In particular, it tends to underestimate the scores of internal consistency reliability. Therefore, it is mostly known as a conservative measure of internal consistency reliability.

Hair et al. (2014) demonstrate the superiority of composite reliability as a more appropriate way to measure internal consistency reliability due to Cronbach's alpha's limita-

tions. Composite reliability sheds light on different outer loadings of indicator variables. It should be noted that internal consistency reliability obtained through the composite reliability is interpreted precisely in the same way as Cronbach's alpha. In other words, composite reliability also ranges from 0 to 1, with higher values implying higher levels of reliability (Hair et al., 2014).

According to Sarstedt et al. (2017), composite reliability values of 0.60 to 0.70 are to be considered acceptable within a context of exploratory research. Values between 0.70 and 0.90 describe a satisfactory level of internal consistency reliability. Besides, values above 0.95 are not desirable as they imply that all indicators measure the same phenomenon. Consequently, they are more likely to be invalid in measuring a specific construct. Finally, a lack of internal consistency reliability is evident if the composite reliability values are below 0.60.

In contrast to the conservatism of Cronbach's alpha that tends to underestimate the reliability of measures, composite reliability tends to overestimate the internal consistency reliability. This approach results in a comparatively higher accuracy of internal reliability evaluation. Sarstedt et al. (2017) define composite reliability for standardized data as follows:

$$\rho_c = \frac{(\sum_{k=1}^K l_k)^2}{(\sum_{k=1}^K l_k)^2 + \sum_{k=1}^K var(e_k)}$$

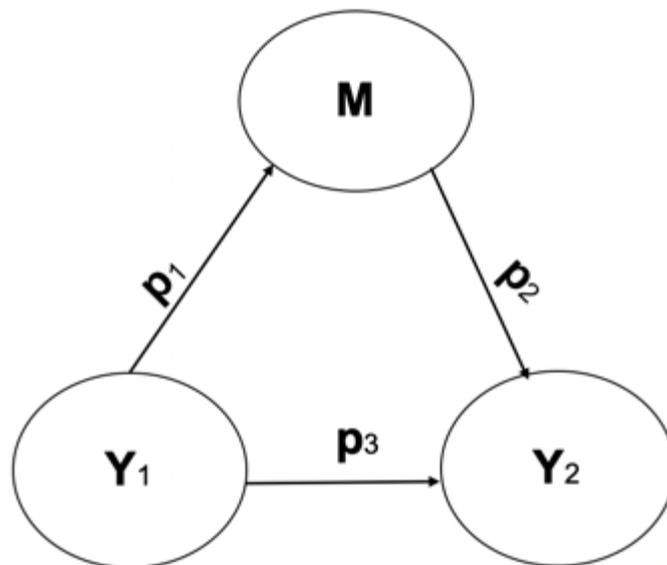
where l_k symbolizes the standardized outer loading of the indicator k with regard to a particular construct measured with K indicators. Moreover, e_k highlights the measurement error of indicator variable k . Finally, $var(e_k)$ represents the variance of the measurement error, which is defined as $1 - R^2_k$.

Hair et al. (2014) recommend utilizing both Cronbach's alpha and composite reliability to precisely assess the reliability of internal consistency for the measures. The main reason to consider and report both criteria is that the real reliability predominantly falls between Cronbach's alpha in a comprehensive way as a lower bound, and the composite reliability as an upper bound (Sarstedt et al., 2017).

Different types of mediation effects are determined in this section. Basically, mediation occurs when a third mediator variable intervenes in the relationship between two related constructs (Hair et al., 2014). To be more precise, a change in an exogenous variable causes a change in an intervening variable, which accordingly results in a change in an endogenous variable in a PLS path model. Therefore, a meaningful mediating

effect can play a fundamental role in the relationship between two constructs. One vital principle in methodological research has been to test the mediation effect over the past few decades. Figure 19 presents an example of a mediator model, whereby p_3 is considered as the direct effect and $p_1 \cdot p_2$ is the indirect effect. Moreover, the direct effect (p_3) + the indirect effect ($p_1 \cdot p_2$) is equal to the total effect (Hair et al., 2019).

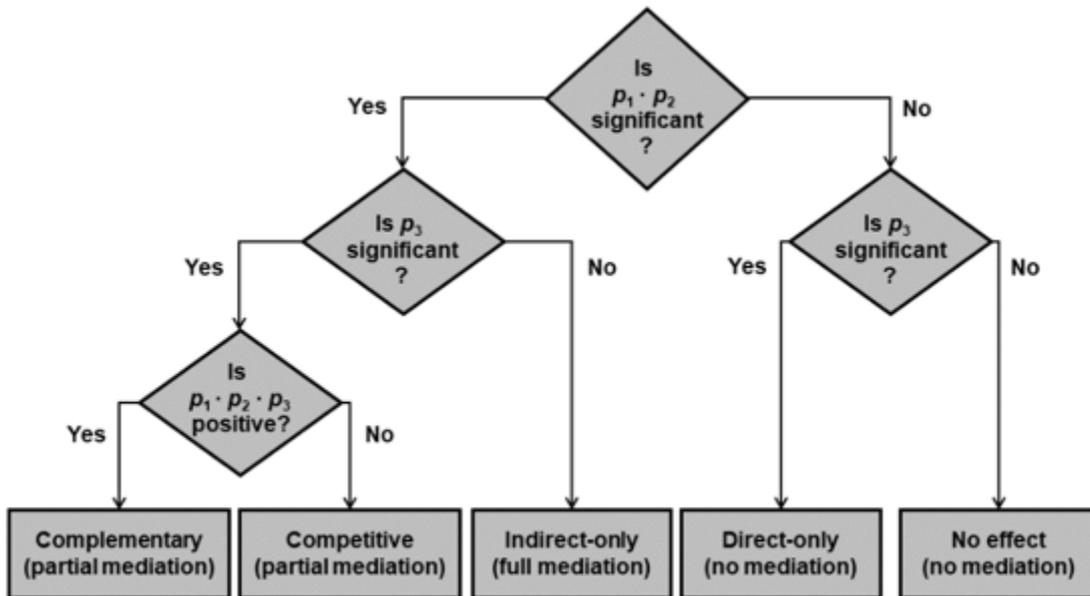
Figure 19: A Simple Mediator Model



Source: Hair et al. (2019)

Figure 20 shows a model, suggested by Zhao et al. (2010), in order to analyze a mediator model in PLS-SEM.

Figure 20: Mediation Analysis Model



Source: Zhao et al. (2010)

Zhao et al. (2010) synthesize prior research on mediation analysis and provide new guidelines for future studies. The authors firstly distinguish two main types of non-mediation:

- **Direct-only non-mediation:** The direct effect is significant but not the indirect effect.
- **No-effect non-mediation:** Neither the direct nor the indirect effect is significant.

Furthermore, three main types of mediation effect can be also distinguished as follows:

- **Complementary Mediation:** The indirect effect and the direct effect are both significant and point in the same direction.
- **Competitive mediation:** The indirect effect and the direct effect are both significant and point in opposite directions.
- **Indirect-only mediation:** the indirect effect is significant but not the direct effect.

Hence, as can be inferred from the explanation, the mediation effect may not exist at all (direct-only non-mediation and no-effect non-mediation). Moreover, if mediation does exist, two scenarios arise: firstly, a mediator construct accounts for some of the observed relationships between two latent variables (complementary and competitive

mediation). Secondly, a mediator construct accounts for all of the observed relationships between two latent variables (indirect-only mediation).

As illustrated in section 2.6.2, the core characteristic of the indirect or mediation effect in this study is that it involves perceived usefulness and perceived risk as third variables that play an intermediate role in the relationship between ubiquity and attitude as well as experience with a payment system, experience with a retailer and intention to use, respectively. Technically speaking, the effect of the ubiquity on the attitude as well as the effect of the experience with a payment system and experience with a retailer on the intention to use are mediated in this study by perceived usefulness and perceived risk, respectively. It is of importance in this study to characterize how the independent variables ubiquity, experience with a payment system, and experience with a retailer affect attitude and intention to use through the potential intervening role of perceived usefulness and perceived risk. The main purpose of considering the mediators in the research model is both explaining and predicting the behavior of users in dealing with mobile payment systems. One scenario is to explain the users' attitude about mobile payment based on the usefulness and ubiquitous features of mobile payment technology. The other scenario is to predict how experience with a payment system and experience with a retailer exert indirect effects through perceived risk on intention to use.

According to the research objectives, the study aims to determine to what extent the effect of the mentioned independent variables on attitude and intention to use is transmitted with the help of perceived usefulness and perceived risk as the mediators. The critical issue in analyzing the mediation is to determine, whether the significance of each indirect effect can be established or not.

CHAPTER 4: RESULTS

4.1 Results of the German Sample

As mentioned in section 3.5, PLS-SEM is used in this study for the purpose of data analysis. As the study is carried out in two countries, Iran and Germany, a detailed analysis of these countries is presented in two parts. In section 4.1 we present the results for the German sample, and in section 4.2 for the Iranian sample.

In each section, before presenting the results of the survey, a reflective measurement model is assessed by evaluating both internal consistency and individual indicator reliability in order to examine composite reliability. As explained in section 3.5, convergent validity is assessed through the average variance extracted (AVE). Discriminant validity is also evaluated through the cross-loadings and the heterotrait-monotrait (HTMT) ratio of correlations.

4.1.1 Descriptive Analysis

By implementing demographic analysis, a population is broken down into specific sub-categories such as age, gender, educational level, and further specifications. Demographic analysis helps correlate respondents' background to consumer behavior. As part of assessing the perceived risk in adopting remote mobile payment, it is fundamental to discuss the respondents' profile and characteristics. Therefore, descriptive analysis of the respondents' demographic and general profile are presented in Tables 6 and 7, respectively.

Table 6: Descriptive Summary of the Demographic Questions

Variable		Frequency	Percentage
Gender	Male	87	43.5%
	Female	113	56.5 %
Age	20 - under 25	88	44%
	25 - under 30	102	51%
	30 - under 35	7	3.5%
	35 and older	3	1.5%
Household In- come (European Euro)	Under 1,500.00 €	130	65%
	1,500.00 € - under 2,600.00 €	38	19%
	2,600.00 € - under 4,500.00 €	23	11.5%
	More than 4,500.00 €	9	4.5%
Education	Abitur ⁴	72	36%
	Hochschulabschluss ⁵	128	64%

As displayed in Table 6, out of 200 respondents 87 are males (43.5%) and 113 are females (56.5%). Concerning the different age groups, those aged 35 years and older represent the minority, with 3 respondents (1.5%). On the other hand, respondents between 25 – under 30 years old are considered the majority, accounting for 102 respondents (51%). According to the household income level, the majority of the respondents specify a figure of under €1,500.00 (65%), followed by those between €1,500.00 – under €2,600.00 (19%), €2,600.00 – under €4,500.00 (11.5%). The smallest group of respondents is that with a household income of more than €4,500.00 (4.5%). With respect to the educational level of respondents, Table 6 illustrates that the majority of the respondents have a German Hochschulabschluss⁵ (64%), and the rest possess an Abitur⁴ (36%). As it is illustrated in the German questionnaire in the appendix, the respondents were asked about their highest educational degree. As the sample only includes Bachelor and Master students both in Iran and Germany, the highest educational degree for the German sample is supposed to be either Abitur, for those who study at a Bachelor level, or Hochschulabschluss, for those who study at a Master level.

⁴ Abitur is achieved after 12 years of schooling and is the university entrance qualification.

⁵ A university degree

It was explained in the section 2.4 that Germany is basically considered as an individualistic country. Interestingly enough, Table 6 shows that only 4.5% of the students have already stated a household income of more than €4,500.00. Consequently, it can be comprehended that most of the students don't live with their parents.

Table 7: Descriptive Summary of General Questions

Variable		Frequency	Percentage
Ever conducted a mobile payment transaction?	Yes	162	81%
	No	38	19%
Duration of usage (Year)	< 1	21	13.5%
	1 - 2	33	21.2%
	2 - 3	61	39.1%
	More than 3	41	26.3%
Frequency of conducting a mobile payment	Minimum once a week	28	17.9%
	Minimum once a month	77	49.4%
	Minimum once a quarter	32	20.5%
	Seldom	19	12.2%
Average cost per transaction (European Euro)	Under €10.00	19	12.2%
	€10.00 - under €50.00	93	59.6%
	€50.00 - under €100.00	32	20.5%
	€100.00 or more	12	7.7%
Average time using mobile phone per day	Less than an hour	25	12.5%
	1 - Less than 3 hours	105	52.5%
	3 - Less than 6 hours	48	24.0%
	More than 6 hours	22	11%

Table 7 shows that 81% of the respondents have ever conducted a remote mobile payment at least once. Moreover, the majority of them (49.4%) state that they use mobile payment systems at least once a month. Regarding the average cost for each mobile payment transaction, the majority of the respondents, i.e. 59.6%, list the category of €10.00 - under €50.00. Most of the respondents (39.1%) have been using the mobile

payment technology since the past 2 – 3 years. It shows that people still have uncertainties regarding to this technology.

Table 8 presents different product categories in which respondents have already placed an order when conducting a mobile payment transaction.

Table 8: Products Purchased by German Respondents Using Mobile Payment

	Responses		Percentage of cases
	N	Percent	
Laptop/ computer/ notebook	30	3.8%	19.4%
Furniture	14	1.8%	9.0%
Consumer electronics	55	6.9%	35.5%
Perfume, cosmetics	47	5.9%	30.3%
Clothing, accessories	98	12.3%	63.2%
Tickets for theatre, cinema, concert, sports events	83	10.4%	53.5%
Food , beverages	36	4.5%	23.2%
Sports equipment	45	5.6%	29.0%
Books	74	9.3%	47.7%
CD, DVD, computer/ video games, music	47	5.9%	30.3%
Mobile app	56	7.0%	36.1%
Holidays	37	4.6%	23.9%
Hotel room	56	7.0%	36.1%
Software	24	3.0%	15.5%
Toys	19	2.4%	12.3%
Tickets	65	8.1%	41.9%
Others:	14	1.8%	9.0%
Total	800	100.0%	516.1%

The Percent column reports the percentage of total responses represented by each product category whereas the Percentage of cases column is the percentage of valid

cases represented by each product category. Asking Germans about the different product categories they have already purchased through mobile payment reveals that clothing and accessories (63.2%), tickets for the theater, the cinema, a concert, or sports events (53.5%), and books (47.7%) are the top three product types purchased through a mobile payment, as indicated in Table 8.

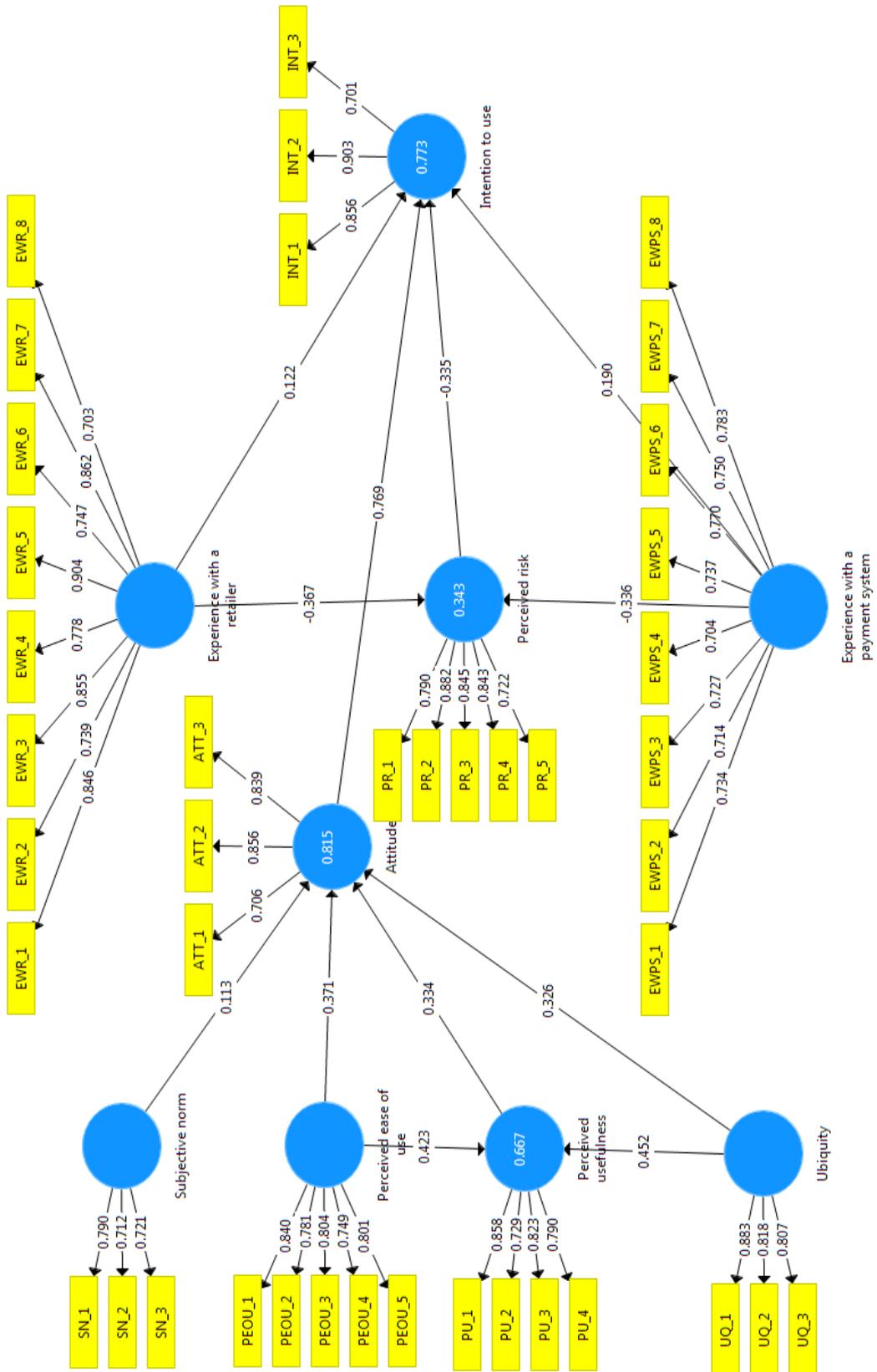
4.1.2 Results of the Structural Model

To efficiently apply PLS-SEM as the primary analysis tool for this study, it is necessary to first focus on the PLS-SEM algorithm and its statistical properties. This section represents the estimation of the theoretical framework by the PLS path model. It will also discuss and interpret the initial results from the algorithm.

The variance-based PLS-SEM algorithm was initially developed and introduced by Wold (1975, 1982). The algorithm method was later extended by Bentler and Huang (2014), Dijkstra (2014), and Dijkstra and Henseler (2015a, 2015b). The main functionality of the algorithm is to estimate path coefficients of a structural path model. Other model parameters are also analyzed through the algorithm estimation in order to maximize the explained variance of dependent construct(s) by the respective indicators.

When PLS-SEM is algorithm being run, the standardized coefficient of the algorithm ranges approximately between -1 and +1 for every relationship represented in a structural and a measurement model. Path coefficients close to +1 indicate a strong positive relationship between a construct and each assigned measure distinctively. Values close to -1 act in the opposite way and emphasize a strong negative relationship. If estimated coefficients are close to the value of 0, a weak relationship between constructs and indicators is expected. It is also worth noting that very low values close to 0 will not be statistically significant (Ringle et al., 2012). Indeed, checking for the significance of the relationships is an underlying part of evaluation and interpretation of the algorithm results. An initial overview of the results from the PLS-SEM algorithm is shown in Figure 21. It is important to recall that this part is exclusively assigned to the German sample.

