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Exploring Customer Trust in B2C Mobile Payments – A Qualitative Study

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***Abstract*—**Mobile payments have been deployed by businesses for more than a decade. Customers use mobile payments if they trust in this relatively new payment method, have a belief and confidence in, as well as reliance on its services and applications. Despite its potential, the current literature shows that there is lack of customer trust in B2C mobile payments, and a lack of studies that determine the factors that influence their trust in these payments; which make these factors yet to be understood, especially in the Middle East region. Thus, this study aims to explore the factors that influence customer trust in mobile payments. The empirical data for this explorative study was collected by establishing four focus group sessions in the UAE. The results indicate that the explored significant factors can be classified into five main groups: customer characteristics, environmental (social and cultural) influences, provider characteristics, mobile-device characteristics, and perceived risks.

***Keywords*—**B2C mobile payments, Mobile commerce, Mobile-payment services and application, Trust in mobile payments.

I. Introduction

WE have entered a new 'all mobile' era, in which mobile phones are used as phones, internet connections, organizers, jukeboxes, games consoles, messaging devices, shopping tools and others. This diverse range of options over mobile phones has made it possible for mobile users to expect their devices to function as an all-in-one wallet. Thus, the popularity of mobile devices is increasing day by day. Utilising mobile devices in the business and commerce fields leads to the concepts of mobile business and mobile commerce. Mobile commerce (m-commerce) refers to exchanging products and services via mobile telecommunications networks [1], [2]. M-commerce has many applications, such as mobile shopping, mobile marketing, mobile banking, mobile ticketing, mobile entertainment and others.

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In order to complete an m-commerce transaction, a customer needs to exchange values, goods and services with a wireless mobile device. This monetary transaction that is associated with m-commerce is called a mobile payment. A mobile payment (m-payment) is defined as "a payment where a mobile device is used to initiate, authorize and confirm an exchange of financial value in return for goods and services" [3, Page 141].

II. Trust in Mobile Payments

For more than a decade, telecommunications companies have offered mobile payment services. There are various types of payment conducted by mobile phones, based on the parties involved, the value exchanged, the tools and technologies used and others. The immediacy of m-payments along with the portability of mobile devices, make it possible for customers to conduct commercial transactions in many situations in a rapid and comfortable manner. However, and despite the potential of m-commerce and m-payments, trust is a major obstacle in its adoption and development [4]-[6]. Trust is a multi-disciplinary term, and has many meanings, dimensions and characteristics. Moreover, trust has been studied in psychology, management, communication, sociology, economics and political sciences. Trust in m-payments has many facets and dimensions: psychological, social, cultural, technological and technical aspects. Thus, trust in m-payments is complex and is not easy to understand.

Many scholars in the field of electronic and mobile commerce have argued that there is a lack of trust in m-payments worldwide [5], [7]-[14]. Other scholars argue that customer trust in m-payments at least needs to be developed [15]-[17]. These problems facing trust in m-payment can be explained by a lack of understanding of the factors that influence customer trust in m-payments.

Trust and culture are closely related constructs [18], [19] and probably one cannot be properly understood without the other [20], [21]. Previous research, which examined culture and online trust across cultures, suggests the need to include culture in the framework because trust, and its antecedents, changes across cultures [22]-[25]. With respect to the Arab and Gulf countries, and the Emirates specifically, no scholarly research has yet been found that discusses the factors that influence trust in m-payment. Instead, there are very few relevant studies with regard to m-payments adoption and development in few Arab countries, which discuss trust as an independent construct. This literature points out the

importance of trust when adopting m-payments, without clarifying how this trust could be achieved, and what factors influence it. As a result, we do not understand the factors that influence customer trust in m-payments in Arab countries. Therefore, this study aims to understand the factors that influence customer trust in Business-to-Consumer (B2C) m-payments. Thus, this study sampled respondents in the United Arab Emirates (the Emirates). The Emirates is a Middle Eastern developing country, and is one of the Arab and Gulf states. Although trust has been indicated as an important factor that impacts the adoption of m-payment services in the Emirates and other Arab countries [26]-[29], it has not been studied, and its factors have not yet been discovered.

