FACTORS AFFECTING THE ATTITUDE TOWARD MOBILE COMMERCE USAGE AMONG LEBANESE CONSUMERS: A CONCEPTUAL FRAMEWORK

Haifa Bou Khzam¹, and Jean Francois Lemoine²

¹ ESA Business School, Department of Business Administration Beirut, Lebanon
² University Paris 1 Pantheon-Sorbonne, Department of Management Paris, France

(Received May 2021 – Accepted August 2021)

ABSTRACT

Bou Khzam, H., & Lemoine, J. F., (2021). Factors Affecting the Attitude Toward Mobile Commerce Usage Among Lebanese Consumers: A Conceptual Framework. Lebanese Science Journal, 22(2), 263-291.

Mobile commerce is a worldwide innovation. However, in Lebanon, several factors are hindering its development. Therefore, our objective is to find the factors influencing the consumer’s attitude toward the use of mobile commerce and to create a research model reflecting our findings. This research revises the basic theories of technology adoption and studies conducted in m-commerce, e-commerce, and related fields. An exploratory study of deep interviews with 14 consumers and experts was held, and a content analysis by themes was performed to show the consistent variables for our conceptual framework. New derived variables, the situational factor and digital culture tend to moderate the relations between independent and dependent variables. Service availability, self-efficacy and social-influence significantly influence the consumer’s attitude toward the use of m-commerce, while cost is negatively affected. This study has both theoretical and managerial implications, it presents a new research model compared to prior studies in online service technologies, especially in mobile commerce. In addition, results provide online businesses with many trusted recommendations for their strategic plans based on analyzed and accurate data.

Keywords: Innovation, Mobile commerce, Consumer’s attitude, Exploratory study, digital culture.
INTRODUCTION

The rapid evolution of technology and telecommunication, especially the development of smartphones from being a way to communicate to be a way to search, to work, and to make commercial transactions, in addition to their unique characteristics defined by the location-based services, the internet services (4G and 5G), and the ubiquity, all these factors force the companies to enroll in the digital era and find new opportunities, to meet this transformation. Moreover, the number of global smartphone users has constantly been growing ever since the first smartphones hit the market, surpassing the three billion marks for the first time in 2019, and this growth trend is forecast to continue over the next few years (Statista, 2020). This increase will affect m-commerce growth since in 2021, 72.9 percent of all retail e-commerce is expected to be generated via m-commerce, up from 58.9 percent in 2017 according to Statista 2021.

However, although the number of mobile subscribers is increasing, and m-commerce is growing in developing countries, the usage of m-commerce compared with the developed ones is often lower and slower. Therefore, the aim of this study is explained in the following question: ‘What are the factors that influence the Lebanese consumer’s attitude of consumers toward the use of mobile commerce technology?

This research covers two aspects: a theoretical aspect that fills the existing research gap by providing a conceptual new research model, based on variables derived from the basic models of technology and services studies, especially in mobile commerce (Kalinic & Marinkovic, 2016; Yee & Chong, 2013; Khalifa et al., 2012; Wei et al., 2009; Kim et al., 2007; Hong et al., 2006; Wu & Wang, 2005), moreover, the model also presents the variables derived from an exploratory study that makes its point of differentiation.

A managerial aspect is also found to enable companies and managers evaluating mobile commerce as a potential channel, through which they can promote their products and services, and set the suitable online marketing strategies that lead to a higher m-commerce acceptance rates based on the influential factors found in our study.

This paper is outlined as follows. First, we provide a literature on the adoption of innovation and technology, a mobile commerce overview, its development and statistics worldwide, the second section briefly discuss the technology status of the context, followed by the general propositions derived from literature, next we discussed the methodology followed by the results of the exploratory study and the research design. A discussion
followed the research design. Finally, we present implications, limitations, and suggestions for future research, with a conclusion.

MATERIALS AND METHODS

1. Theoretical background

1.1 Adoption of innovation

The concept of adoption of innovation has been the subject of several studies for a very long time. The innovation was widely defined by different researchers and authors, but Rogers’s theory was the commonly known in the diffusion of innovation and the adoption of technologies.

For Rogers (2003), the word ‘technology’ and “innovation” are used as synonyms, so he defined the innovation as being any object, idea, technology or practice that is new to a company, he also identified the principal concept of the theory by four factors, that impact the spread of a brand-new idea: the innovation, communication channels, time and social system, and classifies five categories of adopters on the basis of their innovativeness: innovators, early adopters, early majority, late majority and laggards, moreover he identifies the differences between these two groups “in terms of socioeconomic status, personality variables, and communication behaviors, which usually are positively related to innovativeness”.

However, Roger’s theory of diffusion faces many criticisms such as the Pro-innovation bias, the individual-blame bias, the recall problem in diffusion research, which may lead to inaccuracies when respondents are asked to remember the time at which they adopted a new idea, the one-way information flow and other evaluations…As discussed earlier, innovation is any new idea, product or service that became in use. Therefore, e-commerce and m-commerce are forms of innovation since they present new services and processes for businesses and individuals, especially for m-commerce users who are the central of focalization in our research, and a potential source for economic growth and for creating new jobs (Mokyr, 2002; Foxon et al., 2005).

1.2 History of mobile commerce

Mobile commerce is explained by Müller and Veerse (2000), as "any transaction with a monetary value that is conducted via a mobile telecommunications network,” and is
presented as a form of e-commerce conducted over mobile or wireless networks and is maybe very different from its traditional desktop computer–based precursor, in as much as m-commerce services are accessible on the move through devices (such as Smartphone and tablets) with fundamentally different presentation, processing, and interaction modalities compared to a desktop computer (Mylonopoulos et al., 2003; Ngai et al., 2007). Such services enable a whole new form of unique service capabilities, including location awareness, context sensing, and push delivery.