Figure 21: Structural Path Model (PLS-SEM Algorithm)



The results from Figure 21 enable us to identify exogenous variables that strongly affect the respective endogenous variable(s). It is observed that attitude has the most substantial positive effect on intention to use mobile payment systems (0.769), followed by perceived risk (-0.335), experience with a payment system (0.190), and experience with a retailer (0.122). Moreover, these constructs explain 77.3% of the variance of the endogenous construct intention to use ($R^2 = 0.773$)⁶. Experience with a payment system and experience with a retailer jointly explain 34.3% of the variance of the construct perceived risk ($R^2 = 0.343$). In this regard, experience with a retailer has the most substantial negative effect on perceived risk, with a value of -0.367, followed by experience with a payment system with a value of -0.336.

Subjective norm, perceived ease of use, perceived usefulness, and ubiquity explain altogether 81.5% of the variance of the construct attitude ($R^2 = 0.815$). As exhibited in Figure 21, perceived ease of use has the most substantial positive effect on attitude (0.371), followed by perceived usefulness (0.334), ubiquity (0.326), and subjective norm (0.113). As shown Figure 21, perceived ease of use and ubiquity also jointly explain 66.7% of the total variance of the construct perceived usefulness ($R^2 = 0.667$). Ubiquity with a value of 0.452 has the strongest positive effect on perceived usefulness, followed by perceived ease of use with a value of 0.423.

In addition to examining the size of the path coefficients, it is also necessary to characterize whether the designed relationships are statistically significant or not. A detailed examination of the significance of the path coefficients will be provided later in this section. As a rule of thumb, for a sample size up to about 1,000 observations, path coefficients with standardized values above 0.20 are predominantly significant, whereas those relationships with values below 0.10 usually produce an insignificant result (Ringle and Sarstedt, 2016).

As a basis for the reflective measurement model evaluation of the current study, it is necessary to estimate the relationships between the reflective latent variables and their associated indicators, referred to as outer loadings. The respective outer loadings are displayed in Figure 21 in the PLS-SEM algorithm. All the outer loadings of the reflective constructs, namely experience with a payment system, experience with a retailer, perceived risk, intention to use, attitude, subjective norm, perceived ease of use, perceived usefulness and ubiquity, are well above the threshold value of 0.70. Thus, there is a sufficient level of indicator reliability for the relationships of the conceptual model.

⁶ R-Square or R^2 is a statistical measure that represents the exact proportion of the variance for a dependent variable which is explained by the respective independent variable or variables in a model (Hair et al., 2014).

The indicator INT_3 (Intention to use) has the smallest indicator reliability with a value of 0.491 (0.701²). On the other hand, EWR_5 (Experience with a retailer) with the outer loadings of 0.904, exhibits the highest indicator reliability, with a value of 0.817 (0.904²).

The estimates are obtained from the structural model relationships, expressly referred to the path coefficients. A path coefficient helps evaluate hypothesized relationships among constructs as a fundamental part of the study. Path coefficient values vary approximately between -1 and +1. According to Ringle et al. (2012), estimated path coefficient values close to +1 imply a robust positive relationship, and the opposite applies to the negative values. Moreover, the closer the estimated coefficient values are to 0, the weaker the developed relationships will be. In particular, estimated coefficients very close to the value of 0 are most likely to be of no statistical significance.

The question of whether a coefficient is significant or not ultimately depends on its standard error. Standard error is obtained through bootstrapping as a useful functionality offered by SmartPLS software. After running bootstrapping, it can compute empirical t-values and p-values for all structural path coefficients through the bootstrap standard error. On the basis of the empirical t-value and the critical value, it is concluded that a specific path coefficient is statistically significant at a certain error probability. Hair et al. (2014) demonstrate the different significance levels used in statistics and commonly used critical values for two-tailed and one-tailed tests.

As determined by Hair et al. (2014), researchers in marketing predominantly assume a significance level of 5%. The choice of using a critical value of 1.96 at the significance level of 5% for two-tailed tests corresponds to the objectives of the current study. However, when assuming a significance level of 5%, a p-value can also be applied to evaluate the structural model path coefficients. If so, to conclude that a relationship under consideration at a 5% significance level is significant, p-values must be lower than 0.05.

Figure 22 shows the outer weights for the significance and relevance of the path coefficients. Using bootstrapping, it is possible to consider the significance of the outer weights. All the significant path coefficients are indicated in Figure 22, considering the t-value of 1.96 at a significance level of 5% as a critical value.

Figure 22: Structural Path Model (PLS-SEM, Bootstrapping)

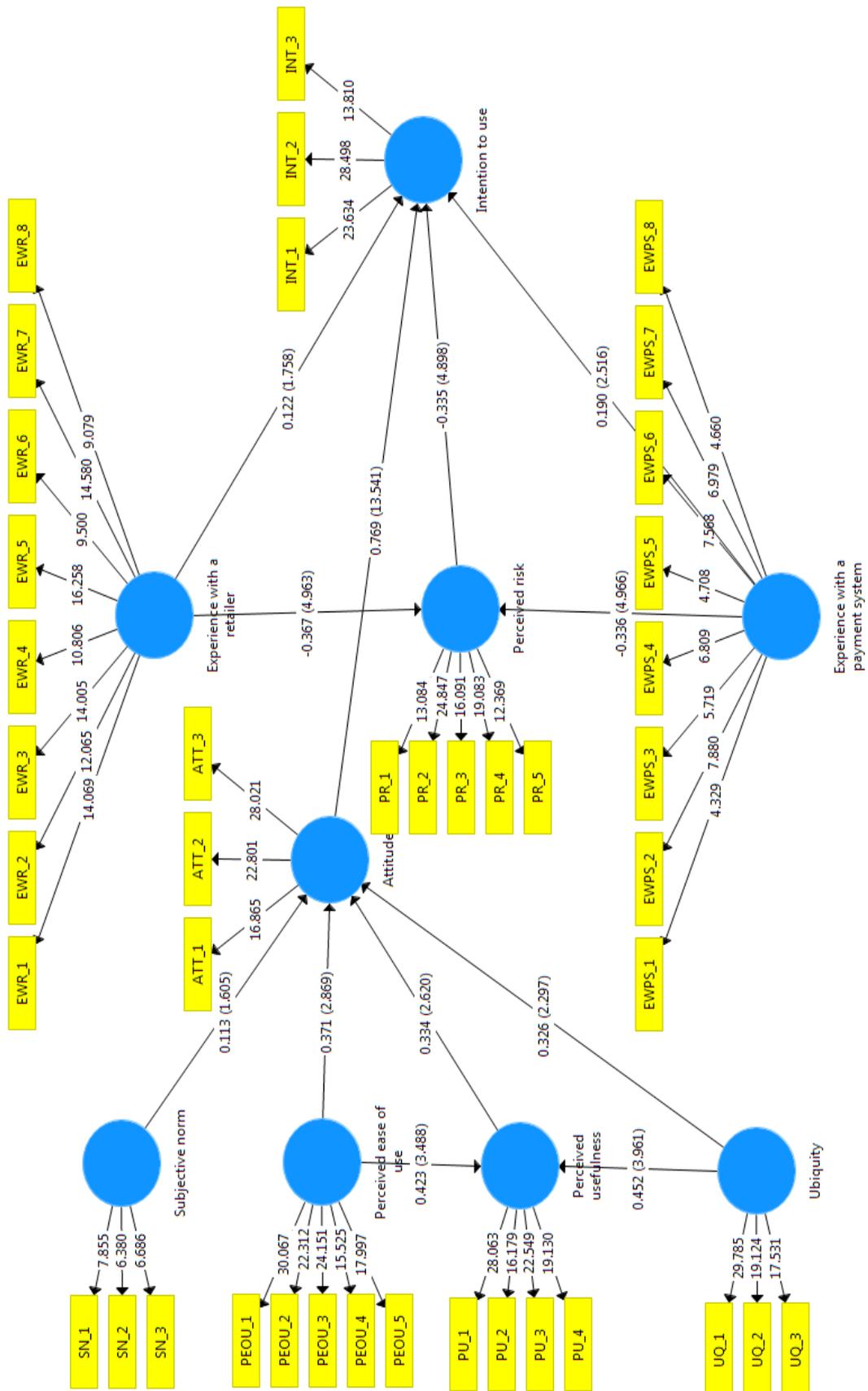


Figure 22 shows that all the reflective indicators are statistically significant, as the t-values are well above the threshold of 1.96 at a 5% significance level. Investigating the results such as t-value, p-value, and outer loadings illustrate that the highest and lowest outer loadings of the structural model indicators occur for PEOU_1 (Perceived ease of use) with a t-value of 30.067 and for EWPS_1 (Experience with a payment system) with a t-value of 4.329, respectively. Analysis and evaluation of the reflective measurement models exhibit satisfactory quality levels for all reflective constructs in this study.

A fundamental part of the structural model assessment evaluates the significance of path coefficients and highlights the designed hypotheses for this study. Looking at the relative significance of the exogenous driver constructs for perceived risk, one finds that both experience with a payment system and experience with a retailer negatively affect perceived risk. The relationships between experience with a payment system (with a t-value of 4.966), followed by experience with a retailer (with a t-value of 4.963) and perceived risk are both statistically significant. The relationship between perceived risk and intention to use with a t-value of 4.898 is also statistically significant. The relationship between experience with a payment system and intention to use also shows a significant t-value of 2.516. In contrast, experience with a retailer, providing a t-value of 1.758, does not influence intention to use. Attitude with a t-value of 13.541 is significantly related to intention to use. The constructs of perceived ease of use, perceived usefulness, and ubiquity are also significantly associated with attitude with t-values of 2.869, 2.620, and 2.297, respectively. It is also confirmed that the relationship between perceived ease of use and perceived usefulness is statistically significant due to the t-value of 3.488, which is well above the threshold of 1.96. Finally, looking through the model in Figure 22, one also finds a significant relationship between ubiquity and perceived usefulness, represents the t-value of 3.961. Among all path coefficients, subjective norm is the only construct that bears a t-value below the threshold of 1.96 (1.605), and therefore is not significantly associated with the reflective of construct attitude.

4.1.3 Model Evaluation

Model estimation conveys two different relational empirical measures within the context of SmartPLS 3. Firstly, it delivers empirical measures on relationships between indicators and constructs. Secondly, model estimation provides empirical measures between the constructs solely. Both measurement model and structural model were broadly described in section 3.2. Indeed, empirical measures allow a theoretically established measurement and a structural model to be compared with reality. Besides, it is also possible to determine the fitness of a selected theory with the data. There are various

critical metrics regarding the importance of both measurement and structural models. Reliability, convergent validity, and discriminant validity are considered the most crucial measurement model metrics for PLS-SEM (see 3.5).

On the other hand, size and statistical significance of the path coefficients along with f^2 (effect size), Q^2 (predictive relevance) and R^2 (explained variance) are the most critical evaluation metrics for structural models. The required information about R^2 and statistical significance of the structural path coefficients has already been described in the last section. The other criteria will be discussed in depth later in this section. Table 9 summarizes the most critical standards in evaluating the results of PLS-SEM for both reflective and formative measurement models.

Table 9: Systematic Evaluation of PLS-SEM Results

Systematic Evaluation of PLS-SEM Results	
Evaluation of the Measurement Models	
Reflective Measurement Models	Formative Measurement Models
<ul style="list-style-type: none"> • Internal consistency (Cronbach's alpha, composite reliability) • Convergent validity (indicator reliability, average variance extracted) • Discriminant validity 	<ul style="list-style-type: none"> • Convergent validity • Collinearity between indicators • Significance and relevance of outer weights
Evaluation of the Structural Models	
<ul style="list-style-type: none"> • Coefficient of determination (R^2) • Predictive relevance (Q^2) • Size and significance of path coefficients • f^2 effect sizes • q^2 effect sizes 	

Source: Hair et al. (2014)

As mentioned in section 3.5, all the explained quality criteria must be taken into account in the evaluation of a mediation model. In the analysis of a model, it is crucial to prevent biased indirect effects that might lead to incorrect implications of mediator constructs. As a result, it is necessary to ensure the discriminant validity of the mediator constructs. Furthermore, high reliability of reflective mediator constructs must also be guaranteed. To establish a reliable and valid measurement model, including mediator constructs and other exogenous and endogenous latent variables, collinearity must not be at a critical level.

The structural model evaluation does not occur until reliability and validity of constructs are examined. In other words, as soon as the measurement of a model, either reflective or formative, provides evidence of the quality of measures, it is the right time to evaluate the structural model. In order to evaluate internal consistency reliability, Cronbach's alpha, composite reliability, and average variance extracted (AVE) are displayed in Table 10.

Table 10: Internal Consistency Reliability of the German Model

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Attitude	0.835	0.845	0.838	0.634
Experience with a payment system	0.908	0.909	0.908	0.551
Experience with a retailer	0.916	0.917	0.916	0.658
Intention to use	0.854	0.864	0.856	0.666
Perceived ease of use	0.896	0.897	0.896	0.633
Perceived risk	0.909	0.912	0.909	0.668
Perceived usefulness	0.877	0.880	0.877	0.642
Subjective norm	0.782	0.785	0.783	0.546
Ubiquity	0.875	0.877	0.875	0.700

According to Table 10, the composite reliability values of all nine constructs are well above the threshold value of 0.70. With values of 0.838 (attitude), 0.908 (experience with a payment system), 0.916 (experience with a retailer), 0.856 (intention to use), 0.896 (perceived ease of use), 0.909 (perceived risk), 0.877 (perceived usefulness), 0.783 (subjective norm), and 0.875 (ubiquity), all the nine reflective constructs have a high enough level of internal consistency reliability.

With respect to Cronbach's alpha, Table 10 also indicates values for all the constructs. It confirms that all construct measures vary between the value of 0 and 1 and are above the 0.70 threshold. The specific Cronbach's alpha values, 0.835 for attitude, 0.908 for experience with a payment system, 0.916 for experience with a retailer, 0.854 for intention to use, 0.896 for perceived ease of use, 0.909 for perceived risk, 0.877 for perceived usefulness, 0.782 for subjective norm, and 0.875 for ubiquity are presented in Table 10. To sum up, there is no problem regarding the internal consistency reliabil-

ity of the measurement model, as all the composite reliability values exceed the threshold of 0.70 and all the Cronbach's alpha values are above 0.70 as well.

After the internal consistency reliability has been evaluated via the composite reliability and Cronbach's alpha, it is also necessary to carry out convergent validity assessment based on the average variance extracted (AVE). As indicated in Table 10, the AVE values of attitude (0.634), experience with a payment system (0.551), experience with a retailer (0.658), intention to use (0.666), perceived ease of use (0.633), perceived risk (0.668), perceived usefulness (0.642), subjective norm (0.564) and ubiquity (0.700) are well above the required minimum level of 0.50. As a result, it is concluded that the measures of the nine reflective constructs show a high level of convergent validity.

Table 11 presents the results of the heterotrait-monotrait ratio (HTMT) in order to assess discriminant validity of the constructs.

Table 11: Discriminant Validity (HTMT)

Heterotrait-Monotrait Ratio (HTMT)	Attitude	Experience with a payment system	Experience with a retailer	Intention to use	Perceived ease of use	Perceived risk	Perceived usefulness	Subjective norm	Ubiquity
Attitude									
Experience with a payment system	0.135								
Experience with a retailer	0.262	0.427							
Intention to use	0.830	0.202	0.420						
Perceived ease of use	0.830	0.090	0.175	0.641					
Perceived risk	0.088	0.561	0.503	0.365	0.114				
Perceived usefulness	0.824	0.104	0.249	0.606	0.757	0.142			
Subjective norm	0.284	0.112	0.111	0.239	0.448	0.197	0.327		
Ubiquity	0.822	0.092	0.240	0.577	0.742	0.084	0.765	0.338	

As explained earlier in section 3.5, HTMT is a more reliable criterion in assessing the discriminant validity compared to the Fornell-Larcker criterion and Cross-Loadings. Table 11 characterizes the HTMT values for all pairs of the reflective constructs in the

study. According to Ringle and Sarstedt (2016), the appropriate threshold level of 0.85 is applied by SmartPLS to investigate the discriminant validity.

As shown in Table 11, all the HTMT values are lower than the more conservative threshold value of 0.85, even for the constructs such as experience with a payment system and experience with a retailer, which might be assumed to be similar from a conceptual point of view. Furthermore, to examine HTMT, the confidence interval of the designed relationships must also be assessed. More precisely, if value 1 is contained in a confidence interval, a lack of discriminant validity is concluded (Hair et al., 2014). Conversely, if the value 1 falls outside the confidence interval range, it empirically implies distinctiveness for the constructs.

Table 12 provides more details about the confidence intervals for each pair of reflective latent variables. In this table, columns labeled 2.5%, and 97.5% represent the lower and upper bounds of the 95% confidence interval, which is considered a significant criterion in examining the discriminant validity of the constructs. As can be seen in Table 12, neither of the confidence intervals contains the value 1 and is therefore significantly different from 1. For example, regarding the association between attitude and intention to use, a confidence interval of HTMT with the lower and upper bounds of 0.653 and 0.875 is observed. Consequently, the conservative HTMT supports the results indicated in Table 11. Hence, the bootstrap confidence interval results of the HTMT similarly highlight the same scenario and speak in favor of the discriminant validity of all reflective constructs.

Table 12: Path Relationship Confidence Interval

	Original Sample (O)	Sample Mean (M)	Bias	2.5%	97.5%
Attitude -> Intention to use	0.769	0.769	0.001	0.653	0.875
Experience with a payment system -> Intention to use	-0.190	-0.184	0.006	-0.323	-0.043
Experience with a payment system -> Perceived risk	-0.336	-0.340	-0.004	-0.461	-0.193
Experience with a retailer -> Intention to use	0.122	0.120	-0.002	0.006	0.257
Experience with a retailer -> Perceived risk	-0.367	-0.363	0.004	-0.519	-0.225
Perceived ease of use -> Attitude	0.371	0.366	-0.005	0.111	0.644
Perceived ease of use -> Perceived usefulness	0.423	0.426	0.003	0.146	0.663
Perceived risk -> Intention to use	-0.335	-0.335	-0.000	-0.464	-0.199
Perceived usefulness -> Attitude	0.334	0.324	-0.011	0.130	0.595
Subjective norm -> Attitude	0.113	0.107	-0.006	-0.032	0.249
Ubiquity -> Attitude	0.326	0.341	0.015	0.043	0.594
Ubiquity -> Perceived usefulness	0.452	0.451	-0.001	0.226	0.694

Dormann et al. (2012) define collinearity as a level of non-independency of predictor variables. Collinearity arises when two or more predictor variables appear to be linearly related in a conceptual model. Indeed, the main problem triggered by collinearity is that the effect of various variables cannot be separated. The reflective measurement model for collinearity of indicators is examined in this section by looking at the VIF values of the reflective indicators. Table 13 represents the required outer VIF values of indicators as follows:

Table 13: Collinearity Outer VIF Values

Construct	Outer VIF	
Attitude	ATT_1	1.749
	ATT_2	2.163
	ATT_3	2.336
Experience with a payment system	EWPS_1	3.774
	EWPS_2	4.456
	EWPS_3	4.688
	EWPS_4	4.439
	EWPS_5	4.268
	EWPS_6	4.872
	EWPS_7	2.877
	EWPS_8	2.681
Experience with a retailer	EWR_1	4.696
	EWR_2	4.552
	EWR_3	4.846
	EWR_4	4.023
	EWR_5	4.001
	EWR_6	4.242
	EWR_7	4.380
	EWR_8	3.801
Intention to use	INT_1	2.434
	INT_2	2.279
	INT_3	1.982
Perceived ease of use	PEOU_1	3.174
	PEOU_2	2.449
	PEOU_3	2.326
	PEOU_4	2.088
	PEOU_5	1.915
Perceived risk	PR_1	1.704
	PR_2	3.491
	PR_3	2.887
	PR_4	3.524
	PR_5	2.871
Perceived usefulness	PU_1	2.629
	PU_2	2.067
	PU_3	2.364
	PU_4	2.014
Subjective norm	SN_1	1.756
	SN_2	1.737
	SN_3	1.503
Ubiquity	UQ_1	2.320
	UQ_2	2.554
	UQ_3	2.261

According to the results exhibited in Table 13, EWPS_6 (experience with a payment system) has the highest VIF value (4.872). As stated by Hair et al. (2014), all the VIF values must be uniformly below the threshold value of 5. Hence, according to Table 13 there is no collinearity problem concerning reflective measurement model for this study. However, because of the expected high correlations among reflective indicators, considering the collinearity is not a point of concern (Henseler et al., 2016). Incidentally, Table 14 also shows the inner VIF values of all combinations of endogenous constructs and corresponding exogenous constructs.