Therefore, it is the aim of this study to determine the factors that influence customer trust in m-payments in the Emirates, and explore what new factors might emerge in this context that could be different from the general case. Understanding these factors could contribute to the successful adoption and development of m-payment applications in the Emirates. Next section presents the research methodology, followed by the section of the findings demonstration. Finally, the last section rounds off with discussion and conclusion.

III. Methodology and Data Collection

As mobile payments are a relatively new research area in the UAE with little previous empirical work on the subject, a qualitative approach using focus group interviews was chosen to explore consumer trust in m-payments. The focus group technique has been used in social research, but possibly its most obvious use has been applied to investigate consumer habits and preferences [30], and to test customer reactions to products or services [31]. The ability of the focus group interviews to emphasise a specific theme or topic that is explored in depth [31], to give the insight and data produced by interaction between participants[32], and to stimulate new ideas, creative concepts and impressions for understanding a phenomena [30]-[33] were the stimulators for the researchers to choose this technique.

The focus group discussions followed a semi-structured guide, which was tested with pilot group of five participants. The group was consistent with the research design, and thus there was no need for major modifications to the guide. Four focus group sessions took place in the Emirates, in four main cities/Emirates (Dubai, Abu Dhabi, Sharjah and Al-Ain). Three of these sessions were conducted in Arabic, and one was in English. All sessions were recorded and some notes were taken to commentate on the perceptions of the participants. The sessions were then transcribed and sent back to the participants for checking and validation. Afterwards, Arabic transcripts were translated into English and prepared for analysis.

Each focus group size in the research varied between six and eight participants, which follows the common recommendations for focus group composition [30], [34]-[36]. This number also ensures that the focus group size is manageable and shows greater potential. Overall, twenty seven participants had the chance to participate in the sessions Participants had been selected among many nationalities, such as: Emirati, Jordanian, Syrian, Palestinian, Egyptian, Sudanese, Indian, Pakistani, Bangladesh, Spanish, Australian and American. The age range of the participants was from 19 to 52. The participants had different backgrounds and occupations; university students and lecturers, bankers, salesmen, accountants, IT professionals, secretaries and housewives. The common thing that was shared among the participants was the awareness of m-payments concepts, technologies and services, and most of them had some experiences in conducting m-payments in the Emirates.

The participants were reached through three main entities: telecommunication companies, banks and online social groups and forums. These entities have been particularly selected because the term m-payment is closely related to telecom companies and banks, and their customers are seen to be the most familiar with the m-payment concept and characteristics, have some knowledge about the concept, or already have used it.

IV. Findings and Analysis

The key themes are identified from the focus group discussions process. The information provided is considered to be appropriate due to its relevance to the stated research objective, and its value in revealing patterns, themes and concepts relating to the factors influencing customer trust in mobile payments. Firstly, participants were asked about their m-payments usage pattern (in terms of services and applications). Then, they were asked about their m-payments usage frequency. Some participants in the first group identified certain amounts of money they are willing to trust, and others followed. Accordingly, this subject was considered for all other groups. The results of the usage pattern, frequency and willing to trust in m-payments with fixed amount of money are profiled in Table I. Afterwards, participants were asked to give score of their general trust in m-payments in the Emirates in a 0-10 scale. The average score of their trust was 7.13 out of 10.

TABLE I
Pattern and Frequency of m-Payment Usage between the Focus Groups

Focus Group	Usage of m-payment applications	Usage experience of m-payments	Trustworthy amount of m-payment (in Drhs)
FG1	Paying bills (power, water), Booking airline tickets	Several times (4-8 times)	500-1000
FG2	Paying bills (power, water), Car parking, traffic registration and fines, paying charity	Many-times (+15 times)	100 – 500

FG3	Mobile banking, paying bills, Car parking, traffic registration and fines,	Many times (+10 times)	100 – 500
FG4	Games and Entertainment, Telecomm and internet services	Several times (3-6 times)	100 – 500

To analyse the discussions' data, we followed a suggestion in using the Constant Comparative Analysis (CCA) strategy that is applied widely in qualitative research [30], [34]. The CCA strategy consists of three processes: (1) open codes, (2) axial codes, and (3) selective codes. The first step begun with is open coding, which is the process of identifying concepts, and discovering their dimensions by breaking down, comparing, conceptualizing, and categorizing data [35], [36]. Afterwards, axial coding is used to group the codes developed during open coding into categories. In axial coding, the coding occurs around the axis of a category, linking categories at the level of properties and dimensions [35]. The transcripts are inspected for similarities or differences and grouped into groups of conceptual units. In the last step, selective coding is used to integrate and refine the concepts emerged during axial coding.