“M-commerce refers to pairing of mobile devices with commercial transactions, giving customers services anywhere and anytime through a wireless, Internet-enabled device, and without the utilization of a computer” (Clarke, 2001).

Further to the previous similar definitions, we will limit our definition of mobile commerce in our study to: “any financial transaction of goods and services conducted via a Smartphone device,” not taking into consideration any other handheld device.

With all phenomena that have impacted the lives of humans in profound way, the mobile revolution has attracted the hobby of many heavyweight players that have rendered today’s marketplace no longer just hypercompetitive, but literally the battleground for the records and communications era marketplace’s giants. This battle is still ongoing and may be summarized in a three-technology trajectory (Eras) from closed (“walled garden”) to open-ended solutions and returned (Panos et al., 2012).

With the integration of Apple (iPhone, iPad, iTunes), Google (Android), Microsoft (windows Smartphone) and other developed tool and platform improvements that managed to seize big audiences in various sorts of closed-ended, mobile applications (m-apps) are termed the 0.33 era of m-commerce (circa 2007 to this point). Such commercial enterprise models popularized the manufacturer-a third party utility distribution to allow users to find out, download, or purchase mobile applications, thereby growing a new m-commerce ecosystem. The big audience drawn to such m-apps has attracted more huge organizations of developers who compete to offer the best deal, thus creating a large pool of m-apps that attract additional clients.

1.3 Shifting from e-commerce to m-commerce

M-commerce is a form of e-commerce sharing the same features through mobile devices, so it is essential to explain the differences between these two terms. In 2010, Hoang in his thesis said that, electronic commerce signifies an anytime access to business processes managed by
computer-mediated networks, it’s also independent of the geographic location, as mentioned by Hohenberg and Rufera (2004), therefore m-commerce is considered as an effective way of delivering e-commerce to consumers regardless the time and location. Several key drivers helped the development of mobile commerce, such as the mobile middleware and internet enabled services, the transition toward fifth-generation telecommunication technologies and higher data rates, the smartphone penetration where users are more likely to use portable devices anywhere everywhere. In addition to the fact that handheld devices are much easier to carry, they save time and effort instead of using a desktop, but according to eMarketer, 5.11bn of smartphone users in 2019 prefer the smartphone on other devices with an increase of 10.8 % from the previous year. Figure 1 shows the Smartphone user penetration as a percentage of total global population from 2016 to 2021.

![Figure 1. Smartphone user penetration as a percentage of total global population from 2016 to 2021 (Source: Statista, 2020)](image)

The number of smartphone users worldwide has surpassed three billion, with several hundred million more expected in the coming years. This difference between m-commerce
and internet-based e-commerce can be generalized into two dimensions, namely technology and value.

*Perceived difference in technology* between m-commerce and e-commerce refers to perceived differences in end-user devices and communication networks. In case e-commerce, end-user devices are personal computers (PCS) with large screens, rich audio and video, standard keyboard and sufficient power supply and communication networks are broadband with high transmission speed.

However, in m-commerce, the user interfaces are small screen, incomplete text input keyboard and limited power supply. Still, communication strength through mobile devices is not strong enough, so consumers may encounter battery discharge because of the limits of battery while conducting mobile transactions.

*Perceived difference in Value* compared to traditional pattern of shopping, consumers can perceive several benefits of purchasing via internet or mobile internet, such as a greater variety of products, time savings, increased convenience, and improved efficiency (Lu and Su, 2009).

M-commerce has its own unique attributes such as ubiquity, mobility, personal identity, and localization, where personal identity stems from the relationship between the mobile device and the user, whereas localization refers to the ability to track the geographic position of the user. With the support of these two characteristics of m-commerce, service providers can improve consumers’ personalization perceptions.

Another part of the perceived advantage discrepancy between m-commerce and e-commerce is perceived differences in personalization expectations. (Cao et al., 2015). Below is a table of the main studies made on the effects of difference between e-commerce and m-commerce:
Table 1. Studies on the differences between e-commerce and m-commerce  
(Source: Cao et al. 2015)

| Studies                        | Difference perspective | m-commerce | e-commerce                  |
|-------------------------------|------------------------|------------|-----------------------------|
| Zhang and Yuan (2002)         | Technology             | Tiny screen, bandwidth limited by spectrum, can be geographically located | Large screen, substantial memory, unlimited bandwidth, cannot be geographically located |
|                              | Nature of service      | Simple transactions, time-critical and emergency handling | Complete and sophisticated transactions, overcome time limitation and always available |
|                              | Business model         | Location sensitive service based on subscription | Customer self-service, free or limited service charge |
| Min et al. (2008)             | Communication network  | Limited bandwidth, low transmission speed | Broadband, high transmission speed |
|                              | Task and application   | Used in many environments | Mainly used indoor |
|                              | End user device        | Small screen, limited power supply | Large screen, sufficient power supply |
|                              | Value proposition      | Personalised applications and services, location based applications | High intelligence application |
| Ozok and Wei (2010)           | Human-related Interface | Shopping from every wish location and at any time | Shopping with a convenient screen, keyboard, cursor movement |
|                              | Product-related        | Shopping for customised products, a large variety of products |  |
|                              | Service-related        | Being able to shop for customised products, getting a large variety of services, shopping in a secure environment |  |
| Ghinea and Angelides (2004), Lu and Su (2009) and Kim et al. (2009b) | User interface | Limited battery power, bandwidth, and connection stability | Convenient battery power, bandwidth, and connection stability |
| Liao et al. (2005), Park (2006) and Kim et al. (2007) | Unique features of m-commerce | Convenience, ubiquity, localisation | Nil |

Touch commerce is the new name for m-commerce. It may have seemed like a dream a few years ago to be able to buy something you want with a single finger tap, but it is now a fact thanks to the combination of touch screen technology and one-click shopping, which allows consumers to purchase items directly from their phones.