Table 14: Collinearity Inner VIF Values

Inner VIF	Attitude	Experience with a payment system	Experience with a retailer	Intention to use	Perceived ease of use	Perceived risk	Perceived usefulness	Subjective norm	Ubiquity
Attitude				1.098					
Experience with a payment system				1.351		1.177			
Experience with a retailer				1.493		1.177			
Intention to use									
Perceived ease of use	3.004						2.215		
Perceived risk				1.535					
Perceived usefulness	3.005								
Subjective norm	1.250								
Ubiquity	2.831						2.215		

The following sets of constructs must be examined in connection with the inner VIF values: (1) experience with a payment system and experience with a retailer as the predictors of perceived risk; (2) perceived risk, experience with a payment system, experience with a retailer, and attitude as the predictors of Intention to use; (3) subjective norm, perceived ease of use, perceived usefulness, and ubiquity as the predictors of attitude; and (4) perceived ease of use and ubiquity as the predictors of perceived usefulness. As shown in Table 14, all the inner VIF values are clearly below the critical threshold of 5. Hence, it is concluded that the collinearity does not reach critical levels in any of the reflective constructs for the study.

To assert whether a specific relationship in a structural path model is empirically significant or not, it is necessary to assess the p-values of the path coefficients, besides

evaluating t-values of path coefficients. Assuming a 5% significance level, as shown in Table 15, all relationships designed in the structural model are significant, except **Subjective norm → Attitude** and **Experience with a retailer → Intention to use** which provide a p-value greater than 0.05 (p-value = 0.139 and p-value = 0.068, respectively).

Table 15: Path Coefficient P-Value

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Attitude -> Intention to use	0.769	0.775	0.058	13.153	0.000
Experience with a payment system -> Intention to use	-0.190	-0.188	0.072	2.642	0.008
Experience with a payment system -> Perceived risk	-0.336	-0.342	0.072	4.652	0.000
Experience with a retailer -> Intention to use	0.122	0.119	0.067	1.827	0.068
Experience with a retailer -> Perceived risk	-0.367	-0.360	0.076	4.854	0.000
Perceived ease of use -> Attitude	0.371	0.369	0.134	2.767	0.006
Perceived ease of use -> Perceived usefulness	0.423	0.427	0.127	3.327	0.001
Perceived risk -> Intention to use	-0.335	-0.334	0.073	4.571	0.000
Perceived usefulness -> Attitude	0.334	0.324	0.129	2.597	0.010
Subjective norm -> Attitude	0.113	0.103	0.076	1.480	0.139
Ubiquity -> Attitude	0.326	0.336	0.146	2.237	0.026
Ubiquity -> Perceived usefulness	0.452	0.450	0.118	3.837	0.000

After the direct effect of a construct on the related corresponding construct has been evaluated, the second step is to assess indirect effects in the model by examining mediating constructs. Hair et al. (2014) point to the total effect as a sum of both direct and indirect effects. Interpreting total effect is precisely in line with the objectives of this

study because it aims to explore the differential impact of one or more driver constructs on a criterion construct through one or more mediating variables.

In order to examine the total effects, it is important to determine how strongly each of the reflective exogenous constructs ultimately influences the key target variable through the mediating constructs. Hence, Table 16 provides a detailed specification of all total effects in the structural model. Each column highlights a target construct in this table, whereas the rows illustrate antecedent constructs.

Table 16: Total Effect

Total Effect	Attitude	Experience with a payment system	Experience with a retailer	Intention to use	Perceived ease of use	Perceived risk	Perceived usefulness	Subjective norm	Ubiquity
Attitude				0.769					
Experience with a payment system				0.302		-0.336			
Experience with a retailer				0.245		-0.367			
Intention to use									
Perceived ease of use	0.512			0.393			0.423		
Perceived risk				-0.335					
Perceived usefulness	0.334			0.257					
Subjective norm	0.113			0.087					
Ubiquity	0.477			0.367			0.452		

For example, it can be seen that among the five exogenous driver constructs, perceived ease of use has the most substantial total effect on intention to use (0.393), followed by ubiquity (0.367), experience with a payment system (0.302), experience with a retailer (0.245) and subjective norm (0.087).

After the algorithm has been run to evaluate the R^2 values of all endogenous constructs, it is also important to assess the changes in the R^2 values when a specific exogenous construct associated with a specific endogenous construct is omitted from the structural model. The purpose is to determine whether the omitted construct has a substantive impact on the relevant endogenous construct or not. This measurement of exogenous construct effectiveness on its associated endogenous construct refers to the f^2 effect size. According to Henseler et al. (2016), f^2 effect size can be calculated as follows:

$$f^2 = \frac{R_{included}^2 - R_{excluded}^2}{1 - R_{included}^2}$$

In the formula, $R_{included}^2$ and $R_{excluded}^2$ refer to the two parameters which play a fundamental role in calculating f^2 effect size. In particular, $R_{included}^2$ and $R_{excluded}^2$ are the R^2 values of an endogenous variable if a selected exogenous latent variable is included in or excluded from the structural model. According to Cohen (1988), the thresholds for assessing the f^2 effect size are the values of 0.02, 0.15, and 0.35. These values are referred to as small, medium, and large effects, respectively. Effect size values less than 0.02 imply that a selected exogenous latent variable is ineffective with respect to the associated endogenous construct. Table 17 shows the f^2 values for all combinations of the endogenous and the corresponding exogenous constructs.

Table 17: F Square

F Square	Attitude	Experience with a payment system	Experience with a retailer	Intention to use	Perceived ease of use	Perceived risk	Perceived usefulness	Subjective norm	Ubiquity
Attitude				2.366					
Experience with a payment system				0.118		0.146			
Experience with a retailer				0.044		0.175			
Intention to use									
Perceived ease of use	0.247						0.242		
Perceived risk				0.321					
Perceived usefulness	0.200								
Subjective norm	0.055								
Ubiquity	0.203						0.277		

As indicated in Table 17, attitude has a large effect size of 2.366 on intention to use. Furthermore, experience with a payment system and experience with a retailer have a small and medium effect size of 0.146 and 0.175 on perceived risk, respectively. Moreover, both experience with a payment system and experience with a retailer show a small effect size of 0.118 and 0.044 on intention to use, respectively. Perceived ease of use has a medium effect size of 0.247 on attitude and 0.242 on perceived usefulness. Furthermore, perceived risk also shows a medium effect size of 0.321 on intention to use remote mobile payment. In addition, perceived usefulness and ubiquity, two independent determinant constructs, present a medium effect size of 0.200 and 0.203 on

attitude, respectively. Subjective norm has a small effect size of 0.055 on attitude. Finally, ubiquity represents a medium effect size of 0.277 on perceived usefulness.

Besides evaluating the magnitude of R^2 values for the predictive accuracy criterion, it is also necessary to examine Stone-Geisser's Q^2 value (Geisser, 1974; Stone, 1974). Q^2 values measure the out-of-sample predictive power for a model or, in other words, predictive relevance (Ringle et al., 2012). If there is no problem regarding the Q^2 values obtained from blindfolding, the predictive relevance of a PLS path model can be ascertained accordingly. In other words, it is inferred that a PLS path model can also predict data not employed in the model estimation.

Ringle et al. (2012) show that Q^2 values larger than 0 for a specific reflective endogenous latent variable assert the predictive relevance of path model for the particular dependent variable. Table 18 displays the Q^2 values of the study's path model regarding the four reflective endogenous latent variables. As shown in Table 18, all the Q^2 values are well above the value of 0. As a result, the model shows predictive relevance for its four specified endogenous constructs. More precisely, attitude has the highest Q^2 value (0.468), followed by intention to use (0.425), perceived usefulness (0.374), and perceived risk (0.204).

Table 18: Blindfolding

Blindfolding	SSO	SSE	$Q^2 (=1-SSE/SSO)$
Attitude	894.000	475.331	0.468
Experience with a payment system	2,384.000	2,384.000	
Experience with a retailer	2,384.000	2,384.000	
Intention to use	894.000	513.758	0.425
Perceived ease of use	1,490.000	1,490.000	
Perceived risk	1,490.000	1,185.902	0.204
Perceived usefulness	1,192.000	746.141	0.374
Subjective norm	894.000	894.000	
Ubiquity	894.000	894.000	

Similarly to the f^2 effect size approach, the impact of predictive relevance power can be compared by measuring q^2 effect size. It is calculated on the basis of a formula, as indicated below (Hair et al., 2014):

$$q^2 = \frac{Q_{included}^2 - Q_{excluded}^2}{1 - Q_{included}^2}$$

Therefore, to determine the q^2 effect size of a specific construct on a reflective endogenous latent variable, the first step is to compute the model's blindfolding results. The model is calculated on the basis of two scenarios: with a specific construct ($Q^2_{included}$); and without a specific construct ($Q^2_{excluded}$). The next step is to run the analysis by placing both $Q^2_{included}$ and $Q^2_{excluded}$ in the formula described above. The threshold values of 0.02, 0.15, and 0.35 assigned to an exogenous construct reveal a small, medium, and large predictive relevance, respectively. As the q^2 effect size assessment must be computed manually, Table 19 summarizes the q^2 effect size results with regard to all the structural model relationships. The first row represents the endogenous constructs in this table, whereas the first column represents the predictor constructs.

Table 19: q^2 Effect Size

q^2 Effect Sizes	Perceived risk	Intention to use	Attitude	Perceived usefulness
Experience with a payment system	0.071 small	0.012 no effect		
Experience with a retailer	0.094 small	0.015 no effect		
Perceived risk		0.062 small		
Subjective norm			0.003 no effect	
Perceived usefulness			0.054 small	
Perceived ease of use			0.063 small	0.102 small
Ubiquity			0.056 small	0.1 small

Before providing detailed information on the measurement model in mediation analysis, it is worthwhile to determine the total and the specific indirect effect. The total indirect effect represents the effect through all the mediating constructs simultaneously. On the other hand, a specific indirect effect sheds light on a particular mediating construct intervening between an independent and a dependent variable. Establishing an indirect effect validates a mediation hypothesis that a specific mediator can explain a relationship between two other constructs. Table 20 and Table 21 show the total and the specific indirect effects, respectively.

Table 20: Total Indirect Effect

Total Indirect Effects	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Attitude -> Intention to use					
Experience with a payment system -> Intention to use	0.112	0.114	0.035	3.200	0.001
Experience with a payment system -> Perceived risk					
Experience with a retailer -> Intention to use	0.123	0.120	0.037	3.339	0.001
Experience with a retailer -> Perceived risk					
Perceived ease of use -> Attitude	0.141	0.137	0.070	2.030	0.043
Perceived ease of use -> Intention to use	0.393	0.393	0.110	3.580	0.000
Perceived ease of use -> Perceived usefulness					
Perceived risk -> Intention to use					
Perceived usefulness -> Attitude					
Perceived usefulness -> Intention to use	0.257	0.250	0.101	2.537	0.011
Subjective norm -> Attitude					
Subjective norm -> Intention to use	0.087	0.080	0.059	1.478	0.140
Ubiquity -> Attitude	0.151	0.146	0.072	2.112	0.035
Ubiquity -> Intention to use	0.367	0.372	0.100	3.655	0.000
Ubiquity -> Perceived usefulness					

Table 21: Specific Indirect Effect

Specific Indirect Effects	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Perceived ease of use -> Perceived usefulness -> Attitude	0.141	0.137	0.070	2.030	0.043
Ubiquity -> Perceived usefulness -> Attitude	0.151	0.146	0.072	2.112	0.035
Perceived ease of use -> Attitude -> Intention to use	0.285	0.286	0.107	2.655	0.008
Perceived ease of use -> Perceived usefulness -> Attitude -> Intention to use	0.109	0.107	0.056	1.942	0.053
Ubiquity -> Perceived usefulness -> Attitude -> Intention to use	0.116	0.112	0.055	2.121	0.034
Subjective norm -> Attitude -> Intention to use	0.087	0.080	0.059	1.478	0.140
Ubiquity -> Attitude -> Intention to use	0.251	0.260	0.114	2.191	0.029
Experience with a payment system -> Perceived risk -> Intention to use	0.112	0.114	0.035	3.200	0.001
Experience with a retailer -> Perceived risk -> Intention to use	0.123	0.120	0.037	3.339	0.001

As indicated in both tables, all but one of the total indirect effects as well as two specific indirect effects, show a statistically significant relationship, with p-values below the threshold of 0.05. The first exception is the total indirect effect **Subjective norm -> Intention to use** (p-value = 0.140), and its specific indirect effect **Subjective norm -> Attitude -> Intention to use** (p-value = 0.140). The other exception is the specific indirect effect **Perceived ease of use -> Perceived usefulness -> Attitude -> Intention to use** (p-value = 0.053).

As a fundamental and required part of each analysis, F-factor analysis provides the prerequisites and foundation of further assessments. Basically, it must be implemented in the preliminary stage of a research. Concerning the current research, F-factor analysis is evaluated through the results reports by SmartPLS 3. The indicator loadings shown in Table 22 reveal that all indicators of the reflective constructs experience with a payment system, experience with a retailer, perceived risk, intention to use, attitude, subjective norm, perceived ease of use, perceived usefulness and ubiquity have loadings of 0.700 or higher.

Table 22: F-Factor Loadings

F-Factor	Attitude	Experience with a payment system	Experience with a retailer	Intention to use	Perceived ease of use	Perceived risk	Perceived usefulness	Subjective norm	Ubiquity
ATT_1	0.706								
ATT_2	0.856								
ATT_3	0.839								
EWPS_1		0.734							
EWPS_2		0.714							
EWPS_3		0.727							
EWPS_4		0.704							
EWPS_5		0.737							
EWPS_6		0.770							
EWPS_7		0.750							
EWPS_8		0.783							
EWR_1			0.846						
EWR_2			0.739						
EWR_3			0.855						
EWR_4			0.778						
EWR_5			0.904						
EWR_6			0.747						
EWR_7			0.862						
EWR_8			0.703						
INT_1				0.856					
INT_2				0.903					
INT_3				0.701					
PEOU_1					0.840				
PEOU_2					0.781				
PEOU_3					0.804				
PEOU_4					0.749				
PEOU_5					0.801				
PR_1						0.790			
PR_2						0.882			
PR_3						0.845			
PR_4						0.843			
PR_5						0.722			
PU_1							0.858		
PU_2							0.729		
PU_3							0.823		
PU_4							0.790		
SN_1								0.790	
SN_2								0.712	
SN_3								0.721	
UQ_1									0.883
UQ_2									0.818
UQ_3									0.807

Four fundamental elements, namely brand knowledge of a payment system, brand knowledge of a retailer, previous usage of a payment system, and previous usage of a retailer, were described in sections 2.6.1 and 2.6.2. These factors have been employed in this study to support measurement of the two substantial independent variables in the conceptual model; experience with a payment system and experience with a retailer. At this point, we examine the association of these factors with perceived risk. Table 23 illustrates the results of the correlation test by SPSS to assess the significance of the relationships.

According to Table 23, the correlations between the factors brand knowledge of a payment system, brand knowledge of a retailer, previous usage of a payment system, previous usage of a retailer and perceived risk are all statistically significant, because of both Pearson correlation values and p-values that are all well below the critical value of 0.01.

Table 23: Correlation among Brand Knowledge of a Payment System, Brand Knowledge of a Retailer, Previous Usage of a Payment System, Previous Usage of a Retailer, and Perceived Risk

		Correlations				
		Mean of perceived risk	Brand knowledge of payment system	Brand knowledge of retailer	Previous usage of payment system	Previous usage of retailer
Mean of perceived risk	Pearson Correlation	1	-.331**	-.272**	-.491**	-.433**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	200	200	200	156	156
Brand knowledge of payment system	Pearson Correlation	-.331**	1	.568**	.557**	.425**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	200	200	200	156	156
Brand knowledge of retailer	Pearson Correlation	-.272**	.568**	1	.387**	.410**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	200	200	200	156	156
Previous usage of payment system	Pearson Correlation	-.491**	.557**	.387**	1	.588**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	156	156	156	156	156
Previous usage of retailer	Pearson Correlation	-.433**	.425**	.410**	.588**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	156	156	156	156	156

** . Correlation is significant at the 0.01 level (2-tailed).

Finally, considering the significance of both direct and indirect effects, Table 24 summarizes the type of mediation for each structural path model relationship, hypothesized in section 2.7. The results shed light on the partial mediation effect of perceived usefulness in the relationship between ubiquity and attitude. Interestingly enough, it is ascertained how significant can be to conduct a mobile payment anytime and anywhere. Perceived risk partially mediates the relationship between experience with a payment system and intention to use. Most importantly, the relationship between experience with a retailer and intention to use is only significant through the full mediation effect of perceived risk regarding to the German sample in this study.

Table 24: Path Model Mediation Type

Specific Path Model Relationship	Mediation Type
Ubiquity -> Perceived usefulness -> Attitude	Complementary (partial mediation)
Experience with a payment system -> Perceived risk -> Intention to use	Complementary (partial mediation)
Experience with a retailer -> Perceived risk -> Intention to use	Indirect only (full mediation)

4.1.4 Results Summary

To conclude the first part of the research analysis, Table 24 summarizes the reflective measurement model assessment results. As can be seen, all the evaluation criteria have been met. They all support the excellence of the reliability and validity of the measures. Outer loading is the most crucial criterion in evaluating the indicator reliability that must be either greater than the critical threshold value of 0.700 or equal to it (Hair et al., 2014). Although the satisfactory threshold for both composite reliability and Cronbach's alpha was stated as lying between 0.60 – 0.90 in this study, Hair et al. (2019) indicate that values above 0.95 are basically problematic. Therefore, a threshold of 0.60 – 0.95 is also considered as acceptable in this study.