By applying the CCA approach, analysis revealed many important aspects that play a role in affecting customer trust in mobile payments, such as: customer past experience in m-payments, social influences, security and technical risks, reputation of the m-payments provider, and other issues associated with the mobile device. In more details, the factors emerged during the focus group discussions were categorized into five main groups: customer characteristics, environmental (social and cultural) influences, provider characteristics, mobile-device characteristics, and perceived risks. Next sequenced sections describe these groups and the factors included in each group.

A. Customer Characteristics

The focus group discussions exposed some personal characteristics and intrinsic values of customers that could influence their trust in m-payments. These characteristics include customer past experiences in m-payments, customer awareness and knowledge about m-payments, and customer personal characteristics (demographics).

The vast majority of all participants argued that customer past experience in using m-payments services and other online payment methods can strongly influence their trust in conducting an m-payment. For instance, one participant argued: "Previous experience in m-payments is a factor of trusting it... My personal experience in conducting an m-payment determines my trust in it". Another participant argued that trust in m-payments could be gained through a cumulative practices and past experiences of this payment method, by saying: "Trust increases or decreases by usage. To me, at the beginning of launching m-payment services in the Emirates, I had some concerns in using it, but these concerns were away when I started using this service, and trust has become higher and higher". Discussions further noted that the first experience in and usage of an m-payment service or application significantly influence trust in m-payments. Moreover, the relationship between customer past experience in m-payments and trusting it was illustrated, depending on positive and negative practices and past experiences he/she had with m-payment services and applications.

Away from past experiences and practices, the majority participants argued that customer' knowledge in and awareness of m-payments services and applications would influence their trust in m-payments. In a participant's words, "the significant issue which is related to trust in m-payments is that to what extent customers are aware of this service and how much they know about it". According to one participant, awareness of m-payments means "to be aware of m-payment services, applications, its characteristics and details". The interviews specified that awareness could be associated with several sources of knowledge, such as education, profession and culture.

Two demographic variables were identified as contributing factors of trust in mobile payments through the discussions. Some participants indicated that the age of customers could influence their trust in m-payments. For instance, one participant argued that age is associated with trust in technologies in general, and with m-payments in specific, in a direct relationship. "I would say age plays a significant role in trust in m-payments... I would say the older the age the less the trust". Other participants preferred to use the term generation instead of age. For instance, a participant argued: "I agree that age is a factor of trust. I cannot say the older the people the less the trust, perhaps it is a matter of generations. Our generation has grown with this technology... The older generation are more conservative and take a while to pick up and use such a new technology". Arguably, few participants indicated a relationship between gender and trust in m-payments. For example, a participant argued: "I feel males are more likely to trust in m-payments than females". Another person disagreed with him, arguing that "females tend to trust in m-payments without deeply thinking... They may not think of security and technical troubles when conducting the payment, so they trust in it more than males". A summary of customer characteristics is shown in Fig. 1.

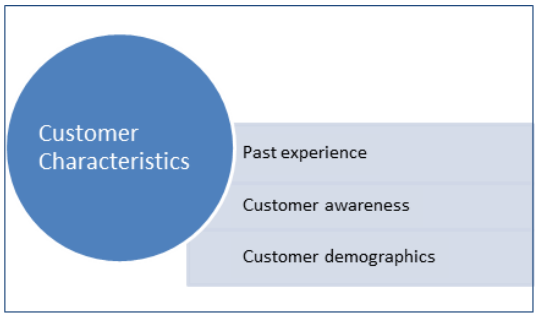

Fig. 1 Customer characteristics that influence customer trust in m-payments

B. Environmental (Social and Cultural) Influences

The focus groups suggested that social influence, especially the interpersonal influences have significant impact on customer trust in m-payments, while the second social influence type; the mass media has some influence on customer trust in m-payments. Interpersonal influences, based on participants' perceptions, include word-of-mouth referral, and normally come from social networks such as close relatives, friends and colleagues. Mass media includes newspapers, TV advertisements, public advertisements and marketing campaigns. In addition, discussions revealed that some external parties could influence trust in mobile payments.