2. M-commerce in number

As we discussed earlier, smartphones evolution is the key developer of m-commerce. Indeed, statistics show that Smartphone’s user penetration is expected to increase from 21.6% in 2014 to 37% in 2020. This increase may affect the m-commerce growth, according to eMarketer indicators. In 2021, m-commerce could round up some $3.5 trillion and afterward make up right around 75% (72.9 percent) of e-commerce sales (Statista, 2018). Again, m-commerce's share of worldwide on-line retail forecasts to exceed five-hundredth by 2021 and
continues growing in specific Asian nations like China and India, and conjointly had the highest percentage of digital users who made purchases via apps.

Consumer surveys also reveal that clothes, electronics, books, and games were the most purchasing apps via mobile, the biggest growing categories are consumer electronics by 33% and Home with 25% year on year. This purchase motivation is due to the ubiquity that they can shop online from anywhere. Two out of every three mobile shoppers in Mexico chose mobile devices because shopping apps saved them time (Research and Markets 2017). The percentage in the Middle East and gulf was even bigger because of the massive increase in supply, such as the wave of Omni channel players going online such as Al Tayer’s, Ounass and Landmark (year), the local players have also expanded in terms of geography and categories, such as Namshi, Souq and Wadi. Many of these retailers have an established presence online, simultaneously, also many international players have fully established here - Asos, Jollychic, SheIn, Net-A-Porter, and Amazon. Consumers would buy more because they have so many options (Google, 2017). This mobile growth accounted 49 percent of e-commerce, or $252 billion in sales, in 2020.

In MENA, conducting online research is an important part of the consumer journey. Furthermore, consumers prefer to use their smartphones for online research and shopping. In UAE and Saudi Arabia for example, the mobile share of shopping-related search queries has averaged 70%, 55% in the UAE, 51 % Saudi Arabia and 32% Egypt, prefer to use Smartphone for online shopping (Thinkwithgoogle, 2018; Statista, 2018), noticing that there are no showing results for Lebanon, and this may indicate that purchasing via mobile phones in Lebanon, still in its very early stages.

3. A brief explanation of technology status in Lebanon:

3.1 Information Technology sector in Lebanon

The Lebanese Information Technology (ICT) sector is a fast-growing sector, reaching USD 543.5 million in 2019. It contributes 3% of Lebanon’s GDP and forecasted to be greater than USD 7 billion by 2025 as reported by the Investment Development Authority of Lebanon (IDAL) in 2018.

The overall IT sector includes more than 800 IT agencies, out of which 89 companies operating in the software product field, generating software development for vertical industries, mainly for the healthcare. On the one hand, education, and banking sectors account 52% of software development and service companies, whereas 61 companies are
mainly involved in web hosting, web design and development. Alternatively, e-services account 36% of total software development and services companies.

3.2 -Telecommunication Sector in Lebanon

Telecommunications, after the VAT, was Lebanon's second-largest source of revenue in 2011, with net revenues reaching USD 1.4 billion. Various policy measures and government decisions to develop the sector have fueled steady growth in recent years. The “Lebanon 2020 Digital Telecom Vision” initiative, which began on July 1, 2015, is a five-year plan to upgrade the country's telecommunications infrastructure and to implement fiber-optic connectivity as well as 5G connections throughout the country by 2020, as stated by the Internet World Stats (2019).

3.3 -Mobile Telephony

We will focus on mobile network and telephony since the aim of our study is “mobile commerce.” Mobile networks in Lebanon are owned and regulated by the Ministry of Telecommunications and managed by two private operators Alfa and Touch. The mobile accounts registered in Lebanon remain lower than the Arab countries average of 110%, and the developing world average of 93%. Mobile growth is forecasted to average just 1.45% over 2016-2020, with penetration remaining under 90% by the end of 2020. With the introduction of 4G that expected to surpass 1.1mn by the end of 2021, the mobile broadband penetration rates are expected to be the highest area of expansion in the telecom market. Minister Harb, in his Agenda 2020 announced that an investment of 600 million dollars was put to improve the infrastructure, where Alfa signed a deal with Ericsson and Nokia in April 2016 to install 4.5G services in the country and to develop a 5G network in the future.

Unfortunately, the telecommunication sector faces many barriers through the political outlook, which does not support the creation of long-term goals to develop the telecom sector or support the development of genuine competition, added to it the fixed rates on mobile subscriptions imposed by the government, and the retention of direct ownership on telecom sector. All these issues will certainly negatively affect the mobile commerce in Lebanon.

In 2014, Lebanon ranks among the worst in the region in e-commerce penetration, only 9% of Internet users surveyed by ArabAd magazine are engaged in e-commerce, compared to other countries, however, a wide variety of e-commerce ventures are operational, despite the
continued lack of e-commerce law and regulatory framework for e-transactions, what thrust the banks to create new services to encourage the mobile commerce in Lebanon. Bank Audi introduced a series of Tap2Pay for NFC Smartphone, also BLC bank introduced the revolutionary HEY! which allows instant peer-to-peer (P2P) transfers, Mr. Sehnaoui the chairperson of BLC said: ”we will be extending HEY! BLC to m-commerce users through integrating multiple solutions” However, Uber and BLOM Bank together introduced the service UberBLOM, which is a Visa prepaid reloadable card, developed exclusively for Uber Riders. However, in 2019, digital Lebanon reports that only 0.7% of the population has a mobile money account, so we still can say that the mobile commerce in Lebanon is still in its infancy.

4. General propositions derived from literature

Going through the literature, especially with subjects related to m-commerce and online purchases, we identified various important factors explaining well this type of concept.