Table 25: Results Summary for Reflective Measurement Models

Results Summary for Reflective Measurement Models						
Latent Variable	Indicators	Convergent Validity		Internal Consistency Reliability		Discriminant Validity
		Loadings	AVE	Composite Reliability	Cronbach's Alpha	
		>0.70	>0.5	0.60-0.95	0.60-0.95	HTMT confidence interval does not include 1
Experience With a Payment System	EWPS_1	0.734	0.551	0.908	0.908	Yes
	EWPS_2	0.714				
	EWPS_3	0.727				
	EWPS_4	0.704				
	EWPS_5	0.737				
	EWPS_6	0.770				
	EWPS_7	0.750				
	EWPS_8	0.783				
Experience With a Retailer	EWR_1	0.846	0.658	0.916	0.916	Yes
	EWR_2	0.739				
	EWR_3	0.855				
	EWR_4	0.778				
	EWR_5	0.904				
	EWR_6	0.747				
	EWR_7	0.862				
	EWR_8	0.703				
Perceived Risk	PR_1	0.790	0.668	0.909	0.909	Yes
	PR_2	0.882				
	PR_3	0.845				
	PR_4	0.843				
	PR_5	0.722				
Intention To Use	INT_1	0.856	0.666	0.856	0.854	Yes
	INT_2	0.903				
	INT_3	0.701				
Attitude	ATT_1	0.706	0.634	0.838	0.835	Yes
	ATT_2	0.856				
	ATT_3	0.839				
Subjective Norm	SN_1	0.790	0.546	0.783	0.782	Yes
	SN_2	0.712				
	SN_3	0.721				
Perceived Ease of Use	PEOU_1	0.840	0.633	0.896	0.896	Yes
	PEOU_2	0.781				
	PEOU_3	0.804				
	PEOU_4	0.749				
	PEOU_5	0.801				
Perceived Usefulness	PU_1	0.858	0.642	0.877	0.877	Yes
	PU_2	0.729				
	PU_3	0.823				
	PU_4	0.790				
Ubiquity	UQ_1	0.883	0.700	0.875	0.875	Yes
	UQ_2	0.818				
	UQ_3	0.807				

4.2 Results of the Iranian Sample

Similar to section 4.1, this section presents the evaluation of the Iranian sample reflective measurement model. It aims to assess the model in terms of internal consistency reliability as well as validity and other fundamental criteria. First, the descriptive analysis of the Iranian sample is shown in the next section.

4.2.1 Descriptive Analysis

Analysis of this study is continued in this section, focusing on Iran, as the other country included in this research. The same procedure and the same assessment criteria will also be discussed in this part. To start this part, Table 25 and 26 present the findings for a descriptive analysis of both the demographic and the general profile of the respondents, respectively.

A remarkable attempt was made in this study to use equivalent samples by considering key demographic variables such as age, educational level, income, etc. in Iran and Germany. Despite the currency disparity between two countries, an attempt was made to provide nearly equivalent income thresholds in both samples in order to minimize bias. Sample representativeness in both countries was allocated top priority during the data collection process. Indeed, the participants of both Iranian and German samples are representative of the target population. Targeting Bachelor and Master students in both countries helps reduce confounding differences and bias in terms of intelligence or experience and facilitates the comparability of samples.

Table 26: Descriptive Summary of the Demographic Questions

Variable		Frequency	Percentage
Gender	Male	99	49.5%
	Female	101	50.5%
Age	20 - under 25	80	40%
	25 - under 30	106	53%
	30 - under 35	12	6%
	35 and older	2	1%
Household Income <small>(1€ = 4,600 Iranian Toman)</small>	Under 650 €	17	8.5%
	650 € - under 2,000 €	25	12.5%
	2,000 € - under 4,200 €	50	25%
	More than 4,200 €	108	54%
	Education	Diploma	76
	University degree	124	62%

As indicated in Table 26, out of 200 respondents, there are 99 males (49.5%), compared to 101 females (50.5%). Regarding the different age groups, we see that 35 years old and older represent the minority, with 2 respondents (1%). On the other hand, respondents between 25 – under 30 years old represent the majority, accounting for 106 respondents (53%). In terms of income level, the majority of the respondents belong to the category with more than €4,200 (54%), followed by €2,000 – under €4,200 (25%), €650– under €2,000 (12.5%), and finally the minority group of respondents assigned to under €650 (8.5%). As explained in section 2.4, Iran is considered as a collectivistic society. Therefore, the household income shows that the majority of the Iranian sample seemingly lives with their parents, as they state to earn more than €4,200. According to Table 26, most of the respondents possess a university degree (Bachelor) (62%), followed by a Diploma (38%). It is worth noting that the university degree stands for a Bachelor degree in the Iranian sample. Moreover, Diploma in the Iranian sample is also equivalent to the Abitur in the German sample.

Table 27: Descriptive Summary of General Questions

Variable		Frequency	Percentage
Ever conducted a mobile payment transaction?	Yes	159	79.5%
	No	41	20.5%
Duration of usage (Year)	< 1	14	9.8%
	1 - 2	40	28%
	2 - 3	64	44.8%
	More than 3	25	17.5%
Frequency of conducting a mobile payment	Minimum once a week	47	32.9%
	Minimum once a month	76	53.1%
	Minimum once a quarter	20	14%
	Seldom	0	0%
Average cost per Transaction <i>(1€ = 4,600 Iranian Toman)</i>	Under 10 €	7	4.9%
	10 € - Under 50 €	20	14%
	50 € - Under 100 €	50	35%
	100 € or More	66	46.2%
Average time using mobile phone per day	Less than an hour	5	2.5%
	1 - Less than 3 hours	68	34%
	3 - Less than 6 hours	101	50.5%
	More than 6 hours	26	13%

Table 27 shows that 79.5% of the respondents have already conducted a mobile payment transaction at least once. Most of the respondents (53.1%) state that they frequently use mobile payment systems once a month, while 46.2% of the respondents spend €100 or more on average per each mobile payment transaction. Similarly to the German sample, most of the respondents (44.8%) specify their duration of mobile payment usage to the past 2 – 3 years. It highlights that mobile payment not only in Iran, but also in Germany is still in its infancy.

Table 28 displays different product categories bought by Iranian users through the usage of mobile payment systems.

Table 28: Products Purchase by Iranian Users Using Mobile Payment

	Responses		Percent of Cases
	N	Percent	
Laptop, computer, notebook	22	2.3%	15.6%
Furniture	86	9.1%	61.0%
Consumer electronics	89	9.4%	63.1%
Perfume, cosmetics	37	3.9%	26.2%
Clothing, accessories	96	10.1%	68.1%
Tickets for theatre, cinema, concert, sport events	93	9.8%	66.0%
Foods, Beverages	20	2.1%	14.2%
Sports equipment	72	7.6%	51.1%
Books	66	7.0%	46.8%
CD, DVD, video games, music	27	2.9%	19.1%
Mobile app	83	8.8%	58.9%
Holidays	50	5.3%	35.5%
Hotel room	63	6.7%	44.7%
Software	50	5.3%	35.5%
Toys	13	1.4%	9.2%
Tickets	71	7.5%	50.4%
Others:	9	1.0%	6.4%
Total	947	100.0%	671.6%

As can be seen in Table 28, clothing and accessories (68.1%), tickets for the theatre, cinema, a concert, or sports events (66%), and consumer electronics (63.1%) are reported as the top three products purchased by Iranians, using mobile payment systems.

Generally speaking, people from different cultures are expected to show different preferences and motivation to use mobile payment systems for a certain product. Various product categories purchased using mobile payment by German and Iranian users have been illustrated in sections 4.1.1 and in this section, respectively. In a continuation of this work, the product categories of both countries listed here will first be individ-

ually compared to ascertain whether a specific pair of product categories differs significantly or not. Then, the products purchased in each country will be classified into the following three categories: 1) Durable product category; 2) Non-durable product category; 3) Service product category.

A comparison of the acceptance of mobile payment systems for individual product categories as well as durable, non-durable, and service products between Iran and Germany is presented using SPSS to perform a non-parametric Wilcoxon test. It helps assess which categories differ significantly. Hence, Table 29 shows a comparison of mobile payment usage in the same product categories for the two countries.

Table 29: Products Purchased Using Mobile Payment: Iran & Germany

Product Category	Z	Asymp.Sig. (2-tailed)
<i>Laptop, Computer, Notebook</i>	-0.378	0.705
<i>Furniture</i>	-6.828	0.000
<i>Consumer electronic</i>	-4.258	0.000
<i>Perfume, Cosmetics</i>	-1.859	0.063
<i>Clothing, Accessories</i>	-0.962	0.336
<i>Tickets for theatre, Cinema, Concert, Sport events</i>	-2.060	0.039
<i>Foods, Beverages</i>	-3.182	0.001
<i>Sports equipment</i>	-2.534	0.011
<i>Book</i>	-0.911	0.362
<i>CD, DVD, Computer / Video games, Music</i>	-1.938	0.053
<i>Mobile App</i>	-3.910	0.000
<i>Holidays</i>	-0.949	0.343
<i>Hotel room</i>	-0.412	0.680
<i>Software</i>	-2.333	0.020
<i>Toys</i>	-1.069	0.285
<i>Bus, train, or flight ticket</i>	-0.283	0.777

*5% significance level

As indicated in Table 29, furniture (p-value = 0.000), consumer electronics (p-value = 0.000), tickets for the theater, cinema, and sports events (p-value = 0.039), food and beverages (p-value = 0.001), sports equipment (p-value = 0.011), mobile app (p-value = 0.000) and software (p-value = 0.020) show a p-value of less than the critical value of 0.05. Therefore, it is concluded that the usage of mobile payment systems in the product categories of furniture, consumer electronics, tickets for the theater, cinema, and sports events, foods and beverages, sports equipment, mobile apps and software are significantly different between Iran and Germany.

Moreover, as explained earlier in this section, Table 30 also provides the results of a non-parametric Wilcoxon test for the classification of different product categories into three main types; Durable product category (e.g., clothing), Non-durable product category (e.g., food and beverages) and Service product category (e.g., holidays or hotel room).

Table 30: Durable, Non-durable, and Service Product Category Paired Samples Test: Iran & Germany

Test Statistics^a			
	Durable product category	Non - durable product category	Service product category
Z	-3.108 ^b	-2.379 ^c	-3.327 ^b
Asymp. Sig. (2-tailed)	.002	.017	.001

a. Wilcoxon Signed Rank Test

b. Based on positive ranks.

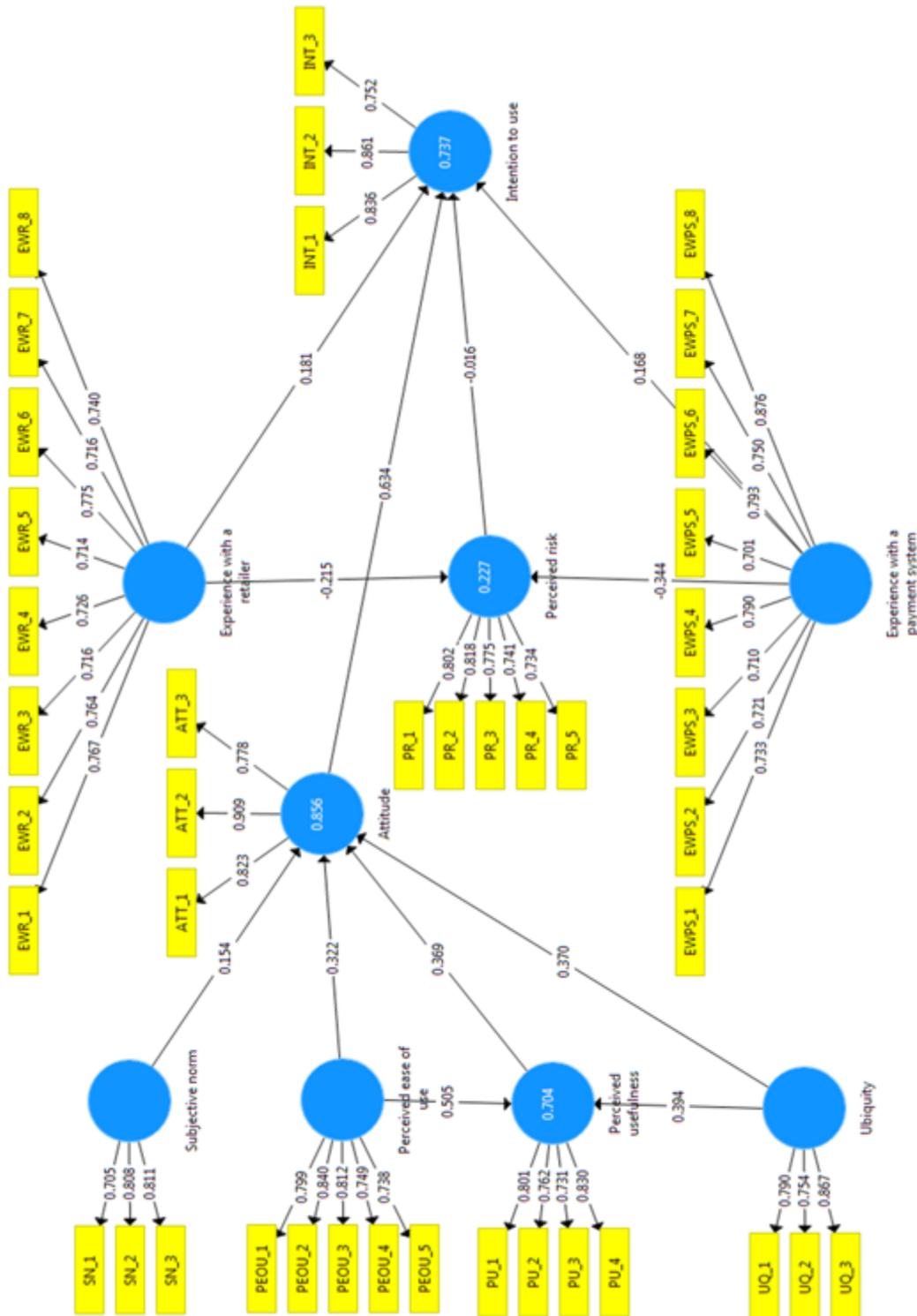
c. Based on negative ranks.

Interestingly, the differences in all three product categories, including durables, (p-value = 0.002), non-durables, (p-value = 0.017), and services (p-value =0.001) are statistically significant, as the p-values are less than 0.05.

4.2.2 Results of the Structural Model

This section illustrates the results of the algorithm and bootstrapping for the Iranian sample. First, Figure 23 gives an overview of the algorithm results for the path model.

Figure 23: Structural Path Model, Algorithm, PLS-SEM



As Figure 23 shows, attitude has the most substantial positive effect on intention to use mobile payment systems (0.634), while perceived risk shows a negligible path coefficient (-0.016) on its relationship with intention to use. In addition, experience with a payment system and experience with a retailer show positive effects of 0.168 and

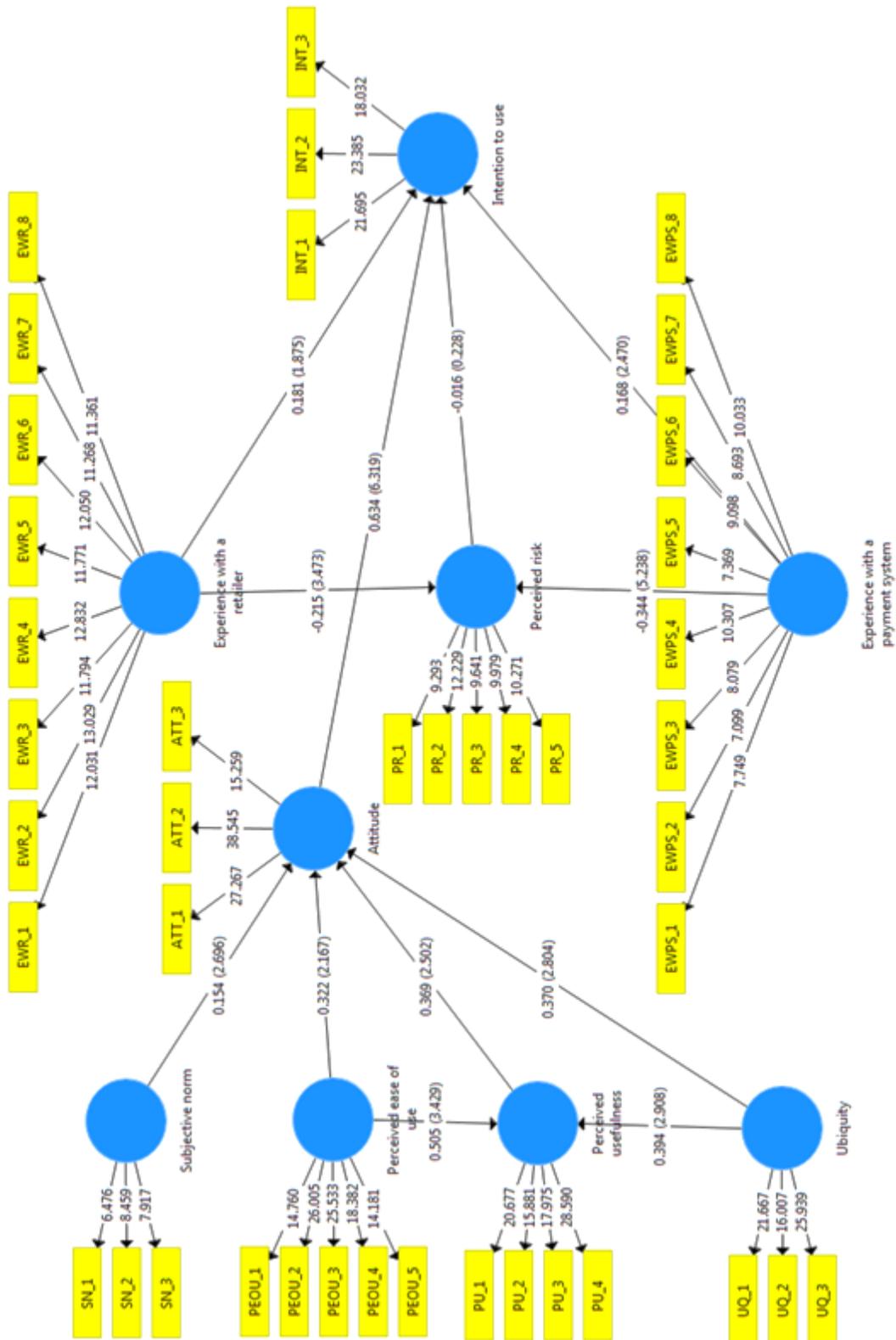
0.181 on intention to use mobile payment systems, respectively. Furthermore, the four constructs explain 73.7% of the variance of the endogenous construct intention to use ($R^2 = 0.737$), as displayed in the structural path model in Figure 23. Moreover, experience with a payment system and experience with a retailer jointly explain 22.7% of the variance of the construct perceived risk ($R^2 = 0.227$). It is worth noting that experience with a payment system has a higher negative effect on the construct of perceived risk with a value of -0.344, compared to experience with a retailer with a value of -0.215. Following the similar procedure, subjective norm, perceived ease of use, perceived usefulness, and ubiquity totally explain 85.6% of the variance of the construct attitude ($R^2 = 0.856$). In addition, ubiquity shows the most substantial positive effect specifically on attitude (0.370). Perceived usefulness (0.369), perceived ease of use (0.322), and subjective norm (0.154) occupied second, third, and fourth place, respectively. Besides, as exhibited in Figure 23, perceived ease of use and ubiquity together explain 70.4% of the total variance of the construct perceived usefulness ($R^2 = 0.704$). In this regard, perceived ease of use provides a more substantial positive effect on perceived usefulness with a value of 0.505, compared to ubiquity with a value of 0.394.