The majority of all participants argued that social influences, especially the word of mouth, are factors of trust in m-payments. For example, a participant argued: "I trust my friends. If I trust a friend, I trust his/her perceptions and experience in m-payments". Similarly, another participant argued: "I think here [in the Emirates] word-of-mouth is very effective… In the past, I did not trust in buying air tickets online by my mobile in the past, but I was encouraged by a friend. I tried it and started trusting it since then. His advice resulted in my trust...". Participants illustrated the effect of word of mouth and the social interactions among customers by the significant others, such as family members, relatives, friends, colleagues and others.

Discussions identified mass media as an another source of social influences. Participants argued that media can make customers aware of m-payments characteristics, the thing that can lead to trusting in it. "My trust could be affected by Media means... Media provides me with the awareness and knowledge required to understand this technology and start trusting it". Similarly, another participant agreed and continued: "Media is very affective on my trust... Media can offer customers the consciousness of m-payment services and affect my mind without I know...when getting such information about the service; I will naturally feel that I have a positive attitude towards this service and makes me trust it". Interviewees further noted that media could play a major role in trusting m-payments, especially if the service is newly adopted and not many customers had tried it before. Other interviewees considered this influence as conditional, subject to the advertiser (service provider) and how trustworthy it is. However, the influence of the provider is mentioned later in the paper.

Many participants suggested that external parties could influence customer trust, such as governmental legislations for customer protection, and supporting the service by an external party. For instance, a participant argued that "if m-payment services are supported by governmental legislations and policies then customer trust in these services would increase dramatically… banks could also play that role by monitoring payments and protect their customers". Another participant agreed and said: "Such policies protect customers and provide compensations in case of troubles". In addition to the regulations legislated by governmental agencies, participants supported the acting of financial institutes as a third mediated party between the provider and the customer, which indicate the importance of a third party certificate when conducting an m-payment.

Participants also considered the culture factor and its impact on trust in m-payment. Some of the participants viewed culture as the background of a person, or as a literacy, while others defined culture as the atmosphere around a person. The majority of the participants considered culture as an important factor that influences customer trust in m-payments. A participant argued: "culture shapes a person's behaviour. If you come from a background or a culture that tend to trust new technology easily, you will be initiative to trust in it". Similarly, another participant said: "there are people who are open minded to new technologies where others may not... it could be also related to the environment surrounding them… I think the multi-cultural environment here makes the people somehow willing to trust new technologies".

Many participants argued that the availability of m-payment services and the abundance of its application in a country could impact customer trust in m-payments as a cultural influence. For instance, a participant argued: "to what extent m-payment services and applications are available for usage and how they are spread impact a person's trust... The more abundant the service the more trustworthy it will be". Another participant agreed and continued: "I agree. Involving some public institutions, such as power and water companies, in the m-payment services would increase trust in m-payments... It becomes a norm and a prevailing trend, and this automatically increases trust in these services". In addition, participants directly linked the prevalence of m-payments services to culture and trust, arguing that the greater the number of m-payments services and applications are available in the Emirates, the more it becomes part of our culture, the higher the trust we will have in them even if there were some risks associated with them. The overall environmental influences are summarizes in Fig. 2.