4.1 Perceived usefulness (PU)

PU has been widely discussed in studies related to technology, innovation, and adoption. It was first integrated in the theory of technology acceptance model TAM by (Davis, 1985), to be employed later under other names and definition. For example, the motivation model explains the perceived usefulness as an “Extrinsic motivation.”

PU was a significant factor affecting the intention of using information technology (Davis, 1989; Todd et al., 1992; Karahanna and Straub, 1999; Moore and Bembasat, 1991; Bhattachherjee and Premkumar, 2004) computers (Campeau and Higgins, 1991), mobile payment (Chen, 2006; Duane et al., 2014), m-commerce (Alkhunaizan and Steve Love, 2012; Zhou, 2011; Malik et al., 2013; Parker and Wang, 2016), mobile banking (Koksal, 2016; Tarhini et al., 2016) and mobile shopping (Shang and Wu, 2017).

Therefore, we propose that

- Perceived usefulness positively influences the attitude toward using mobile commerce
4.2 Perceived ease of use (PEOU)

PEOU as defined by (Davis, 1989) is “the degree to which a person believes that using a particular system will be free of effort”. This variable was widely discussed by other theories like “complexity” in the theory of PC use (Thomson et al., 1991), and in the theory of innovation diffusion (Roger, 2003). This construct was usually studied with perceived usefulness in studies of technology acceptance and innovations and was a significant factor influencing the intention to use of Games based (Venkatesh and Smith, 1999), online shopping (Perea et al., 2004), information system (Davis and Venkatesh, 2004), and m-commerce (Maity, 2010).

Therefore, we propose that

- Perceived ease of use positively influences the attitude toward using mobile commerce

4.3 Social Influence (SI)

Social influence was first known in the theory of reasoned action (TRA), as ‘subjective norms’, then integrated by (Venkatesh, Morris and Davis, 2003) in the theory of planned behavior as: “the extent to which an individual perceives important other believe that he or she should use the new system”. It was also explained as external influence, including the mass media reports, expert opinions, and other nonpersonal influences (Bhattacherjee, 2000), similar to other research that refer the interpersonal influence to the word of mouth (WOM) by referent groups like peers, friends, superiors, computer and technology experts (Elliot and Philips, 2004).

Many researchers have discussed the “word of mouth” in e-commerce (Papadopoul and Pelet, 2013), m-commerce (Parker and Wang, 2016), mobile shopping (Shang and Wu, 2017), and is considered an important mechanism on internet. Nevertheless (Lewis et al., 2015) supposed that social influence may positively affect the behavior intention and reduce the perceived risks

Therefore, we propose that

- Social influence positively influences the attitude toward using mobile commerce
4.4 Self-efficacy (SE)

Self-efficacy is defined by (Bandura, 1977) as “people's beliefs in their capabilities to mobilize motivation, cognitive resources, and courses of action needed to exercise control over events in their lives”. Many researchers have extended the self-efficacy construct to cope it more with their field of study such as (Hsu and Chiu, 2004) who discusses the “internet self-efficacy” to explain the consumers’ decisions in e-commerce use, and (Audi et al., 2016), who created the MCSE (mobile computing self-efficacy), to demonstrate the strong direct effect of mobile computing self-efficacy on users initial trust in location-based app vendors, as well as their perceived risk of disclosing information. Moreover, (Saleh, 2008) studied the computer self-efficacy levels among the faculty of the college of education at the Lebanese University (LU) and found that only 14 (11%) had low computer self-efficacy scores, so Saleh synthesized that instructional designers at LU should consider special efforts and training structured to help increase low computer self-efficacy to at least a moderate level. Therefore, we propose that

- Self-efficacy positively influences the attitude toward using mobile commerce.

4.5 Trust

(Monsué et al., 2004) declared that Trust was commonly widely discussed by several researchers online shopping. For example, in Lebanon, (Koksal, 2016) studied the Lebanese consumers’ intentions to adopt mobile banking and found that perceived credibility with their two dimensions privacy and security and perceived trust, positively and significantly discriminate high mobile banking adopters from low adopters. In the same context, (Audi et al., 2016), shows that trust positively affected consumer's attitude toward the banking services, (Shalhoub, 2006) also discussed the trust, privacy, and security in e-businesses in GCC countries and claimed that the lack of trust in online transactions is one of the main reasons for the relatively low electronic commerce adoption. Many studies have determined that trust has a positive significant impact on e-commerce (McKnight et al., 2002; Bhattacherjee, 2001; Gefen et al., 2003).

Therefore, we propose that

- Trust positively influences the attitude toward using mobile commerce.
4.6 Cost

Shifting from wired e-commerce (EC) to m-commerce (MC) incurs additional costs, including access equipment and transaction-related costs (Constantinides, 2002). Perceived financial cost has also had a significant negative influence on behavioral intention to use m-banking (Luarn and Lin, 2005).

As for the cost, it is considered a fundamental aspect for consumers when deciding whether or not to use m-commerce as mentioned (Hong et al. 2008), and it was one of the causes that may reduce the expansion of using m-commerce as described by (Wei et al. 2009), but the key point is in the creation and delivery of m-commerce as noted by (Sadi and Noorden, 2011).

However, (Alkhunaizan and Love, 2012), in KSA extended UTAUT to integrate two constructs “trust” and “cost” and fount that costs ($\beta = .185$, $t = 5.180$, $p < 0.001$), was the second largest predictor of usage intention toward m-commerce in Saudi Arabia.

This study suggests that cost, including cost of handset, subscription, service, and communication fees, may influence the consumer’s attitude toward mobile commerce. Therefore, we propose that:

- Cost negatively influences the attitude toward using mobile commerce.