As indicated in the structural path model in Figure 23, all the outer loadings of the reflective constructs experience with a payment system, experience with a retailer, perceived risk, intention to use, attitude, subjective norm, perceived ease of use, perceived usefulness and ubiquity are well above the threshold value of 0.70; this implies a sufficient level of reliability for the indicators with regard to the relationships of the conceptual model.

The indicator EWPS_5 (experience with a payment system), with an outer loading of 0.701, has the smallest indicator reliability with a value of 0.491 (0.701^2). Conversely, the indicator ATT_2 (attitude) with an outer loading of 0.909, has the highest indicator reliability throughout the structural path model with a value of 0.826 (0.909^2).

Figure 24 shows the outer weights for the significance and the relevance of the path coefficients. As explained earlier in section 4.1.1, a t-value of 1.96 at a significance level of 5% as a critical value measures the significance of a path coefficient.

Figure 24: Structural Path Model, Bootstrapping, PLS-SEM



By looking at the significance levels, it is asserted that all the reflective indicators are statistically significant, as the t-values are all above the threshold of 1.96 at a 5% significance level. ATT_2 (attitude) has the highest outer loading with a value of 38.545, whereas SN_1 (subjective norm) accounts for the lowest outer loading amongst the structural model indicators, with a value of 6.476. The evaluation of the reflective measurement model indicators illustrates a satisfactory level of construct quality, as indicated in Figure 24.

Both experience with a payment system and experience with a retailer show a robust negative effect on perceived risk. In particular, the relationship between experience with a payment system and perceived risk yields a t-value of 5.238, compared to the relationship between experience with a retailer and perceived risk with a t-value of 3.473. Both relationships are then asserted to be statistically significant as the t-values are well above 1.96. On the other hand, the relationship between perceived risk and intention to use with a t-value of 0.228 is not statistically significant. Unlike experience with a retailer with a t-value of 1.875, experience with a payment system shows a statistically significant t-value of 2.470 on its relationship with intention to use mobile payment systems. Attitude with a t-value of 6.319 establishes a statistically significant relationship with intention to use mobile payment systems. The exogenous constructs of subjective norm, perceived ease of use, perceived usefulness and ubiquity are also significantly associated with attitude, exhibiting t-values of 2.696, 2.167, 2.502, and 2.804, respectively. Moreover, both perceived ease of use and ubiquity provide excellent t-values of 3.429 and 2.908, respectively, over the relationship with perceived usefulness. Therefore, it is also concluded that both relationships are statistically significant.

4.2.3 Model Evaluation

To investigate the internal consistency reliability, Table 31 displays Cronbach's alpha, composite reliability, and average variance extracted (AVE) as follows:

Table 31: Internal Consistency Reliability

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Attitude	0.875	0.881	0.876	0.703
Experience with a payment system	0.917	0.919	0.916	0.580
Experience with a retailer	0.911	0.911	0.910	0.559
Intention to use	0.857	0.861	0.858	0.669
Perceived ease of use	0.892	0.893	0.891	0.621
Perceived risk	0.883	0.884	0.882	0.600
Perceived usefulness	0.862	0.864	0.863	0.611
Subjective norm	0.821	0.823	0.819	0.603
Ubiquity	0.846	0.850	0.846	0.648

According to Table 31, all nine constructs yield composite reliability values well above the threshold value of 0.70. With values of 0.876 (attitude), 0.916 (experience with a payment system), 0.910 (experience with a retailer), 0.858 (intention to use), 0.891 (perceived ease of use), 0.882 (perceived risk), 0.863 (perceived usefulness), 0.819 (subjective norm), and 0.846 (ubiquity), all the nine reflective constructs have a high enough level of internal consistency reliability.

Cronbach's alpha values of the constructs also show that all the construct measures are above the threshold value of 0.70. The specific Cronbach's alpha, 0.875 for attitude, 0.917 for experience with a payment system, 0.911 for experience with a retailer, 0.857 for intention to use, 0.892 for perceived ease of use, 0.883 for perceived risk, 0.862 for perceived usefulness, 0.821 for subjective norm, and 0.846 for ubiquity are displayed in Table 31. The results from Table 31 confirm that there is no problem concerning the internal consistency reliability of the measurement model, as all the necessary criteria are met through Cronbach's alpha and composite reliability as well.

In this part, the average variance extracted (AVE) is discussed in order to assess the convergent validity of the indicators. As indicated in Table 31, the AVE values of attitude (0.703), experience with a payment system (0.580), experience with a retailer (0.559), intention to use (0.669), perceived ease of use (0.621), perceived risk (0.600), perceived usefulness (0.611), subjective norm (0.603) and ubiquity (0.648) are all well above the required minimum level of 0.50. Consequently, high levels of convergent validity with respect to the measures of the nine reflective constructs are asserted.

After evaluating the internal consistency and convergent validity of the reflective indicators, Table 32 exhibits the results of heterotrait-monotrait ratio (HTMT) to investigate the discriminant validity of the construct measures.

Table 32: Discriminant Validity (HTMT)

Heterotrait-Monotrait Ratio (HTMT)	Attitude	Experience with a payment system	Experience with a retailer	Intention to use	Perceived ease of use	Perceived risk	Perceived usefulness	Subjective norm	Ubiquity
Attitude									
Experience with a payment system	0.417								
Experience with a retailer	0.633	0.459							
Intention to use	0.830	0.522	0.683						
Perceived ease of use	0.837	0.391	0.613	0.672					
Perceived risk	0.507	0.435	0.343	0.474	0.292				
Perceived usefulness	0.848	0.331	0.653	0.677	0.794	0.309			
Subjective norm	0.225	0.259	0.390	0.262	0.328	0.084	0.380		
Ubiquity	0.830	0.463	0.702	0.844	0.735	0.398	0.766	0.383	

Considering the relevant threshold of 0.85 in examining the discriminant validity, Table 32 reveals that all the HTMT values are lower than the conservative threshold value of 0.85. Hence, similar to the findings of the German sample, the discriminant validity for the two constructs of experience with a payment system and experience with a retailer, which might somehow be similarly conceptualized, is not a point of concern.

Besides, in order to complete the assessment of discriminant validity, Table 33 provides an overview of each pair of the confidence intervals for the reflective latent variables. As shown in Table 33, neither of the confidence intervals contains the value 1. For example, the association between experience with a payment system and perceived risk exhibits a confidence interval of HTMT with the lower and upper bounds of -0.461 and -0.210, respectively. Hence, HTMT and the bootstrap confidence interval results of the HTMT confirm the discriminant validity for all reflective constructs.

Table 33: Path Relationship Confidence Interval

	Original Sample (O)	Sample Mean (M)	Bias	2.5%	97.5%
Attitude -> Intention to use	0.634	0.642	0.008	0.419	0.805
Experience with a payment system -> Intention to use	0.168	0.163	-0.004	0.030	0.293
Experience with a payment system -> Perceived risk	-0.343	-0.350	-0.006	-0.461	-0.210
Experience with a retailer -> Intention to use	0.181	0.176	-0.005	-0.002	0.371
Experience with a retailer -> Perceived risk	-0.215	-0.219	-0.004	-0.325	-0.089
Perceived ease of use -> Attitude	0.322	0.307	-0.014	0.026	0.636
Perceived ease of use -> Perceived usefulness	0.505	0.502	-0.003	0.160	0.744
Perceived risk -> Intention to use	-0.016	-0.017	-0.001	-0.157	0.113
Perceived usefulness -> Attitude	0.369	0.372	0.003	0.077	0.679
Subjective norm -> Attitude	0.154	0.159	0.005	0.054	0.265
Ubiquity -> Attitude	0.370	0.385	0.015	0.190	0.713
Ubiquity -> Perceived usefulness	0.394	0.397	0.003	0.179	0.734

To examine the collinearity of indicators for the reflective measurement model, Table 34 outlines the required outer VIF values of the indicators.

Table 34: Collinearity Outer VIF Values

Construct	Outer VIF	
Attitude	ATT_1	1.944
	ATT_2	1.973
	ATT_3	1.984
Experience with a payment system	EWPS_1	2.370
	EWPS_2	2.361
	EWPS_3	2.505
	EWPS_4	2.383
	EWPS_5	2.682
	EWPS_6	2.386
	EWPS_7	2.194
	EWPS_8	2.160
Experience with a retailer	EWR_1	2.093
	EWR_2	2.625
	EWR_3	2.652
	EWR_4	2.048
	EWR_5	2.091
	EWR_6	1.775
	EWR_7	1.773
	EWR_8	2.165
Intention to use	INT_1	2.070
	INT_2	1.920
	INT_3	1.647
Perceived ease of use	PEOU_1	2.244
	PEOU_2	2.184
	PEOU_3	2.693
	PEOU_4	2.597
	PEOU_5	3.733
Perceived risk	PR_1	4.392
	PR_2	3.958
	PR_3	4.817
	PR_4	3.532
	PR_5	4.399
Perceived usefulness	PU_1	4.953
	PU_2	4.443
	PU_3	4.428
	PU_4	4.308
Subjective norm	SN_1	4.573
	SN_2	4.166
	SN_3	3.802
Ubiquity	UQ_1	4.097
	UQ_2	3.984
	UQ_3	4.360

Table 34 shows that all the VIF values are uniformly below the threshold value of 5. PU_1 (perceived usefulness) with 4.953 records the highest VIF value. Therefore, the reflective measurement model causes no problem of collinearity. In addition, Table 35 provides the inner VIF values for all the combinations of endogenous constructs and the associated exogenous constructs.

Table 35: Collinearity Inner VIF Values

Inner VIF	Attitude	Experience with a payment system	Experience with a retailer	Intention to use	Perceived ease of use	Perceived risk	Perceived usefulness	Subjective norm	Ubiquity
Attitude				1.988					
Experience with a payment system				1.436		1.272			
Experience with a retailer				1.815		1.272			
Intention to use									
Perceived ease of use	3.058						2.197		
Perceived risk				1.465					
Perceived usefulness	3.432								
Subjective norm	1.197								
Ubiquity	2.779						2.197		

In connection with the inner VIF values, the following possible combinations of latent variables can be distinguished: (1) experience with a payment system and experience with a retailer as the predictors of perceived risk; (2) perceived risk, experience with a payment system, experience with a retailer, and attitude as the predictors of intention to use; (3) subjective norm, perceived ease of use, perceived usefulness, and ubiquity as the predictors of attitude; and (4) perceived ease of use and ubiquity as the predictors of perceived usefulness. Considering the inner VIF values that must be also below the critical threshold of 5, we can conclude that the collinearity does not reach critical levels in any of the reflective constructs.

To examine the significance of the path coefficients for the structural model, it is necessary to evaluate the path coefficient p-values. As a consequence and based on Table 36, it can be ascertained that – except for the relationship between *perceived risk* → *intention to use*, which provides a p-value above the critical value of 0.05 (p-value

= 0.706) – the p-values of other path coefficients confirm the significance of the designed relationships.

Table 36: Path Coefficient P-Value

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Attitude -> Intention to use	0.609	0.609	0.100	6.093	0.000
Experience with a payment system -> Intention to use	0.148	0.147	0.062	2.393	0.017
Experience with a payment system -> Perceived risk	-0.352	-0.352	0.064	5.536	0.000
Experience with a retailer -> Intention to use	0.225	0.228	0.092	2.445	0.015
Experience with a retailer -> Perceived risk	-0.181	-0.188	0.062	2.924	0.004
Perceived ease of use -> Attitude	0.322	0.313	0.132	2.437	0.015
Perceived ease of use -> Perceived usefulness	0.505	0.504	0.134	3.763	0.000
Perceived risk -> Intention to use	-0.025	-0.023	0.065	0.377	0.706
Perceived usefulness -> Attitude	0.369	0.367	0.145	2.541	0.011
Subjective norm -> Attitude	0.154	0.157	0.055	2.784	0.006
Ubiquity -> Attitude	0.370	0.385	0.118	3.146	0.002
Ubiquity -> Perceived usefulness	0.394	0.395	0.123	3.205	0.001

To continue, Table 37 represents the total effects of the structural model. Indeed, total effect encompasses both direct and indirect effects. Target constructs are represented by each column in Table 37, whereas antecedent constructs are illustrated in rows.

Table 37: Total Effect

Total Effect	Attitude	Experience with a payment system	Experience with a retailer	Intention to use	Perceived ease of use	Perceived risk	Perceived usefulness	Subjective norm	Ubiquity
Attitude				0.634					
Experience with a payment system				0.173		-0.344			
Experience with a retailer				0.184		-0.215			
Intention to use									
Perceived ease of use	0.508			0.322			0.505		
Perceived risk				-0.016					
Perceived usefulness	0.369			0.234					
Subjective norm	0.154			0.098					
Ubiquity	0.516			0.327			0.394		

Table 37 shows that among the five exogenous driver constructs, ubiquity has the most substantial total effect on the intention to use (0.327), followed by perceived ease of use (0.322), experience with a retailer (0.184), experience with a payment system (0.173), and subjective norm (0.098).

In connection with f^2 , Table 38 illustrates the f^2 values for all combinations of the endogenous constructs and the corresponding exogenous constructs.

Table 38: F Square

F Square	Attitude	Experience with a payment system	Experience with a retailer	Intention to use	Perceived ease of use	Perceived risk	Perceived usefulness	Subjective norm	Ubiquity
Attitude				0.776					
Experience with a payment system				0.077		0.125			
Experience with a retailer				0.071		0.049			
Intention to use									
Perceived ease of use	0.235						0.391		
Perceived risk				0.001					
Perceived usefulness	0.276								
Subjective norm	0.138								
Ubiquity	0.343						0.238		

Table 38 shows the large effect size of attitude on intention to use (0.776). Moreover, experience with a payment system with the effect size value of 0.125 and experience with a retailer with the effect size value of 0.049 show a small effect on perceived risk. Furthermore, both experience with a payment system and experience with a retailer represent a small effect size of 0.077 and 0.071 on intention to use, respectively. Perceived ease of use, perceived usefulness, and ubiquity with the effect size values of 0.235, 0.276, and 0.343 demonstrate medium effect sizes on attitude. Furthermore, perceived ease of use illustrates a large effect size on perceived usefulness with a value of 0.391. Ubiquity also provides a medium effect size on perceived usefulness with a value of 0.238. Subjective norm, with an effect size value of 0.138, suggests a small effect size on attitude. Finally, perceived risk, as shown in Table 38, has no effect on intention to use, representing an effect size value below 0.02 (0.001).

To be continued, Table 39 displays the Q^2 values of the reflective endogenous latent variables for the structural path model to measure the out-of-sample predictive power and predictive relevance of the model. It shows that all the indicated Q^2 values are well above the critical value of 0. Consequently, it is concluded that the model provides predictive relevance for the four specified endogenous constructs. In particular, attitude has the highest Q^2 value (0.526), followed by intention to use (0.439), perceived usefulness (0.374), and finally perceived risk (0.114).

Table 39: Blindfolding

Blindfolding	SSO	SSE	Q² (=1-SSE/SSO)
Attitude	600.000	284.321	0.526
Experience with a payment system	1,600.000	1,600.000	
Experience with a retailer	1,600.000	1,600.000	
Intention to use	600.000	336.676	0.439
Perceived ease of use	1,000.000	1,000.000	
Perceived risk	1,000.000	886.199	0.114
Perceived usefulness	800.000	500.699	0.374
Subjective norm	600.000	600.000	
Ubiquity	600.000	600.000	

As mentioned in section 4.1.2, q^2 is employed to characterize effect size of a particular construct on its associated reflective endogenous latent variable. Table 40 summarizes the results of q^2 effect sizes for the structural path model. The first row represents the endogenous constructs, whereas the predictor constructs are displayed in the first column.

Table 40: q^2 Effect Size

q^2 Effect Sizes	Perceived risk	Intention to use	Attitude	Perceived usefulness
Experience with a payment system	0.061 small	0.026 small		
Experience with a retailer	0.025 small	0.036 small		
Perceived risk		0.001 no effect		
Subjective norm			0.008 no effect	
Perceived usefulness			0.069 small	
Perceived ease of use			0.082 small	0.138 small
Ubiquity			0.075 small	0.078 small

Table 41 and Table 42 show the total and specific indirect effects, respectively. They help comprehend and validate both the direct and indirect effects of mediating constructs.

Table 41: Total Indirect Effects

Total Indirect Effects	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Attitude -> Intention to use					
Experience with a payment system -> Intention to use	0.009	0.008	0.024	0.367	0.714
Experience with a payment system -> Perceived risk					
Experience with a retailer -> Intention to use	0.004	0.004	0.013	0.342	0.733
Experience with a retailer -> Perceived risk					
Perceived ease of use -> Attitude	0.187	0.190	0.105	1.776	0.076
Perceived ease of use -> Intention to use	0.310	0.303	0.073	4.220	0.000
Perceived ease of use -> Perceived usefulness					
Perceived risk -> Intention to use					
Perceived usefulness -> Attitude					
Perceived usefulness -> Intention to use	0.225	0.222	0.092	2.438	0.015
Subjective norm -> Attitude		-0.000	0.000		
Subjective norm -> Intention to use	0.094	0.095	0.037	2.554	0.011
Ubiquity -> Attitude	0.145	0.142	0.066	2.192	0.029
Ubiquity -> Intention to use	0.314	0.325	0.103	3.038	0.003
Ubiquity -> Perceived usefulness					

Table 42: Specific Indirect Effect

Specific Indirect Effects	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Perceived ease of use -> Perceived usefulness -> Attitude	0.187	0.190	0.105	1.776	0.076
Ubiquity -> Perceived usefulness -> Attitude	0.145	0.142	0.066	2.192	0.029
Perceived ease of use -> Attitude -> Intention to use	0.196	0.189	0.081	2.405	0.017
Perceived ease of use -> Perceived usefulness -> Attitude -> Intention to use	0.114	0.114	0.064	1.778	0.076
Ubiquity -> Perceived usefulness -> Attitude -> Intention to use	0.089	0.087	0.044	2.008	0.045
Subjective norm -> Attitude -> Intention to use	0.094	0.095	0.037	2.554	0.011
Ubiquity -> Attitude -> Intention to use	0.225	0.238	0.093	2.424	0.016
Experience with a payment system -> Perceived risk -> Intention to use	0.009	0.008	0.024	0.367	0.714
Experience with a retailer -> Perceived risk -> Intention to use	0.004	0.004	0.013	0.342	0.733

As displayed in Tables 41 and 42, except for the total indirect effects of *experience with a payment system -> intention to use* (p-value = 0.714), *experience with a retailer -> intention to use* (p-value = 0.733), and *perceived ease of use -> attitude* (p-value = 0.076), as well as specific indirect effects *perceived ease of use -> perceived usefulness -> attitude* (p-value = 0.706), *experience with a payment system -> perceived risk -> intention to use* (p-value = 0.714), *perceived ease of use -> perceived usefulness -> attitude -> intention to use* (p-value = 0.076), and *experience with a retailer -> perceived risk -> intention to use* (p-value = 0.733), all other total direct and specific indirect effects are statistically significant, based on the p-values below the critical threshold value of 0.05.

The occurrence of mediation and different mediation effects have already been discussed in section 3.5. Therefore, based on the significance of both direct and indirect effects, Table 43 represents the specific type of mediation for each relationship of the structural path model according to the designed hypotheses (see section 2.7).