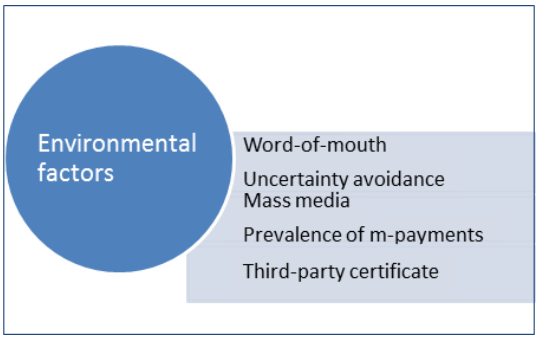

Fig. 2 Environmental factors that influence customer trust in m-payments

C. Provider Characteristics

The discussions indicated that trusting the provider of m-payment services is significant for trusting in m-payments. The provider in this context, as determined by the participants, is a telecom company (two main telecom companies were specified). They pointed out some characteristics of the providers that are related to trust in m-payments, such as reputation of the provider, number of years in the business, size of the company providing the service, and brand recognition.

The majority of the participants pointed out that the reputation of the provider is strongly related to their trust in m-payments. They used the terms good-well, image, and reputation while discussing the factor of the provider's reputation. For instance, a participant argued that "the reputation of the company and its image in it customers eyes is important to trust in its products and services". Similarly, another participant argued: "to me, trusting in m-payments is a result of how I see the service provider and what I heard about it. For example, I do not trust in the m-payment service provided by the company because I do not trust in the company itself, and this is because I hear about its problems frequently". Individual participants associated the provider's reputation with several issues, such as the efficiency of the employees' staff, its system processes, its services and products, or the number of years in business.

Some participants agreed that the number of years in business could influence their trust in m-payments. For instance, one participant argued that the number of years the provider in business, or provider's age as he described it, results in more knowledgeable and trustworthy its staff members. He said: "provider's reputation, which I think is an important factor of trust, is associated with the provider's age. The older the company, the more experienced its staff members and the higher ability to deal with problems". Likewise, another participant argued: "the older the company the more experience in the industry and the more professional and solid in business, and accordingly the more trustworthy will be".

Another characteristic of the provider that was discussed during the focus group sessions was the size the company. Some participants demonstrated the size the provider (the telecom company) as the number of branches it has, the extent of availability and the degree of spanning domestically or abroad, while others related the size of the company to the number of the company's employees and customers. Many of the participants argued that the size of the provider affects their trust in m-payments. For instance, one participant described the relationship between the number of employees at a company, its branches, and customer trust in that company and its services. He said: "the more the customers and staff members, the more the branch numbers, the higher availability and spanning of its services, the higher trust".

Arguably, some participants discussed the influence of the firm's brand recognition and its services on its customer trust. Regarding service brand recognition, few participants indicated that brand recognition has a psychological influence on customer trust in m-payment services. A participant argued: "service brand recognition is an influential factor of trust, and that is a part of psychological affects". Another participant agreed and continued: "brands have hidden effects on our trust... brands give intimation about the service and its functionality, and thus it affects secretly our awareness and trust in an m-payment service". Overall, Fig. 3 summarizes the four main provider characteristics that influence customer trust in m-payments.

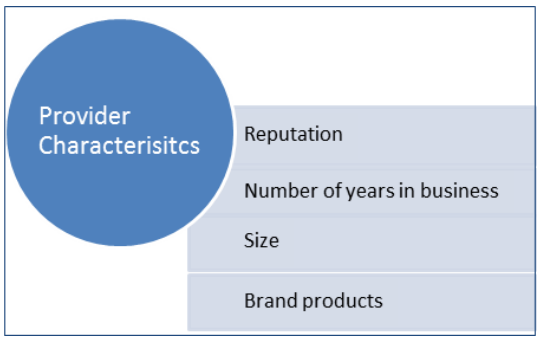

Fig. 3 Provider characteristics that influence customer trust in m-payments

D. Mobile Device Characteristics

Few participants argued that the mobile device characteristics have an influence on customer trust in m-payments. Among the four focus groups, only one group (the one that was conducted with non-Arabic speakers) had a someway consensus that some characteristics of the device can influence their trust, such as the mobile design, brand name, the battery life, and software issues, whereas others argued that these characteristics can influence the usage and adoption of m-payments rather than trust in these services.