4.7 Service availability and Internet connection (PSA)

Many prior studies discussed the bandwidth and service availability and their influence on the user’s intention to use or adopt a specific technology, where the major research issues are bandwidth and coverage as mentioned by (Varshnet et al., 2000). Other reviews, such as (Siau and lim, 2001) discussed the benefit role of high-speed connection on mobile application use in their research agenda.

Furthermore, (Hong et al., 2006), talked about the perception of service availability, which was concerned as a facilitating condition.

As discussed earlier, only 10% of Internet users in Lebanon shopped online as opposed to 40% globally. In 2019, this percentage increased to 16% with 0.7% having a mobile money account, blaming high internet costs and slow internet speeds for the relatively limited activity, in addition the “Lebanon 2020 Digital Telecom Vision” project is still in process, so we suppose that the internet connection and infrastructure are still considered as problems
that hinder the evolution of m-commerce in Lebanon and must be taken as an essential variable in our study. Therefore, we can propose that an internet connection is an environmental condition that directly influence the attitude toward m-commerce.

- Connection speed positively influences the attitude toward using mobile commerce.

As a result, we considered seven independent variables: “Perceived usefulness, Perceived ease of use, Social Influence, Trust, Self-efficacy, Cost, internet connection,” and one dependent variable: “Attitude”, we chose attitude, because intention, needs a longitudinal study and time to be measured, while the mobile-commerce applications have many prototypes available in the Lebanese market and ready to test and use, so the users don’t need to build an intention toward the use, because their attitudes and beliefs are already created. Moreover, mobile commerce in Lebanon is still in its early stages, so we decide to depend on attitude as a predictor of mobile commerce use.

5. Methodology

Lebanon, unlike the developed countries is facing many barriers hindering the development of mobile technologies, furthermore, mobile commerce in Lebanon is still in its early stage, and this is well shown by the 16% of population who makes online purchases and 0.7% who have a mobile money account, according to the digital report 2020.

However, Lebanese consumers, particularly young and adults are interested in mobile commerce, but several issues impede its usage, therefore a qualitative exploratory study is conducted. We made an interview guide with general questions related to the factors of this technology adoption. The questions were semi-direct and the interviews were made face to face with nine consumers who experienced mobile commerce and five experts in e-commerce and digital marketing field, we intended to have two populations so consumers can describe their attitude, toward mobile commerce in their daily life on one hand, and experts can give us a valuable evaluation of the market and consumer needs, based on their vision and studies. The interviewees’ profiles are detailed in table 2 and table 3:
| Interviewee | Age | Gender | Education                                | Marital Status | Career industry/position                     | Region           |
|------------|-----|--------|------------------------------------------|----------------|---------------------------------------------|------------------|
| I1         | 23  | Female | Bachelor in Advertising                  | Single         | student                                     | Beirut suburb    |
| I2         | 20  | Male   | Telecommunication engineering            | Single         | student                                     | Village          |
| I3         | 22  | Male   | finished high school                    | Single         | None                                        | Village          |
| I4         | 22  | Female | Master in International business management | Single         | None                                        | Village          |
| I5         | 36  | Female | Master Telecommunication engineering     | Married with four kids | In E-learning firm                           | Saida            |
| I6         | 30  | Male   | master's degree in information communication | Single         | Quality assurance                           | Beirut           |
| I7         | 27  | Male   | master student in migration studies      | Single         | documentation                               | Beirut           |
| I8         | 38  | Female | Bachelor degree in Law                  | Married with one girl | distributor coordinator in a research center | Village          |
| I9         | 27  | Male   | Master advertising                      | Single         | In a Digital media agency                   | Beirut           |
Table 3. Profiles of experts’ interviewees

| Experts | Age   | Profession \ Field expertise                                      |
|---------|-------|-----------------------------------------------------------------|
| E1      | 40-45 |                                                                |
| E2      | 45-50 | Consultant in e-marketing and e-commerce                        |
| E3      | 40-45 | CEO and co-founder of Hicart.com                                |
| E4      | 35-40 | Business owner for exclusive management company                 |
| E5      | 35-40 | E-commerce consultant                                           |

The number of interviews was enough for our exploratory study since we reached the saturation of the answers. The sample was limited to young-adult Lebanese users living in Lebanon with different sociodemographic profiles, and the duration of each interview took from thirty to forty minutes for consumers and forty to sixty minutes for experts, it means about forty-five minutes as average. We chose the “themes” as a unit measure of the content analysis, where each theme is also developed into sub-themes. Two analyses, the vertical and horizontal are considered:

- The vertical analysis shows the interviewee’s approach through the categories in the grid
- The horizontal analysis is a transversal operation that shows how each element in the grid mainly the themes are elaborated by all the interviewees

6. Results presentation from qualitative study

According to consumer’s viewpoint, social media are the most used applications on smartphones, whereas Ease of use is an important factor to install these apps, I7: “It really does help your day to day life making it easier a lot so I think that’s the main reason and all motivation for my use and why I’m convinced,” while the barriers from installing apps and services are the lack of need, I5: “It takes too much place on the phone. Some applications are unworthy to download”.

We grouped the two factors: knowledge and experience, under one theme named “self-efficacy,” so 70% of the interviewees rely on searching, tutorials, and YouTube, in addition 83% of interviewees tend to buy more goods than services.

The cost of fees and services, infrastructure mainly the internet connection and delivery address, are the most barriers that hinder Lebanese consumers of using mobile commerce. I9: “In Lebanon using an application to buy things online is really high”.

GPS problem, so If you want to send something specifically to your house, it must be next to a known place or you have to send it to somewhere else than go and get it by you own”.

Credibility and Trust are positive influencers on consumers to use mobile commerce in Lebanon by 43% when using technology, especially with smartphone’s application, whereas ease of use and usefulness is less important regarding consumers’ opinion, with 21% and 11% respectively.