Table 43: Path Model Mediation Type

Specific Path Model Relationship	Mediation Type
Ubiquity -> Perceived usefulness -> Attitude	Complementary (partial mediation)
Experience with a payment system -> Perceived risk -> Intention to use	Direct only (no mediation)
Experience with a retailer -> Perceived risk -> Intention to use	No effect (no mediation)

Regarding to the Iranian sample, the results of the mediation analysis show that the perceived risk doesn't have an intervening effect in the relationships of both experience with a payment system and experience with a retailer with the intention to use. The results are in contrast with those illustrated in the previous section in Table 24. It is ascertained that the perceived risk not only partially mediates the relationship between experience with a payment system and intention to use in the German sample, but also fully mediates the relationship between experience with a retailer and intention to use. Similarly to the German sample, perceived usefulness also plays a partial mediation role in the relationship between ubiquity and attitude in the Iranian sample.

As explained in section 4.1.3, F-factor analysis is considered an underlying part of each research. It provides a classified and disciplined order of latent variables. Using SmartPLS 3 to obtain the results for F-factor loadings, Table 44 shows that all the indicators of the reflective constructs of experience with a payment system, experience with a retailer, perceived risk, intention to use, attitude, subjective norm, perceived ease of use, perceived usefulness, and ubiquity have loading values of 0.700 or higher.

Table 44: F-Factor Loading

F-Factor	Attitude	Experience with a payment system	Experience with a retailer	Intention to use	Perceived ease of use	Perceived risk	Perceived usefulness	Subjective norm	Ubiquity
ATT_1	0.824								
ATT_2	0.908								
ATT_3	0.778								
EWP_1		0.733							
EWP_2		0.721							
EWP_3		0.712							
EWP_4		0.786							
EWP_5		0.705							
EWP_6		0.793							
EWP_7		0.754							
EWP_8		0.872							
EWR_1			0.754						
EWR_2			0.778						
EWR_3			0.704						
EWR_4			0.740						
EWR_5			0.704						
EWR_6			0.809						
EWR_7			0.705						
EWR_8			0.781						
INT_1				0.834					
INT_2				0.861					
INT_3				0.754					
PEOU_1					0.802				
PEOU_2					0.839				
PEOU_3					0.812				
PEOU_4					0.747				
PEOU_5					0.736				
PR_1						0.801			
PR_2						0.819			
PR_3						0.772			
PR_4						0.745			
PR_5						0.733			
PU_1							0.801		
PU_2							0.764		
PU_3							0.733		
PU_4							0.826		
SN_1								0.705	
SN_2								0.808	
SN_3								0.811	
UQ_1									0.789
UQ_2									0.753
UQ_3									0.869

The importance of brand knowledge of a payment system, brand knowledge of a retailer, previous usage of a payment system, previous usage of a retailer in forming the constructs of experience with a payment system and experience with a retailer was broadly discussed in section 2.6.1. After the effect of experience with a payment system and experience with a retailer on perceived risk has been evaluated, it is essential to assess the influence of the four elements mentioned on perceived risk in mobile payment as well. Thus, Table 45 provides the correlation assessment between these elements and perceived risk, using SPSS. As can be seen in Table 45, the correlations

of brand knowledge of a payment system, brand knowledge of a retailer, previous usage of a payment system, and previous usage of a retailer with perceived risk are all statistically significant. Both Pearson correlation values and the p-values show the significance of the correlations at the 0.01 level.

Table 45: Correlation among Brand Knowledge of a Payment System, Brand Knowledge of a Retailer, Previous Usage of a Payment System, Previous Usage of a Retailer, and Perceived Risk

		Correlations				
		Mean of perceived risk	Brand knowledge of payment system	Brand knowledge of retailer	Previous usage of retailer	Previous usage of payment system
Mean of perceived risk	Pearson Correlation	1	-.338**	-.269**	-.242**	-.228**
	Sig. (2-tailed)		.000	.000	.004	.006
	N	200	200	200	143	143
Brand knowledge of payment system	Pearson Correlation	-.338**	1	.266**	.228**	.354**
	Sig. (2-tailed)	.000		.000	.006	.000
	N	200	200	200	143	143
Brand knowledge of retailer	Pearson Correlation	-.269**	.266**	1	.287**	.370**
	Sig. (2-tailed)	.000	.000		.001	.000
	N	200	200	200	143	143
Previous usage of retailer	Pearson Correlation	-.242**	.228**	.287**	1	.415**
	Sig. (2-tailed)	.004	.006	.001		.000
	N	143	143	143	143	143
Previous usage of payment system	Pearson Correlation	-.228**	.354**	.370**	.415**	1
	Sig. (2-tailed)	.006	.000	.000	.000	
	N	143	143	143	143	143

** . Correlation is significant at the 0.01 level (2-tailed).

4.2.4 Results Summary

As a conclusion to the second part of the analysis (Iranian sample), Table 46 summarizes the reflective measurement model assessment results. As indicated in this table, all the examined criteria comply with the specified threshold values and therefore support the excellence of the reliability and validity of the measures. To examine the reliability of the indicators, the most critical criterion is value of the outer loadings that must be equal to or greater than the critical threshold value of 0.700 (Hair et al., 2014). The standard threshold value for assessing Composite reliability and Cronbach's alpha is generally stated to be 0.90. Nevertheless, as also explained in section 4.1.4, in advanced stages of research, values between 0.90 - 0.95 can also be acceptable (Hair et al., 2019).

Table 46: Results Summary for Reflective Measurement Models

Results Summary for Reflective Measurement Models						
Latent Variable	Indicators	Convergent Validity		Internal Consistency Reliability		Discriminant Validity
		Loadings	AVE	Composite Reliability	Cronbach's Alpha	
		>0.70	>0.50	0.60-0.95	0.60-0.95	HTMT confidence interval does not include 1
Experience With a Payment System	EWPS_1	0.733	0.580	0.916	0.917	Yes
	EWPS_2	0.721				
	EWPS_3	0.710				
	EWPS_4	0.790				
	EWPS_5	0.701				
	EWPS_6	0.793				
	EWPS_7	0.750				
	EWPS_8	0.876				
Experience With a Retailer	EWR_1	0.767	0.559	0.910	0.911	Yes
	EWR_2	0.764				
	EWR_3	0.716				
	EWR_4	0.726				
	EWR_5	0.714				
	EWR_6	0.775				
	EWR_7	0.716				
	EWR_8	0.740				
Perceived Risk	PR_1	0.802	0.600	0.882	0.883	Yes
	PR_2	0.818				
	PR_3	0.775				
	PR_4	0.741				
	PR_5	0.734				
Intention To Use	INT_1	0.836	0.669	0.858	0.857	Yes
	INT_2	0.861				
	INT_3	0.752				
Attitude	ATT_1	0.823	0.703	0.876	0.875	Yes
	ATT_2	0.909				
	ATT_3	0.778				
Subjective Norm	SN_1	0.705	0.603	0.819	0.821	Yes
	SN_2	0.808				
	SN_3	0.811				
Perceived Ease of Use	PEOU_1	0.799	0.621	0.891	0.892	Yes
	PEOU_2	0.840				
	PEOU_3	0.812				
	PEOU_4	0.749				
	PEOU_5	0.738				
Perceived Usefulness	PU_1	0.801	0.611	0.863	0.862	Yes
	PU_2	0.762				
	PU_3	0.731				
	PU_4	0.830				
Ubiquity	UQ_1	0.790	0.648	0.846	0.846	Yes
	UQ_2	0.754				
	UQ_3	0.867				

By presenting the results summary of the reflective measurement model, the individual part of the analysis concerning the Iranian sample is finished in this section, and the study will then continue with a comparison of purchased product categories between Iran and Germany.

4.3 Comparison and Summary

Sections 4.1.2 and 4.2.2 presented the individual hypothesis results for Iran and Germany. It is important to mention that all the results are supported at the 5% significance level in PLS-SEM. Table 47 presents the results summary of the hypotheses developed in Iran and Germany.

Table 47: Results Summary

Hypothesis	Germany	Iran
H1: The higher the attitude towards a mobile payment, the higher is the intention to use.	✓	✓
H2a: The higher the perceived ease of use, the higher is the attitude towards a mobile payment.	✓	✓
H2b: The higher the perceived ease of use, the higher is the perceived usefulness.	✓	✓
H3a: The higher the perceived usefulness, the higher is the attitude towards a mobile payment.	✓	✓
H3b: Perceived usefulness mediates the relationship between the ubiquity and the attitude towards a mobile payment.	✓	✓
H4a: The higher the ubiquity, the higher is the attitude towards a mobile payment.	✓	✓
H4b: The higher the ubiquity, the higher is the perceived usefulness.	✓	✓
H5: The higher the subjective norm, the higher is the attitude towards a mobile payment.	✗	✓
H6a: The higher the perceived risk, the lower is the intention to use.	✓	✗
H6b: Perceived risk mediates the relationship between the experience with a payment system and the intention to use.	✓	✗
H6c: Perceived risk mediates the relationship between the experience with a retailer and the intention to use.	✓	✗
H7a: The higher the experience with a mobile payment system, the lower is the perceived risk.	✓	✓
H7b: The higher the experience with a payment system, the higher is the intention to use.	✓	✓
H8a: The higher the experience with a retailer, the lower is the perceived risk.	✓	✓
H8b: The higher the experience with a retailer, the higher is the intention to use.	✗	✗

When summarizing and comparing the study results in Iran and Germany, it is necessary to support them with the help of previous research. As represented in Table 47, experience with a payment system and experience with a retailer are negatively asso-

ciated with perceived risk in both countries. Moreover, unlike experience with a retailer, the significant positive effect of experience with a payment system on intention to use mobile payment is affirmed both in Iran and Germany. Cobanoglu et al. (2015) confirm a positive effect of previous experience on mobile payment acceptance. In addition, the results are also in line with the findings of Stanforth et al. (2000), Evans (2014), Guillén et al. (2016), Park and Jun (2003), and Dabrynin and Zhang (2019). Experience with a retailer can be considered as one of the main contributions of this study, as the constructs have not been directly and exclusively mentioned in other research. It sheds light on the underlying role of payment systems and retailers, as the main components of a mobile payment transaction in providing an enjoyable experience for users. Furthermore, positive experiences with payment systems or retailers can enhance users' willingness to adopt mobile payment systems more frequently and vice versa.

Based on the results, ubiquity is positively associated with attitude and perceived usefulness both in Iran and Germany. Moreover, the mediation role of perceived usefulness in the relationship between ubiquity and attitude towards a mobile payment is also confirmed in both samples. Nowadays, with the growth of mobile payments even among low-income groups, the necessity for a ubiquitous feature is vital. The findings emphasize the effectiveness of ubiquity in perceiving mobile payment to be useful and necessary, specifically at the micro-level of daily payments. The results have already been supported by the findings from Rezaei dolat Abadi et al. (2013), Lee (2005), Watson et al. (2002), Hourahine and Howard (2004), Jun et al. (2016), and Kim et al. (2010). Similarly, perceived ease of use is positively correlated to the attitude and perceived usefulness in both countries. The same results have also been ascertained by Arvidsson (2014), Deb and David (2014), Amoroso and Magnier-Wantabe (2012), and Muñoz-Leiva et al. (2012). The results show that offering user-friendly platforms makes users both in Iran and Germany embrace mobile payment systems. Both cultural contexts emphasize the importance of ease of use in order to strengthen attitude towards mobile payment systems.

In both countries, attitude is positively and significantly associated with intention to use remote mobile payment. This is supported by the results from Schierz et al. (2010), Yoon and Kim (2013), and Liébana-Cabanillas et al. (2017). Furthermore, perceived usefulness is also positively connected to attitude in both countries. The result is also in line with the findings of Chong et al. (2010), Mohammadi (2015), Teo et al. (2008), Krishanan et al. (2016), and Muñoz-Leiva et al. (2012).

The results summary of the hypotheses developed reveals no significant relationship between perceived risk and intention to use mobile payment systems in Iran, unlike Germany. Besides, both intervening effects of perceived risk in the relationships of experience with a payment system and intention to use as well as experience with a retailer and intention to use are rejected in the Iranian sample. On the other hand, both hypothesized relationships are supported in the German sample. The role of perceived risk in mobile payment has been staunchly ignored by some researchers (Gefen et al., 2003). Chopdar and Sivakumar (2018) also report no significant influence of perceived risk on intention and usage of mobile shopping apps. It is argued that perceived risk has a more powerful negative impact on intention to use mobile payment systems for users with a high level of uncertainty avoidance. As Iran does not exhibit a very high uncertainty avoidance cultural characteristic, it is expected that consumers in such a society become more adept in taking and handling risks associated with mobile payment systems. In these societies, people rely more on motivational factors such as positive word-of-mouth and reputation of payment systems or retailers. Risk is expected to be viewed as a natural component of life which might even produce opportunity in cultures with a lower avoidance of uncertainty such as Iran.

The statistically significant relationship between perceived risk and intention to use mobile payment is proven in Germany. This is in line with many previous studies (Chu and Lu, 2007; Lee and Lin, 2005; Phau and Poon, 2000). Indeed, cultural characteristics play the most crucial issue in this regard. As explained broadly in section 2.4, this point of disparity between Iran and Germany can be interpreted on the basis of Hofstede's cultural value uncertainty avoidance. A considerable number of studies, such as Benbasat et al. (2008), Hofstede (2010), and Phonthanakitithaworn et al. (2015) believe that people in cultures of higher level uncertainty avoidance, such as Germany, cannot tolerate uncertainty in their behavioral intention. As Germans are found to espouse more uncertainty avoidance values than Iranians, they become willing to adopt mobile payment systems if safety is assured. Schierz et al. (2010) emphasize the significance of perceived security in mobile payment services in Germany. On the other hand, societies with a lower uncertainty avoidance value like Iran have a greater tendency to be risk-takers by exhibiting a greater tolerance for adopting new technologies. Lesa and Tembo (2016) state that as Zambians exhibit a culture with a lower level of uncertainty avoidance, no statistically significant influence of perceived risk on mobile payment systems is ascertained. Al Kailani and Kumar (2011) also state that individuals from higher uncertainty avoidant cultures perceive and experience higher levels of perceived risk in online shopping. They conclude in a comparative study including the U.S, India, and Jordan that Jordanians who score higher on uncertainty avoidance,

experience the highest perceived risk in online shopping. On the other hand, Americans show the lowest level of perceived risk, as they score the lowest on uncertainty avoidance. Therefore, members of cultures with higher uncertainty avoidance are expected to be more resistant to changing their established patterns. Another reason is the fact that Germany is a country with a long-term orientation, in which users seek an added-value before adopting a technology such as m-payment. Therefore, as long as users fail to perceive a new payment method as being necessary and attractive, they prefer to retain their payment habits. Conversely, Iranian users with normative beliefs want to satisfy their real-time needs.

An overview of the results illustrates another difference between Iranian and German samples with respect to the relationship between subjective norm and attitude in adopting mobile payment systems. In contrast to the situation in Germany, the significant association between subjective norms and attitude is supported in Iran, as shown in Table 47. This point of difference corresponds to the espoused cultural value, individualism/collectivism, as explained in section 2.4. It is inferred that Iranians are more concerned with social relationships and receiving approval from others than Germans. Moreover, Lee and Green (1991) and Phonthanukithaworn et al. (2015) conceptualize subjective norm to be more effective on attitude in collectivistic cultures like Iran than in individualistic cultures like Germany.

Wu et al. (2011) also confirm a significant positive relationship between subjective norm and attitude. Moreover, Mohammadi (2010) sheds light on a significant relationship between subjective norm and attitude in a study concerning mobile banking in Iran. Conversely, though, Venkatesh and Davis (2000), Ghazali et al. (2018), Shankar and Datta (2018), and Yap and Hii (2009) demonstrate an insignificant association between subjective norm and attitude. This point of difference can also be interpreted on the basis of another of Hofstede's cultural indices, power distance. Fink (2005) also believes that subjective norms are more significant in societies that espouse more power distance. As explained in section 2.4, Iran scores more on power distance than Germany. Therefore, people in such societies are expected to follow the more normative beliefs of their superiors. Such a behavior is assumed to be viewed more in Iran than in Germany. People are more in favor of pragmatic beliefs in societies with lower power distance values like Germany. Compared to Germans, Iranians tend to form more coherent groups of individuals that affect each other. On the other hand, members of individualistic cultures tend to act on the basis of the personal gains from an action. In collectivistic cultures like Iran the relationship "subjective norms – behavior" prevails to a greater extent than in individualistic cultures like Germany.

In a comparative study between the U.S. and China, Dai and Palvia (2009) also reveal that subjective norms have no significant effect among U.S. users. Like Iran and Germany, China and the United States also score low and high on individualism, respectively. The above discussions determine that the influence of subjective norms on users' attitude towards mobile payment adoption will be more vigorous for users with an espoused collectivist cultural value.

CHAPTER 5: DISCUSSION & CONCLUSION

This chapter summarizes the results and findings of the research. It sheds light on the contributions of the study and proposes areas for further research. It begins with a summary of the study derived from the literature and empirical research. The main findings of this study are also illustrated in detail in this chapter. Another significant aspect is to relate the contributions of the study to this particular field of research. Furthermore, research limitations are identified and discussed in order to provide a suitable way for other researchers to overcome them in future research. Finally, the chapter concludes by proposing further directions and recommendations for future research.

5.1 Summary of the Study

This study proposes a theoretical framework for factors affecting perceived risk in remote mobile payments. The comparative study was accomplished in Iran and Germany to assess the influence of selected variables on intention to use mobile payment systems. The reason behind choosing these two countries was to interpret the research findings based on different indicators, such as cultural characteristics. The study tests the interrelationships between experience with a payment system and experience with a retailer on intention to use remote mobile payment directly and through the mediating effect of perceived risk. Furthermore, by extending the Technology Acceptance Model (TAM) with motivational factors, subjective norm and ubiquity, the study contributes to a deeper explanation of intention to use mobile payment systems in Iran and Germany. Ubiquity as a unique characteristic of mobile payment can differentiate it from other payment methods. Subjective norm can also lead to culturally different behavioral intentions by consumers in different countries. Having experience with a payment system or a retailer affects the level of uncertainty in adopting a mobile payment system. Perceived ease of use, perceived usefulness, subjective norms, and ubiquity might all change the attitude towards conducting mobile payment transactions, specifically in various cultural contexts. The formation of the theoretical framework is based on a clear understanding of consumer behavior towards adopting mobile payment systems as well as the nature and objectives of the study.

It may be argued that a company's status of profit figures is not the most suitable parameter for its success. Establishing a mobile payment method helps companies to meet the expectations of a wide range of users with the priority of conducting an online payment anytime and anywhere. If customers experience a satisfying mobile payment either through a payment system or a retailer, they are likely to return to the same

payment system or retailer without perceiving security or privacy risks. On the other hand, dissatisfied customers may switch to other service providers or completely shift to other means of online payment. The following criteria can also be useful in considering experience to measure perceived risk in mobile payment:

1. Technology-related factors
2. Cultural characteristics

With respect to the technology-related factors, the relevance of combining perceived usefulness and perceived ease of use with ubiquity and subjective norm is assessed in adopting mobile payment systems. Moreover, the underlying role of each country's cultural characteristics is also visualized, not only through the association of perceived risk of using and intention to use mobile payment, but also through the relationship between subjective norm and intention to use, mediated by attitude.