The minority of the participants argued that the brand of the mobile device has an influence on their trust, and that there are some mobile devices that are more secured than others. For instance, a participant argued: "some mobile devices are more secure than others, by its operating systems, and some other devices are more vulnerable to security breaches. For example, Galaxy mobile devices are less secured than iPhone

or LG. Therefore, I would trust in iPhone or LG for my m-payments more than Galaxy mobiles". Similarly, another participant argued: "In the Emirates, some mobile devices are provided with some settings to connect them with banks for shopping. For instance, BlackBerry has special built-in software that connects the user with the telecom and the Abu Dhabi National Bank to ease the process of purchasing online. This service distinguished BlackBerry from other mobile devices such as Nokia or Samsung, and made m-payments more trustworthy". Thus, some participants consider some sort of mobile device brands to be more trustworthy than other devices.

The design of the mobile device is related to trust of few participants in m-payments. For example, one participant argued: "the device could play a role in trust, especially when using a touch screen mobile". Another participant agreed and gave some justifications, by arguing: "my concern in the device is the touch screen option. This can cause in entering wrong numbers and amounts of money, or can transfer the amount to someone else's account". The discussions further indicated that lack of trust in m-payments could be related to the mobile software than its hardware, and other individuals related the latency of the device and its battery life to trust in conducting an m-payment. In conclusion, the mobile device characteristics are summarized in Fig. 4.

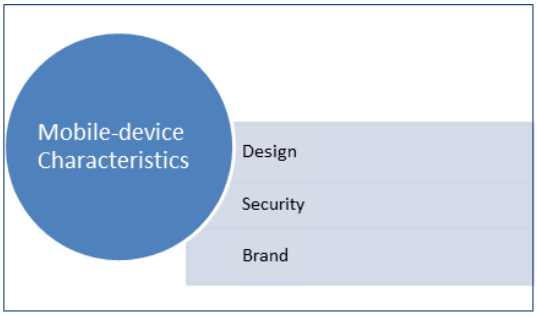

Fig. 4 mobile-device characteristics that influence customer trust in m-payments

E. Perceived Risks

The vast majority of the participants agreed that m-payments are associated with some risks, and these risks influence their trust in these payments. They particularly discussed four types of risks: financial, technical, security and privacy risks. The participants perceived financial risks as the amount of money to be paid by the mobile device, while they associated technical risks with mobile networks and telecommunications. Security risks were perceived as hacking possibilities, fraud cases, and stealing credit card numbers, whereas privacy issues were discussed as exposing personal information and details when conducting an m-payment transaction. Participants' main concerns were about financial and security issues. Technical issues came second, whereas few of them showed privacy concerns.

The majority of all participants argued that their trust in conducting an m-payment is associated with the amount of money they will pay by their mobile devices. They preferred conducting micro m-payments more than conducting macro m-payments. Around half of the participants argued that they would not trust in paying more than 500Drhs by their mobiles. One participant argued: "the amount of the m-payment I am a going to conduct is important to me and impact my trust. I do trust in m-payments but I have concerns regarding paying big amounts of money by my mobile. It could be the same case for my other online payments...". Another participant agreed, and continued to describe the relationship between the amounts of money to be paid by the mobile and his trust in m-payments. He said: "The bigger amount of money paid through the mobile, the more risky transaction will be, the lower trust people will have in m-payments".

Similar to financial risks, the majority of the participants agreed that security risks influence their trust in m-payments, such as hacking, fraud, and steeling credit card numbers. For instance, one participant argued: "I have some hacking concerns. A hacker can steel my credit card info and other personal details". Likewise, another participant argued: "I think there are lot of security breaches while conducting an m-payment, hacking and so on. Hacking is spread all around the Emirates, and people here are aware of it... I have other concerns, such as dealing with Visa Cards and some information about the card owner". The participants indicated that the mentioned security issues are also related to other online payment methods.

Many of the participants indicated that there are some technical issues associated with m-payments, and these issues can influence their trust. For instance, one participant argued: "...I cannot trust in m-payments blindly. Although the technology of m-payments is well developed here in the Emirates, most times I am scared of technical problems, such as getting disconnected or network malfunctioning". Another participant illustrated other forms of potential technical troubles that influence her trust in m-payment. She argued: "what would happen if I lose the mobile connection while conducting a payment because of? My concern is that money will be paid without getting the service". Participants identified some forms of technical risks that are associated with mobile payments, such as system is down, fault in the service, uncompleted processes, or an instantly loosing coverage when moving from one coverage area to another.