Only one of the interviewees shows a negative attitude toward mobile commerce, in fact, 70% like the concept. Nevertheless, the interviewees think that mobile commerce in Lebanon needs an evolution and improvement to encourage the use of mobile commerce.

Situational factors, tend to fluctuate the influence on attitude toward mobile commerce, interviews talked about the geographical location, product details, the accessibility via smartphone and the market limitation in Lebanon, "Some shops that doesn't exist in Lebanon like Abercrombie or Levis". Therefore, we set this factor as a moderator factor in our research model.

According to experts’ perspective: they mostly focus on targeting the market and assuring costumer services because Lebanese consumers are looking to receive their products as soon as possible with a lowest price, but the failure was when Lebanese market wasn’t ready to pay online and use any credit card.

The economy status of Lebanon in addition to its instability, were and continue to be, the main barriers which face e-businesses from launching any service, so building trust with consumers and convince them to buy online is difficult.

They assume that, to develop mobile commerce, the objective is how to market this application. On the other hand, experts think that mobile conversion is better than a mobile application in mobile commerce, because for an application to be successful, it should have a lot of followers and based on a reputable brand. However, experts talked about the need to ensure trust and safety to consumers when buying online, in addition to ensure an ecosystem in Lebanon. Lebanese government should move to “e-government” because once users use to pay online for their bills, they will be able to purchase all their needs online, but the major barrier according to experts is the cultural environment with 39%. Experts think that cultural behavior, mentality, digital education and habit, will affect the use of mobile commerce because it may influence the usefulness of this concept, so people are not aware about its
added value, the ease of use, and the self-efficacy toward the knowhow using of m-commerce.

E2: “they should teach them what credit cards are what digital transactions and payment online is … most people in Lebanon don’t know what PayPal is or bitcoins”

E5: “they don’t research well before buying”

Therefore, we will assume the digital culture as a moderator variable for our research, also integrating the age as a moderator variable will add value to our research, especially in giving accurate results concerning the relations between independent and dependent variables.

7. Research Model

The research model is defined by comparing the main results of the literature review with those of the content analysis of the semi-direct interviews, either by adding or eliminating certain variables, therefore this model includes the following variable: perceived usefulness (PU), perceived ease of use (PEOU), social influence (SI), self-efficacy (SE), Trust, availability of service internet connection (PSA) and cost.

Whereas the variables that emerged from the qualitative study are the situational factors and Digital culture. These variables will be considered as moderator variables due to the importance they show from interviewees responses, to moderate the relations between independents and dependent variables.

We add “Age” as a moderator factor because of the information accuracy it gives, when comparing old to new generations regarding the use of technologies and mobile services. While Trust factor cover not only the privacy and security concerns toward online transactions, but also the trust in vendor while doing mobile-commerce. Therefore, we tend to divide the Trust variable into two sub-variables (Trust in Channel and Trust in e-vendor\ App-vendor), so the research model with the propositions is schematized by Figure 2:
RESULTS AND DISCUSSION

Our final propositions derived from the literature and qualitative study, resulting the following outcomes:

Self-efficacy and social influence are the highest influencers on consumer’s attitude toward mobile commerce, with 69% and 59%, respectively, whereas usefulness and ease of use are the least significant, on the other hand, cost and internet connection are the highest barriers denying the consumer from doing m-commerce, where consumers assume that the cost of services and fees is expensive in Lebanon, moreover the internet connection needs an improvement to make mobile commerce feasible.
New variables (situational factor and digital culture) emerged from the qualitative study which can moderate the relations between independent and dependent variables. Situational factors strongly moderate the relationship between usefulness and attitude, similarly to the relation between ease of use and attitude. Whenever digital culture significantly moderates the relations of usefulness and attitude, ease of use and attitude, self-efficacy and attitude, social-influence, and attitude. Not to eliminate the role of Age as a moderator variable, where usefulness, ease of use and self-efficacy is most moderated by users with age range 26-45, whereas social media is most moderated by age range 18-25.

8. Theoretical and managerial Contributions

This study presents a new research model compared to anterior studies in innovation, technology adoption, and especially mobile commerce, our results were not consistent with all the prior research, and this means that the context of the country studied present an originality that differs the results from others in the same field.

Moreover, the new variables derived from the exploratory study (situational factor and digital culture) add value to our model and give it this new form of distinctiveness.

These results are used to provide the companies, especially e-businesses, trusted recommendations based on analyzed interviews to evaluate the factors that may influence the consumer to use mobile commerce especially the young-adult consumers in Lebanon.

Therefore, companies should first find new applications, services and solutions that serve the consumer and assure his needs. In addition, the internet connection and the availability of the service is also highly considered from the consumer perspective, so here comes the role of the telecom sector to keep in developing the bandwidth and coverage of the internet and infrastructure. Moreover, consumers were sensitive to cost, so companies should provide discounted prices, coupons and offers on smartphone’ apps and mobile websites to encourage the consumers to shop via smartphone. We also noticed that digital education and habit moderate the factors influencing the attitude toward mobile commerce, so schools should integrate the education in technology starting from primary schools, nevertheless the important role of government that should redesign its regime and converted it to a powerful e-government in order to voluntary enroll the Lebanese citizen in the electronic systems.
9. Research limitations and future perspective

Our study concerned Lebanon and thus, results cannot be generalized, also, the geographic location of respondents was in Beirut and Mount Lebanon, which are the biggest provinces, due to the reach flexibility of the customer potential experience toward online transactions.

Hedonic factors were not considered since we limited our study on the utilitarian ones. It would be interesting for other studies to do a quantitative survey for testing the conceptual model and propose it in a different context, moreover, the future research can study different range of age, like elder or teenager to discover new factors, also they can scope the study on different regions outside Beirut and Mount Lebanon.