This study attempts to conceptualize how different factors might affect users' perceived risk when adopting mobile payment systems in Iran and Germany. It includes a review of the relevant literature regarding mobile payment, perceived risk, comparison of the cultural index, Technology Acceptance Model, and other related issues. The conceptual model and hypothesis development are also presented accordingly. Investigating different aspects of research methodology and research design helps implement a step-by-step research in the right direction. Finally, using both PLS-SEM and SPSS, a wide range of different tests were accomplished to analyze the findings based on the research objectives. The proposed conceptual model can be adopted by a broad range of industries and businesses for Customer Experience Management (CEM), Customer Relationship Management (CRM), strategic planning, and decision-making.

5.2 Meeting the Objectives of the Research

The main objectives of the study are to fill research gaps in the field of mobile payment by investigating the characteristics of both users and service providers. These objectives are examined in the following section once again for further assessment.

- **Objective 1: To enhance mobile users' understanding of the perceived risk in mobile payment.**

Specific features of a mobile payment were identified to compare it with other means of payment. This helps to comprehend the uncertainties and risks that might arise when adopting mobile payment technology.

- **Objective 2: To represent the factors that might modify consumers' perceived risk as well as their intention to use mobile payment systems.**

By developing the conceptual model, some factors were identified which influence the usage of remote mobile payments. Experience with a payment system as well as experience with a retailer are considered as strong stimuli to evoke intention to use mobile payment systems.

- **Objective 3: To assess how motivational factors used to extend TAM (Technology Acceptance Model) affect the adoption of mobile payment systems.**

The current study attempts to extend the TAM with such factors that correspond to the research objectives and nature. The selection of subjective norms and perceived risk are directly connected to the underlying role of cultural characteristics in this study. Moreover, ubiquity was included to extend the TAM, emphasizing the accessibility feature of a mobile device for the purpose of a payment. Therefore, these antecedents are expected to play a fundamental role in mobile payment usage.

- **Objective 4: Finally, to ascertain how the study's findings could be interpreted on the basis of various cultural traits.**

The research results, displayed in Chapter 4, show that cultural characteristics play an important role in explaining and predicting consumer behavior towards mobile payment systems in Iran and Germany. As a comparative study, it reveals the disparity of results between Iran and Germany in some critical parts of the conceptual model.

5.3 Main Findings

The research findings confirm the appropriateness of the extended TAM-Model in this study to measure the risk perception in adopting remote mobile payments, considering cultural characteristics. The main findings of the study are illustrated below:

- ❖ **Finding 1:** It is asserted that the constructs experience with a payment system and experience with a retailer both have a significant negative influence on perceived risk of mobile payment adoption not only in Iranian sample, but also in German sample. Having more experience with a payment system or a retailer results in lower risk perception towards remote mobile payment. Unlike experi-

ence with a retailer, experience with a payment system affects intention to use mobile payment in both countries.

- ❖ **Finding 2:** Brand knowledge of a payment system, brand knowledge of a retailer, previous usage of a payment system, and previous usage of a retailer, having crucial roles in formation of experience with a payment system and experience with a retailer, are all correlated to perceived risk in Iran and Germany.
- ❖ **Finding 3:** Based on the results, perceived risk has a significant negative effect on the intention to use mobile payment in Germany. Conversely, perceived risk is not significantly associated with intention to use mobile payment in Iranian sample.
- ❖ **Finding 4:** Concerning the cultural preference of uncertainty avoidance, Iran scores less than Germany, as described in section 2.4. Therefore, in contrast to Germany, no significant relationship between perceived risk and intention to use mobile payment can be observed in Iranian sample, due to its low score on uncertainty avoidance compared to the German sample.
- ❖ **Finding 5:** The mediation effect of perceived risk through experience with a payment system and intention to use as well as experience with a retailer and intention to use is confirmed in Germany. Conversely, no mediation effect of perceived risk on intention to use was detected through the relationships mentioned in the Iran sample.
- ❖ **Finding 6:** Both in Iran and Germany, the constructs of perceived ease of use, perceived usefulness, and ubiquity are significantly associated with the attitude towards using mobile payment systems. The attitude itself has a significant positive influence on intention to use mobile payments in both countries. Furthermore, the positive and significant effect of perceived ease of use and ubiquity on perceived usefulness is ascertained not only in the Iranian sample, but also in the German sample.
- ❖ **Finding 7:** Subjective norm, which was included in TAM in conjunction with the cultural traits, appears to have no significant effect on attitude in Germany. On the other hand, it is significantly associated with attitude in Iran. As explained in section 2.4, Iran scores lower than Germany on Individualism aspect of cultural

characteristics. Moreover Iran scores more on power distance than Germany. It is inferred that Iranian users espouse more collectivistic preferences than Germans. In addition, Iranians are more normative in thinking as a result of a high level of power distance in society. Consequently, subjective norm significantly affects attitude towards the adoption of mobile payment systems in the Iranian sample, but not in the German sample. Both power distance and individualism play an underlying role in interpreting the different findings between Iran and Germany regarding the effect of subjective norm on attitude in mobile payment.

- ❖ **Finding 8:** Investigating the products purchased through mobile payment reveals that users in Germany mostly purchase clothing and accessories, tickets for the theater, cinema, concerts or sports events, and books, using remote mobile payment. In Iran, clothing and accessories, tickets for the theater, cinema, concerts or sports events, and electronic devices are considered the most purchased products using a remote mobile payment system.

- ❖ **Finding 9:** Comparing Iran and Germany in terms of the most purchased products using mobile payment, some product categories such as furniture, consumer electronic, tickets for the theater, cinema, concerts or sports events, food and beverages, sports equipment, mobile apps and software show statistically significant differences in this regard.

- ❖ **Finding 10:** Classifying different product categories into three main types, namely durable products, non-durable products and services, reveals that there is a statistically significant difference between users in Iran and Germany in a consideration of the product types as a whole.

- ❖ **Finding 11:** According to the research results in the German sample, perceived ease of use and perceived usefulness are the most critical factors in attitude towards mobile payment, respectively. In contrast, the results of the Iranian sample show that ubiquity and perceived usefulness have the most important effects on attitude towards mobile payment systems.

5.4 Statement of Contribution and Research Novelty

First and foremost, the literature review indicated a minimal amount of research in the area of remote mobile payment. The majority of studies are related to In-store mobile payment or NFC (Near Field Communication). Moreover, perceived risk of a mobile

device for conducting an online remote mobile payment has rarely been investigated by other scholars to date. Research urgently needs to examine the ubiquitous feature of mobile payments as a unique advantage in cases when customers connect to free WIFI in order to conduct a mobile transaction.

It was proposed through the theoretical framework that experience with a payment system and experience with a retailer significantly impact intention to use mobile payment through the mediating effect of perceived risk. Nevertheless, the effect of experience on the perceived risk of mobile payments has always been examined in general and not specifically in relation to payment systems and retailers. Indeed, payment systems and retailers are the two major players in establishing online payments. Therefore, assessing the influence of mobile payment experience from the two different perspectives is a fundamental contribution that this study makes to this specific research field.

A cross-cultural investigation to identify the role of culture in consumer behavior regarding remote mobile payment highlights another fundamental contribution of this study. Former comparative research projects have rarely considered culture in a context of remote mobile payment.

This study also attempted to discover significant differences between users in Iran and Germany concerning various products purchased by mobile payments. As a contribution, different products were classified into three underlying product categories; durable, non-durable, and services. Indeed, a comparison of such a product category classification between different countries, espousing different cultural preferences, had hitherto not been performed in the context of mobile payment.

5.5 Research Limitations

Despite the significance of this study as one of only a few to date that have investigated factors affecting perceived risk towards conducting a remote mobile payment in Iran and Germany, the study encountered some limitations. First and foremost, the sample size of participants is relatively small. This was mainly due to the complexity of the survey and measurement of the high sensitivity to the accuracy of responses. Secondly, due to the complexity of the data collection process, the study employed a convenience sampling method to recruit participants from university students. Thus, the research participants are more highly educated than the general random population of online buyers in Iran and Germany. However, as indicated by Song and Zahedi (2005), university students are often used as subjects in experiments for electronic commerce research. Moreover, student samples were also employed as subjects for research of

risk perception and behavioral intention (Weber and Hsee, 1998). As university students exhibit no significant difference in studies on the decision-making process and risk-orientation, it is therefore believed that the sample of this study appears to be a reasonable representation of online buyers in general. Furthermore, having adopted the sample appropriately and with caution, the research findings can be generalized to some extent in order to apply to the population as a whole.

This study focused only on the extended TAM in order to identify the factors that affect mobile payment adoption in Iran and Germany. As explained in section 2.5, TAM and DOI are the most frequently applied theories in mobile payment studies. Given the existence and integration of different models, including TAM and DOI, it is advisable to test which models provide the optimal prediction and explanation of mobile payment technology.

This study considered users' behavioral intention in order to interpret their actual behavior in the early stage of mobile payment adoption. Additional methods such as a field study or a longitudinal study would help to more closely investigate the later stages of adoption of mobile payment systems.

5.6 Recommendations

These research findings have several implications for improving remote mobile payment services which are worthy of consideration by financial institutions, mobile network operators, merchants, banks, mobile payment system designers, retailers, educational institutes, and consumers.

The main constructs of the theoretical research framework, namely experience with a payment system, experience with a retailer, perceived risk, attitude, subjective norms, perceived ease of use, perceived usefulness and ubiquity, are all considered to influence the usage of remote mobile payments.

Risk perception varies between people and products. However, one of the main objectives of this study was to examine the risk perception of adopting mobile payment based on different cultural characteristics. It is recommended that further empirical studies should be conducted as comparisons of countries with different cultural characteristics when only a few specific products are purchased using mobile payment systems. Moreover, it will be also fruitful for future studies to examine the influence of product type in the risk perception that arises during a mobile payment. As mobile payment non-users might be attracted to use remote mobile payments by financial

incentives, it is worth exploring types of financial incentives that might entice non-users to adopt remote mobile payments more frequently. However, the effect of cultural characteristics should not be overlooked in this regard. As the findings of this study confirm the correlation between brand knowledge and perceived risk in mobile payments, future studies could usefully investigate the impact of brand knowledge of a payment system and brand knowledge of a retailer on intention to use remote mobile payments in greater detail. In addition, it is also recommended that security and privacy risk of both remote and in-store mobile payment should be investigated in terms of the technical differences between a mobile device and other means of payment. As briefly explained in this study, the data connection of a mobile device varies considerably from that of a computer. Scholars fail to reach a consensus on level of exposure to hackers with respect to a mobile device and a computer when customers conduct mobile payments. Hence, it will be interesting to provide more comprehensive results on this aspect.

In accordance with the results of this study, companies and businesses might basically consider the following actions:

- improve mobile payment infrastructures by offering better services to mobile users;
- achieve higher customer satisfaction by providing a pleasurable mobile payment experience for users;
- increase the efficiency of both payment systems and retailers as the significant players in offering mobile payment services;
- better project consumer behavior to service attributes based on different cultural characteristics;
- strive to eliminate risk factors in mobile payment by strengthening brand knowledge and previous usage of a payment system or a retailer;
- pay more attention to the concept of Word-Of-Mouth by offering satisfactory services and keeping potential customers satisfied. This will help more in societies that appreciate subjective norms and espouse more collectivistic cultural preferences.

Since the onset of the coronavirus pandemic throughout the world, cash payments have been actively discouraged in many countries like Germany. Covid-19 has probably changed the payment behavior amongst people even faster than any single technology ever. For countries like Germany, in which cash is tied to people's cultural preferences, it is challenging to switch to other payment methods. Therefore, it is

recommended that an investigation should be conducted for both the managerial and academic sectors on how the spread of Covid-19 around the world has been able to generate greater reliance on remote mobile payments. Due to the outbreak of the coronavirus, people are using less cash on numerous occasions and may be replacing it with other methods such as mobile payments. Future studies will be able to properly determine the stimulus to adopt remote mobile payments in a way that will continue even in the post-Covid-19 era. Although payment habits are rarely considered a norm in society, people need a strong reason to break old habits.

Different cultural preferences in different societies might modify or neutralize some factors accordingly. Therefore, service providers should pay great attention to these concepts. Increasing the credibility of payment systems and retailers in customers' minds and reassuring them about the lack of risks to privacy and security in mobile payment is vital in advancing mobile payment technology.

It is crucial for mobile payment service providers to actively identify, assess and mitigate particular risks associated with mobile payment services. The speed of technological advances is accompanied by a similarly rapid evolution of security threats and various fraud mechanisms. Therefore, companies and service providers must determine new ways to facilitate mobile payments taking account of the relevant risk factors. It is of the utmost importance for the main actors in a mobile payment to reassure users of the safety and security of mobile payment transactions.

Robust authentication, registration controls, protection of mobile payment initiation, and protection of sensitive data access must be carried out by service providers to legitimate payment transactions and offer a satisfying experience to customers. Moreover, strong customer authentication by service providers should be designed in such a way as to reduce perceived risk and protect confidentiality of data. Most importantly, companies should engage in enhancing users' understanding of mobile payment procedures. They should provide useful information on security issues regarding the adoption of mobile payment systems in order to enable users to take advantage of such services in a safe and secure manner.

As mentioned earlier in this section, promoting mobile payment services via word-of-mouth is exceptionally crucial for faster diffusion of this useful technology, following the effectiveness of subjective norms on attitude towards adopting m-payment in some societies. Sharing a satisfying m-payment experience with a payment system or a retailer leads to a significant association of subjective norms and intention to use mobile payment systems. Besides, to help reduce the harmful effects of perceived risk

on mobile payment systems, service providers should strengthen users' knowledge of payment systems and retailers. This can be achieved by employing social media rather than exhaustively focussing only on mass media advertising.

A consideration of privacy protection might lead to repeated usage of mobile payment systems. It is strategically important to use the most updated technology and procedures to create a genuinely data-safe and privacy-protected mobile payment experience. This will be achieved by both retailers and payment systems on smartphone platforms. These strategies and tactics are expected to improve post-usage perceptions appropriately and effectively boost user intention as well.

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APPENDIX

German Questionnaire

Welche Staatsangehörigkeit haben Sie?

- A. Deutsch
- B. Sonstiges

Abschnitt 1

Angabe zur Person

1. Sie sind?

- A. Männlich
- B. Weiblich

2. Wie alt sind Sie?

- A. 20 – unter 25 Jahre
- B. 25 – unter 30 Jahre
- C. 30 – unter 35 Jahre
- D. 35 Jahre und älter

3. Wie hoch ist Ihr monatliches Haushaltsnettoeinkommen?

- A. Unter €1,500.00
- B. €1,500.00 – unter €2,600.00
- C. €2,600.00 - €4,500.00
- D. Mehr als €4,500.00

4. Welcher ist Ihr höchster Bildungsabschluss?

- A. Abitur
- B. Hochschulabschluss (Bachelor)

Abschnitt 2

Allgemeine Fragen

Hier kommen einige Fragen bzgl. Ihrer Nutzung von Remote Payment Systems (mobile Zahlungssysteme).

Ein mobiles Zahlungssystem ist allgemein die Nutzung eines mobilen Endgerätes zur Zahlung von Waren & Dienstleistungen (z. B. PayPal, Sofortüberweisung). Remote Mobile Payment bezeichnet dabei den Einsatz außerhalb des Verkaufsortes, z.B. zur Bezahlung von Internet-käufen.

5. Haben Sie schon ein mobiles Zahlungssystem genutzt?

- A. Ja
- B. Nein

6. Wie lange nutzen Sie schon mobile Zahlungssysteme?

- A. Weniger als 1 Jahr
- B. 1 – unter 2 Jahre
- C. 2 – 3 Jahre
- D. Länger als 3 Jahre

7. Wie häufig nutzen Sie durchschnittlich mobile Zahlungssysteme?

- A. Mindestens einmal die Woche
- B. Mindestens einmal im Monat
- C. Mindestens einmal im Quartal
- D. Seltener

8. Wieviel geben Sie im Durchschnitt bei einer mobilen Zahlung aus?

- A. Unter €10.00
- B. €10.00 – unter €50.00
- C. €50.00 – unter €100.00
- D. €100.00 oder mehr

9. Welche Produkte haben Sie schon einmal mit Ihrem mobilen Endgerät (Mobiltelefon, Tablet) erworben?(Mehrfachnennungen möglich)

- A. Laptop/Computer/ Notebook o. ä.
- B. Möbel
- C. Unterhaltungselektronik

- D. Parfüm, Kosmetika
- E. Kleidung, Accessoires
- F. Eintrittskarten für Theater, Kino, Konzerte, Sportveranstaltungen o. ä.
- G. Nahrungsmittel, Genussmittel, Getränke
- H. Sportausrüst
- I. Bücher
- J. CD, DVD, Computer/Videogames, Musik
- K. mobile App
- L. Urlaubreisen
- M. Hotelzimmer
- N. Software
- O. Spielzeug
- P. Fahrkarten
- Q. Sonstiges, und zwar:

10. Wieviel Zeit verbringen Sie täglich mit Ihrem Mobiltelefon oder Tablet im Internet?

- A. Weniger als eine Stunde
- B. 1 – unter 3 Stunden
- C. 3 – unter 6 Stunden
- D. Mehr als 6 Stunden

Abschnitt 3

1. Bekanntheit von mobile Zahlungssystemen

Weiter unten finden Sie eine Auflistung mobiler Zahlungssysteme. Welche der unten genannten Systeme kennen Sie? (Bitte kreuzen Sie alle Ihnen bekannten Systeme an)

- 1.1 PayPal
- 1.2 Click & Buy
- 1.3 Sofortüberweisung
- 1.4 Mastercard/ Visa
- 1.5 Skrill
- 1.6 2Checkout
- 1.7 Klarna
- 1.8 Payoneer
- 1.9 Gir Pay
- 1.10 Pay direct

1.11 PAYMILL

1.12 Google Wallet

2. Bisherige Nutzung von Zahlungssystemen

Welche der nachfolgend genannten mobilen Zahlungssysteme haben Sie schon einmal genutzt? Bitte kreuzen Sie alle Zahlungssysteme an, die Sie in der Vergangenheit mindestens einmal genutzt haben.

2.1 Paypal

2.2 Click & Buy

2.3 Sofortüberweisung

2.4 Mastercard/ Visa

2.5 Skrill

2.6 2Checkout

2.7 Klarna

2.8 Payoneer

2.9 Giro Pay

2.10 Pay direct

2.11 PAYMILL

2.12 Google Wallet

3. Bekanntheit von Online-Händlern

Weiter unten finden Sie eine Reihe von Anbietern bzw. Plattformen, die ausschließlich oder zusätzlich das Internet als Verkaufsplattform nutzen. Welche der unten genannten Anbieter kennen Sie? Kreuzen Sie bitte alle Ihnen bekannten Anbieter an.

3.1 Amazon

3.2 eBay

3.3 OTTO

3.4 Walmart

3.5 Zalando

3.6 Tigha

3.7 Sheln

3.8 Notebooksbilliger

3.9 Cyberport.de

3.10 Tchibo

4. Bisher getätigte Käufe bei Online-Händlern

Bei welchen der nachfolgend genannten Internet-Anbieter haben Sie schon einmal mobil etwas gekauft? Bitte kreuzen Sie alle Anbieter an, bei dem in der Vergangenheit mindestens einmal einen Kauf getätigt haben.