Few participants concerned about privacy concerns and argued that it can influence their trust in m-payments. For instance, one participant said: "I do have some privacy concerns. I understand their need for my credit card information, but I think that further details such as the balance of my bank account, or unneeded data such as my age are part of my privacy that I do not like to share with others publicly". Similarly, another participant argued: "...I know some people who fear from privacy breaching when using their mobiles for payments. They feel like others tracking their activities and behaviour online, and accordingly they may not trust in paying

by their mobiles". Overall, the perceived risks on customer trust in m-payments are summarized in Fig. 5.

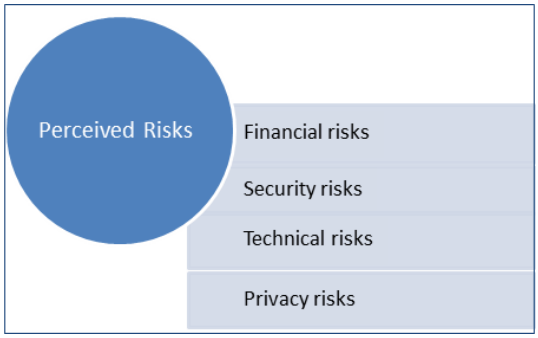

Fig. 5 Perceived risks that influence customer trust in m-payments

V. Discussion and Conclusion

The purpose of this paper was to explore factors that influence consumer trust in mobile payments. The findings, as summarized in Table II, lists these contributing factors categorized into five main groups (trust determinants) along with their positive or negative influences, and the degree of consensus on them.

The findings suggest that the trust in mobile payments are related to specific group of factors; customer characteristics, environmental (social and cultural) influences, provider characteristics, mobile-device characteristics and perceived risks. In addition, it is found that customer past experiences, customer awareness, word-of-mouth, uncertainty avoidance, provider's reputation, financial and technical risks are the most agreed on factors that influence customer trust in m-payments. Furthermore, the findings indicate that the mostly used applications for mobile payments include paying bills (power and water), Car parking, traffic registrations and fines, and mobile-banking payments. The most trustworthy amount of payment to be conducted using a mobile device varied from micro-payments (100 Drhs) to low end macro-payments (500 Drhs).

These findings suggest that in order to deal with the lack of trust, customers need to be better familiarized with current m-payment services and applications. A wide adoption of m-payment services and application could result in increasing the customer awareness in this relatively new type of payment, and consequently becomes part of their culture. Providers can associate governmental agencies or financial institutes in the payment provide, which in turn could make the customers feel more confident and more trusting in m-payments, regardless the perceived potential risks.

TABLE II
Factors Affecting Consumer Adoption of Mobile Payments

Trust Determinant	Contributing Factor	Proposed Effect on Trust	Degree of Consensus among Participants
Customer characteristics	• Past experiences	+ / -	Vast majority
	• Customer awareness	+	Majority
	• Customer demographics ○ Age ○ Gender	 + +	Some Few
Environmental (social and cultural) influences	• Word-of-mouth	+	Majority
	• Mass media	+	Some
	• Third-party certificate	+	Many
	• Uncertainty avoidance	+	Majority
	• Prevalence of m-payments	+	Many
Provider characteristics	• Reputation	+	Majority
	• Number of years in business	+	Some
	• Size	+	Some
	• Brand products	+	Few
Mobile-device characteristics	• Brand	+	Minority
	• Security	-	Minority
	• Design	-	Few
Perceived risks	• Financial risks	-	Majority
	• Security risks	-	Majority
	• Technical risks	-	Many
	• Privacy risks	-	Few

This study provides important theoretical contributions to the existing trust research, by providing a comprehensive overall picture of factors influencing trust in m-payments from a customer perspective. The existing trusts models, however, focused on certain aspects of these factors. Testing and validating a framework of the factors would be considered for future quantitative work.

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