CONCLUSION

Lebanese consumers, unlike developed countries are still unaware of mobile commerce concept, and several factors are hindering its utilization, thus mobile commerce in Lebanon is still in its early stage.

Therefore, this research aims to find the factors that may influence the Lebanese’ consumer to use mobile commerce. We performed a qualitative study, the analysis was done using the theme analysis technique, and it was calculated vertically and horizontally. Propositions show that internet connection, social influence and self-efficacy were the most significant factors influencing consumers to use mobile commerce, whereas usefulness and ease of use are the weakest. Situational factors and digital culture are two variables derived from the exploratory study and moderate the relations between independent and dependent variables. This research model is an original finding to the theories of technologies and provides companies in online commerce trusted information and recommendations. This stream of research will be fruitful for future interdisciplinary research in e-commerce, technology adoption, and mobile services, also for countries with similar context.

REFERENCES

Alkhunaizan, A. and Love, S. 2012. What-drives-mobile-commerce-An-empirical-evaluation of-the-revised UTAUT-model. International Journal of Management and Marketing Academy, 2(1):82–99.
Audi, M.F. Wahbi, M. Abdallah, S. and Kassem, L. 2016. Adoption of Mobile Banking Applications in Lebanon. Journal of Internet Banking and Commerce, 21(1):1-6.
Bagozzi, R. 2006. The role of social and self-conscious emotions in the regulation of business to-business relationships in salesperson-customer interactions. *Journal of Business and Industrial Marketing*. 21(7):453-457.

Bandura, A. 1977. Self-efficacy: toward a unifying theory of behavioral change. *Psychological review*. 84(2): 191.

Bhattacherjee, A. 2000. Acceptance of e-commerce services: the case of electronic brokerages. *IEEE Transactions on Systems, Man, and Cybernetics - Part A: Systems and Humans*. 30(4): 411-420.

Bhattacherjee, A. and Premkumar, G. 2004. Understanding changes in belief and attitude toward information tech- NOLO. *MIS Quarterly*. 28(2): 229-254/June.

Cao, Y. Yaobin, L. Sumeet, G., and Shuiqing, Y. 2015. The effects of differences between E-commerce and M-commerce on the consumers' usage transfer from online to mobile channel. *International Journal of Mobile Communications*, 13(1):51-7.

Chen, L.D. 2006. A Theoretical Model of Consumer Acceptance of mPayment. *AMCIS 2006 Proceedings*. 247.

Compeau, R.D and Higgins, A.C. 1991. A social cognitive theory perspective on individual reactions to computing technology, *ICIS Proceedings*. Paper 55.

Constantinides, E. 2002. The 4S Web-marketing mix model, electronic commerce research and applications. *Elsevier Science*. 1(1): 57–76.

Clarke III., I. 2001. Emerging value propositions for M-commerce. *Journal of Business Strategies*. 18 (2): 133-148.

Datareportal. 2020. Digital 2020 Lebanon. Datareportal. Available at: [https://datareportal.com/reports/digital-2020-lebanon/](https://datareportal.com/reports/digital-2020-lebanon/) (accessed 18 February 2020)

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

Davis F. and Venkatesh V. 2004. Toward Preprototype User Acceptance Testing of New information system: Implications for software Project Management. *IEEE Transactions on Engineering Management*. 51.pp 31-46.

Duane, A. O'Reilly, P. and Andreev, P. 2014. Realising M-Payments modelling consumers' willingness to M-pay using Smart Phones. *Behaviour and Information Technology*. Vol.3 No. 4, 318-334.

Elliott, G. and Phillips, N. 2004. Mobile commerce and wireless computing systems. *Pearson Education Limited*, England.

Emarketer. 2019. Smartphones Will Account for More than One-Third of Ecommerce Sales in 2019. Available at: [https://www.emarketer.com/content/smartphones-will-account-for-more-than-one-third-of-ecommerce-sales-in-2019/](https://www.emarketer.com/content/smartphones-will-account-for-more-than-one-third-of-ecommerce-sales-in-2019/) (accessed 4 April 2019).

Foxon, T.J. Gross, R. Chase, A. Howes, J., Arnall, A., and Anderson D. 2005. UK innovation systems for new and renewable energy technologies: drivers, barriers, and systems failures. *ELSEVIER*, 33(16): 2123-2137.

Gefen, D. Pavlou, A.P. and Tan, Y. 2003. Institutional Trust and Familiarity in Online Interorganizational Relationships. *Proceedings of the European Conference on Information Systems (ICIS)* Naples, Italy.
Google. 2017. E-commerce Series Part 2: Activations. Available at https://www.thinkwithgoogle.com/intl/en-145/perspectives/local-articles/e-commerce-series-prepare (Accessed 28 February 2017)

Hoang, T.2010. Investigating the on-line shopping intentions of Vietnamese students: an extension of the theory planned behaviour. *World Transactions on Engineering and Technology Education*, 8(4): 471-476.

Hohenberg, H. E. and Rufera, S. 2004. Das Mobiltelefon ALS Geldbörse derZukunft – Chancen und Potentiale des Mobile Payment (M-Payment). *in: der markt. Zeitschrift für Absatzwirtschaft und Marketing*, Wien, 43(168), 2004/1, pp.33-40.

Hong, S.J., Thong, J.Y.L. and Tam, K.Y.2006. Understanding continued information technology usage behavior: a comparison of three models in the context of mobile internet. *Decision Support Systems*, 42(3), 1819-1834.

Hong, S. J., Thong, J. Y. L., Moon, J. Y., and Tam, K. Y. 2008. Understanding the behaviour of mobile data services consumers. *Information Systems Frontiers*, 10(4), 431-445.

Hsu, M.H., and Chiu, C.M. 2004.” Internet self-efficacy and electronic service acceptance. Decision support systems”, *Elsevier*, 38(3):369- 381.