4.1 Amazon

4.2 eBay

4.3 OTTO

4.4 Walmart

4.5 Zalando

4.6 Tigha

4.7 Sheln

4.8 Notebooksbilliger

4.9 Cyberport.de

4.10 Tchibo

- Jetzt kommen einige Fragen zu Ihrer Erfahrung mit mobilen Zahlungssystemen. Inwieweit stimmen Sie den folgenden Aussagen zu?
- (1: stimme überhaupt nicht zu und 5: stimme voll und ganz zu).

5. Erfahrung mit einem Zahlungssystem

	Stimme überhaupt nicht zu		Weder/ noch		Stimme voll und ganz zu
	1	2	3	4	5
5.1 Bei der Nutzung von Choose an item. habe ich das Gefühl, dass ich sehr wenig über Choose an item. weiß.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.2 Bei der Nutzung von Choose an item. habe ich das Gefühl, dass ich Erfahrung mit Choose an item. habe .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.3 Bei der Nutzung von Choose an item. hab ich das Gefühl, dass ich über Choose an item. nicht informiert bin.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.4 Ich betrachte mich als Experte wenn es um Choose an item. geht.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Erfahrung mit einem Online-Händler

	Stimme überhaupt nicht zu	2	Weder/ noch	4	Stimme voll und ganz zu
	1	2	3	4	5
6.1 Beim Kauf bei Choose an item. habe ich das Gefühl, dass ich sehr wenig über Choose an item. weiß.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.2 Beim Kauf bei Choose an item. habe ich das Gefühl, dass ich Erfahrung mit Choose an item. habe .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.3 Beim Kauf bei Choose an item. hab ich das Gefühl, dass ich über Choose an item. nicht informiert bin.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.4 Ich betrachte mich als Experte wenn es um Choose an item. geht.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Jetzt kommen die Fragen in Bezug auf die Variablen, die in dieser Untersuchung bewertet werden. Inwieweit stimmen Sie den folgenden Aussagen zu?

7. Wahrgenommener Nutzen

	Stimme überhaupt nicht zu	2	Weder/ noch	4	Stimme voll und ganz zu
	1	2	3	4	5
7.1 Mobile Zahlungssysteme machen es möglich, Zahlungen schnell zu erledigen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.2 Die Nutzung von mobilen Zahlungssystemen macht es möglich, meine Effizienz zu erhöhen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.3 Die Nutzung von mobilen Zahlungssystemen macht es möglich, Zahlungen leichter zu verwalten und durchzuführen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.4 Generell bin ich der Meinung, dass mobile Zahlungssysteme für Zahlungen sinnvoll sind.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Wahrgenommene Einfachheit der Nutzung

	Stimme überhaupt nicht zu		Weder/ noch		Stimme voll und ganz zu
	1	2	3	4	5
8.1 Ich halte es für einfach, den Umgang mit mobilen Zahlungssystemen zu erlernen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.2 Ich halte es für einfach ein mobiles Zahlungssystem dazu zu bringen, das zu tun, was ich möchte.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.3 Ich bin der Meinung, dass meine Interaktion mit dem mobilen Zahlungssystem klar und verständlich ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.4 Ich halte es für einfach, fachkundig im Umgang mit mobilen Zahlungssystemen zu werden.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.5 Insgesamt finde ich es einfach, mobile Zahlungssysteme zu benutzen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Nutzungsabsicht

	Stimme überhaupt nicht zu		Weder/ noch		Stimme voll und ganz zu
	1	2	3	4	5
9.1 Wenn ich die Möglichkeit habe, werde ich in der Zukunft häufiger mobile Zahlungssysteme nutzen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.2 Wenn ich die Möglichkeit habe, erwarte ich, dass ich mobile Zahlungssysteme regelmäßig nutzen werde.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.3 Ich werde anderen Personen zur Nutzung von mobilen Zahlungssystemen nachdrücklich raten.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. Einstellung

	Stimme überhaupt nicht zu		Weder/ noch		Stimme voll und ganz zu
	1	2	3	4	5
10.1 Ich denke, dass die Nutzung von mobilen Zahlungssystemen für alle Käufe eine gute Idee ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.2 Ich denke, dass die Nutzung von mobilen Zahlungssystemen für mich vorteilhaft ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.3 Ich nehme die Nutzung von mobilen Zahlungssystemen als positiv wahr.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. Subjektive Normen

	Stimme überhaupt nicht zu		Weder/ noch		Stimme voll und ganz zu
	1	2	3	4	5
11.1 Wenn ich nicht sicher bin, ob ich eine mobile Zahlung vornehmen soll, beobachte ich das Verhalten anderer Menschen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.2 Ich würde mich weigern, eine mobile Zahlung vorzunehmen, wenn ich erkenne, dass Personen, die für mich wichtig sind, dies auch nicht tun.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.3 Menschen die mein Verhalten beeinflussen, sind der Meinung, dass ich mobile Zahlungssysteme nutzen sollte.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Ubiquität

	Stimme überhaupt nicht zu		Weder/ noch		Stimme voll und ganz zu
	1	2	3	4	5
12.1 Ich bin der Meinung, dass eine mobile Zahlung unabhängig von der Zeit ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.2 Ich bin der Meinung, dass eine mobile Zahlung unabhängig vom Ort ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.3 Ich kann eine mobile Zahlung jederzeit während einer Reise vornehmen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Wahrgenommenes Risiko

	Stimme überhaupt nicht zu		Weder/ noch		Stimme voll und ganz zu
	1	2	3	4	5
13.1 Ich bin der Meinung, dass die mobile Technologie ein zuverlässiges und sicheres Umfeld bietet, um eine mobile Zahlung vorzunehmen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.2 Ich bin der Meinung, dass monetäre Informationen, die ich auf dem mobilen Gerät während der Durchführung einer mobilen Zahlung zur Verfügung stelle, vor Hackern gut geschützt sind.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.3 Ich bin der Meinung, dass das Risiko von mobilen Zahlungssystemen insgesamt hoch ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.4 Bei mobilen Zahlungen habe ich Bedenken bezüglich meiner Privatsphäre.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.5 Ich bin der Meinung, dass das Handy aufgrund der Nutzung einer mobilen Datenverbindung (4G oder 5G) oder einer freigeschalteten Public Wi-Fi einem möglichen Risiko von Hacking ausgesetzt ist.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Vielen Dank für Ihre Teilnahme!

Persian Questionnaire

اطلاعات دموگرافیک

بخش 1

1. جنسیت شما چیست؟

1. مرد

2. زن

2. سن شما چند سال است؟

1. 20 سال - کمتر از 25 سال

2. 25 سال - کمتر از 30 سال

3. 30 سال - 35 سال

4. بیشتر از 35 سال

3. درآمد خالص ماهیانه خانوادگی شما چقدر است؟

1. کمتر از 3.000.000 تومان

2. 3.000.000 تومان - کمتر از 9.200.000 تومان

3. 9.200.000 تومان - کمتر از 19.300.000

4. بیشتر از 19.300.000 تومان

4. بالاترین مدرک تحصیلی شما چیست؟

1. دیپلم

2. لیسانس

اطلاعات عمومی

بخش 2

در این بخش تعدادی سوال درباره استفاده شما از سیستم پرداخت الکترونیکی با تلفن همراه پرسیده خواهد شد. به طور کلی سیستم پرداخت با موبایل شامل استفاده از دستگاه تلفن همراه و یا تبلت به منظور پرداخت برای کالاها و سرویس های مختلف است (مثلا سیستم پرداخت اسان کیش، زرین پال و).

منظور از سیستم پرداخت الکترونیکی با تلفن همراه در این تحقیق صرفا به استفاده خارج از فروشگاه های سطح شهر و فقط و فقط جهت خرید اینترنتی اشاره میشود.

6. آیا تا کنون از تلفن همراه خود جهت انجام پرداخت الکترونیکی استفاده کرده اید؟

1. بله

2. خیر

7. چه مدت است که از سیستم پرداخت الکترونیکی با تلفن همراه استفاده میکنید؟

1. کمتر از 1 سال

2. 1 سال - کمتر از 2 سال

3. 2 سال - 3 سال

4. بیشتر از 3 سال

8. به طور میانگین، اغلب چگونه از سیستم پرداخت الکترونیکی با تلفن همراه استفاده میکنید؟

1. حداقل 1 بار در هفته

2. حداقل 1 بار در ماه

3. حداقل 1 بار در هر فصل

4. به ندرت

9. چقدر به طور میانگین در هر بار پرداخت الکترونیکی با تلفن همراه خرج میکنید؟

1. کمتر از 46.000 تومان

2. 46.000 تومان - کمتر از 230.000 تومان

3. 230.000 تومان - کمتر از 460.000 تومان

4. بیشتر از 460.000 تومان

10. تا کنون چه محصولاتی را حداقل یک بار از طریق تلفن همراه و یا تبلت خود خریداری کرده اید؟

1. لپ تاپ/ کامپیوتر

2. لوازم منزل

3. محصولات الکترونیکی

4. بلیط تئاتر/ سینما / مسابقات ورزشی

5. لباس/ لوازم جانبی

6. مواد غذایی/ نوشیدنی

7. عطر/ لوازم آرایش

8. بلیط اتوبوس/ قطار/ هواپیما

9. رزرو مسافرت

10. رزرو هتل

11. نرم افزار کامپیوتر

12. لوازم ورزشی

13. کتاب

14. اپلیکیشن موبایل

15. سی دی/ دی وی دی/ آهنگ/ بازی کامپیوتری

16. اسباب بازی

17. چیزهای دیگر، لطفا مشخص کنید:

11. متوسط زمان روزانه که با تلفن همراه و یا تبلت خود در اینترنت میگذرانید چقدر است؟

1. کمتر از 1 ساعت

2. 1 ساعت - کمتر از 3 ساعت

3. 3 ساعت - 6 ساعت

4. بیشتر از 6 ساعت

بخش 3

1. آشنایی با یک سیستم پرداخت الکترونیکی

در این بخش شما لیستی از سیستم های پرداخت با تلفن همراه را مشاهده خواهید کرد. کدام یک از سیستم های پرداخت زیر را میشناسید؟ (هر کدام را که میشناسید علامت بزنید)

1. پی پاکس
2. شاپرک
3. میهن گیت
4. زرین پال
5. بانک پاسارگاد
6. اسان پرداخت
7. ایران کیش
8. سامان کیش
9. به پرداخت ملت
10. بانک پارسیان

2. استفاده قبلی از یک سیستم پرداخت الکترونیکی

از کدامیک از سیستم های پرداخت با تلفن همراه زیر حداقل یک بار استفاده کرده اید؟ لطفا هر کدام از سیستم های پرداخت زیر را که حداقل یک بار در گذشته استفاده کرده اید علامت بزنید.

1. پی پاکس
2. شاپرک
3. میهن گیت
4. زرین پال
5. بانک پاسارگاد
6. اسان پرداخت
7. ایران کیش
8. سامان کیش
9. به پرداخت ملت
10. بانک پارسیان

3. آشنایی با یک پلت فرم فروش آنلاین

در این بخش شما لیستی از ارابه دهندگان و یا سیستم های عاملی را مشاهده خواهید کرد که انحصارا و یا به صورت جانی از اینترنت به عنوان یک پلت فرم فروش استفاده میکنند. کدام یک از ارابه دهنده گان آنلاین زیر را میشناسید؟ (هر کدام را که میشناسید علامت بزنید)

1. بامیلو
2. مدیسه
3. دیجی کالا
4. البسکو
5. تک سبد
6. شیکسون
7. میهن استور 3040
8. همراه اول
9. الو
10. نت برگ
11. شیپور

4. استفاده قبلی از یک پلت فرم فروش آنلاین

از طریق کدامیک از آرایه دهندگان محصولات اینترنتی زیر حداقل یک بار با تلفن همراه خود چیزی خریداری کرده اید؟ لطفاً هر کدام را که در گذشته حداقل یک بار از طریق آنها محصولی خریداری کرده اید، مشخص کنید.

1. بامیلو
2. مدیسه
3. دیجی کالا
4. البسکو
5. تک سبد
6. شیکسون
7. میهن استور 3040
8. همراه اول
9. الو
10. نت برگ
11. شیپور

5. داشتن تجربه نسبت به یک سیستم پرداخت

لطفاً دیدگاه موردنظر خود را نسبت به مفاهیم ذیل بیان کنید.
(مقیاس لیکرت از -1 = "کاملاً مخالف" تا +1 = "کاملاً موافق")

کاملاً موافق +2		نظر خاصی ندارم 0		کاملاً مخالف -2	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. 5 هنگام استفاده از احساس میکنم که اطلاعات خیلی کمی نسبت به دارم.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. 5 هنگام استفاده از احساس میکنم که نسبت به بسیار باتجربه هستم.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. 5 هنگام استفاده از احساس میکنم که درباره نامطلع هستم.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. 5 من خودم را نسبت به به عنوان یک کاربر متخصص در نظر میگیرم.

6. داشتن تجربه نسبت به یک فروشنده آنلاین

کاملاً مخالفم -2	کاملاً موافقم +2	نظر خاصی ندارم 0	کاملاً مخالفم -2	کاملاً موافقم +2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1. 6 هنگام خرید از احساس میکنم که اطلاعات خیلی کمی نسبت به دارم.				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. 6 هنگام خرید از احساس میکنم که نسبت به بسیار باتجربه هستم.				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. 6 هنگام خرید از احساس میکنم که درباره نامطمع هستم.				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. 6 من خودم را نسبت به به عنوان یک کاربر متخصص در نظر میگیرم.				

7. سودمندی در نظر گرفته شده

کاملاً مخالفم -2	کاملاً موافقم +2	نظر خاصی ندارم 0	کاملاً مخالفم -2	کاملاً موافقم +2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1. 7 استفاده از سیستم پرداخت الکترونیکی با تلفن همراه من را قادر خواهد ساخت تا امور مالی و پرداختی خود را به سرعت انجام دهم.				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. 7 استفاده از سیستم پرداخت الکترونیکی با تلفن همراه کارایی من را در پرداخت بهبود خواهد بخشید.				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. 7 استفاده از سیستم پرداخت الکترونیکی با تلفن همراه مدیریت پرداخت و انجام آن را برای من آسانتر خواهد کرد.				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. 7 استفاده از سیستم پرداخت الکترونیکی با تلفن همراه اثربخشی من را در پرداخت افزایش خواهد داد.				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. 7 به طور کلی من اعتقاد دارم که سیستم پرداخت الکترونیکی با تلفن همراه امری سودمند می باشد.				

8. در نظر گرفتن راحتی در استفاده

کاملاً موافقم +2	نظر خاصی ندارم 0	کاملاً مخالفم -2	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. 8 یادگیری استفاده از سیستم پرداخت الکترونیکی با تلفن همراه برای من آسان خواهد بود.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. 8 به کارگیری سیستم پرداخت الکترونیکی با تلفن همراه به منظور انجام هر آنچه که مورد نظر من است , آسان خواهد بود.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. 8 تعامل من با سیستم پرداخت الکترونیکی با تلفن همراه شفاف و قابل فهم خواهد بود.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. 8 ماهر شدن در زمینه استفاده از سیستم پرداخت الکترونیکی با تلفن همراه برای من آسان خواهد بود.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5. 8 به طور کلی, به اعتقاد من استفاده از سیستم پرداخت الکترونیکی با تلفن همراه امری آسان می باشد.

9. تمایل به پرداخت با تلفن همراه

کاملاً موافقم +2	نظر خاصی ندارم 0	کاملاً مخالفم -2	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. 9 اگر فرصتی پیش بیاید تمایل دارم که در آینده از سیستم پرداخت الکترونیکی با تلفن همراه استفاده کنم.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. 9 اگر فرصتی پیش بیاید پیش بینی میکنم که در آینده مکرراً از سیستم پرداخت الکترونیکی با تلفن همراه استفاده کنم.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. 9 من به شدت استفاده از سیستم پرداخت الکترونیکی با تلفن همراه را به دیگران توصیه خواهم کرد.

10. دیدگاه نسبت به پرداخت با تلفن همراه

کاملاً موافقم +2		نظر خاصی ندارم 0		کاملاً مخالفم -2	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.1 من فکر میکنم که استفاده از سیستم پرداخت الکترونیکی با تلفن همراه ایده خوبی برای هر پرداختی است.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.2 من فکر میکنم که استفاده از سیستم پرداخت الکترونیکی با تلفن همراه برای من سودمند و مفید خواهد بود.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.3 من درک مثبتی نسبت به استفاده از سیستم پرداخت الکترونیکی با تلفن همراه دارم.

11. هنجارهای ذهنی

کاملاً موافقم +2		نظر خاصی ندارم 0		کاملاً مخالفم -2	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.1 افرادی که برای من مهم هستند فکر میکنند که من باید از سیستم پرداخت الکترونیکی با تلفن همراه استفاده کنم.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.2 هنگامی که من برای انجام یک پرداخت الکترونیکی با تلفن همراه نا مطمئن هستم، برای راه حل به رفتار دیگران توجه میکنم.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.3 من مطمئناً از انجام پرداخت الکترونیکی با تلفن همراه امتناع خواهم کرد، وقتی که متوجه میشوم افرادی که برای من اهمیت دارند هم آن را انجام نمیدهند.

12. امکان استفاده در همه جا

کاملاً مخالفم -2	کاملاً موافقم +2	نظر خاصی ندارم 0	کاملاً مخالفم -2	کاملاً موافقم +2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1. 12 من معتقد هستم که پرداخت الکترونیکی با تلفن همراه مستقل از زمان میباشد.				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. 12 من معتقد هستم که پرداخت الکترونیکی با تلفن همراه مستقل از مکان میباشد.				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. 12 من امکان استفاده از پرداخت با تلفن همراه را در هر زمانی حتی هنگام سفر دارا هستم.				

13. ریسک در نظر گرفته شده

کاملاً مخالفم -2	کاملاً موافقم +2	نظر خاصی ندارم 0	کاملاً مخالفم -2	کاملاً موافقم +2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1. 13 من اعتقاد دارم که تکنولوژی تلفن همراه محیط قابل اعتماد و امنی را جهت پرداخت الکترونیکی فراهم میکند.				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. 13 من اعتقاد دارم که اطلاعات مالی را که هنگام پرداخت الکترونیکی بر روی دستگاه تلفن همراه فراهم و وارد میکنم به خوبی از دسترسی هکرها محافظت می شود.				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. 13 من اعتقاد دارم که ریسک کلی سیستم پرداخت الکترونیکی با تلفن همراه بالاست.				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. 13 من نگرانی هایی راجع به حریم خصوصی خود هنگام پرداخت الکترونیکی با تلفن همراه دارم.				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. 13 من اعتقاد دارم که دیتای تلفن همراه (4G, 5G) جهت استفاده از اینترنت، پتانسیل این را خواهد داشت که تلفن همراه شما را در معرض دسترسی هکرها قرار دهد.				

Eidesstattliche Erklärung

Hiermit erkläre ich, dass ich

- die Arbeit selbständig verfasst habe,
- nur die im Quellen- und Literaturverzeichnis genannten Hilfsmittel benutzt habe und
- alle aus Quellen und Literatur wörtlich oder sinngemäß entnommenen Stellen als solche kenntlich gemacht sowie ihre Fundstellen nachgewiesen wurden.

Die eingereichte elektronische Fassung ist mit den gedruckten Exemplaren identisch.

Ich stimme der Nutzung meiner Arbeit, ihrer Verarbeitung, Speicherung und Übermittlung (auch an Dritte) zum Zweck der Plagiatsüberprüfung – auch als Referenzmaterial für zukünftige Prüfungen – zu.

Hamburg, den 22.07.2021