IDAL.2018.ICT Sector in Lebanon. Available at https://investinlebanon.gov.lb/Content/uploads/Publication/181205011004908~IDAL-ICT%20FACTBOOK%202018.pdf (Accessed December 2018)

Internet World Stats. 2019. Available at *Middle East Internet Statistics, Population, Facebook and Telecommunications Reports* (internetworldstats.com). (Accessed January 2020)

Jian, J.J., Hsu, M.K., Klein, G. and Lin, B.2000. E-commerce user behaviour model: an empirical study. *Human Systems Management*, 19 (4): 265-76

Kalinic, Z,. and Marinkovic, V. 2016. Determinants of users’ intention to adopt m-commerce: an empirical analysis. *Inf Syst E-Bus Manage* 14, 367–387.

Karahanna, E., and Straub, D. 1999. The psychological origins of perceived usefulness a and perceived ease of use. *Information and Management*, 35(4): 237-250.

Khalifa, M., Cheng, S.K.N., and Shen, K.N. 2012. Adoption of mobile commerce: a confidence model. *Journal of Computer Information Systems*, 53(1):14-22

Kim, H.W., Chan, H.C., and Gupta, S. 2007. Value-based adoption of mobile internet: an empirical investigation. *Decision Support Syst* 43(1):111–126.

Koksal, M.H. 2016. The intentions of Lebanese consumers to adopt mobile banking. *International Journal of Bank Marketing*, 34(3): 327-346.

Lewis N.k. et al. 2015. Enjoyment and social influence : predicting mobile payment adoption *The Service Industries Journal Volume 35.

Luarn, P. and Lin, H.H. 2005 Toward an Understanding of the Behavioural Intention to Use Mobile Banking. *Computers in Human Behaviour*, 21(6): 873-891.

Lu, H. and Yu-Jen Su, P. 2009. Factors affecting purchase intention on mobile shopping web sites”, *Internet Research*, 19(4): 442-458

Maity, M. 2010. Critical Factors of Consumer decision-making on m-commerce. *International Journal of Mobile Marketing*, 5(2):87-101. 15p.
Malik, A., Kumra, R., and Srivastava, V. 2013. Determinants of Consumer Acceptance of M-commerce. *South Asian Journal of Management*, published by Association of Management Development Institutes in South Asia, Vol. 20.2, ISSN: 0971-5428.

McKnight, D.H., Choudhury, V., and Kacmar, C. 2002. The impact of initial consumer trust on intentions to transact with a website: a trust building model. *Journal of Strategic Information Systems*, 11(3–4): 297–323.

Monsué T. P. et al., 2004. What drives consumers to shop online A literature review, *International Journal Of Service Industry Management*. Vol. 15 No. 1, pp. 102-121.

Mokyr, J. 2002. Long-term Economic growth and the History of Technology. *Princeton University Press*, Vol 1.pp.1113-1180.

Moore, G., and Benbasat, I. 1991. Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, 2(3): 192-222.

Muller, N. and Veerse, J. 2000. IP Convergence: The Next Revolution in Telecommunications. *Artech House*, Boston/London.

Mylonopoulos, N., Vrechopoulus, A., Constantion, I., and Sideris, I. 2003. The critical role of consumer behaviour research in mobile commerce. *International journal of mobile communication*, 1(3): 239-340.

Ngai, E., Cheng, T.C.E., Au, S., and Lai, K.H. 2007. Mobile commerce integrated with RFID technology in a container depot. *Decision Support Systems*, 43(1): 62-76.

Panos E. Kourouthanassis and George M. Giaglis. 2012. Introduction to the Special Issue Mobile Commerce: The Past, Present, and Future of Mobile Commerce Research. *International Journal of Electronic Commerce*, 16:4, 5-18.

Parker, C., and Wang, H. 2016. Examining hedonic and utilitarian motivations for m-commerce fashion retail app engagement. *Journal of Fashion Marketing, and management* Vol. 20 No.4., pp. 487-506.

Perea y Monsuwé, T., Dellaert, B.G.C. and de Ruyter, K. 2004. What drives consumers to shop online? A literature reviews. *International Journal of Service Industry Management*, Vol. 15 No. 1, pp. 102-121.

Rogers, E. 2003. Diffusion of innovations (5 ed.). *New York: Free press*, Simon and Schuster.

Sadi. A.H.M.S. and Noordin, M.F. 2011). Factors influencing the adoption of M-commerce: An exploratory analysis. *Proceedings of the International Conference on Industrial Engineering and Operations Management*, Kuala Lumpur. Malaysia pp: 492-499.

Saleh, H. 2008. Computer self-efficacy of university faculty in Lebanon. *Education Tech Research Dev*. p:229–240.

Shalhoub, Z. 2006. Trust, privacy, and security in electronic business the case of the GCC countries. *Information Management and Computer Security* Vol.14 No.3, pp.270-283.

Shang, D. and Wu W. 2017. Understanding mobile shopping consumers’ continuance intention. *Industrial Management and Data Systems*, 117 (1):213-227.

Siau, K., and Lim, E, P. 2001. Mobile commerce: Promises, challenges and research agenda. *Journal of Database Management (JDM)*.
Statista. 2020. Global smartphone penetration rate as share of population from 2016 to 2020. Available at: https://www.statista.com/statistics/203734/global-smartphone-penetration-per-capita-since-2005/ (accessed 28 February 2020)
Statista. 2020. Number of smartphone users worldwide from 2016 to 2021. Available at: https://www.statista.com/statistics/330695/number-of-smartphone-users-worldwide (accessed August 2020)
Statista. 2021. Mobile retail commerce sales as percentage of retail e-commerce sales worldwide from 2016 to 2021. Available at: https://www.statista.com/statistics/806336/mobile-retail-commerce-share-worldwide/

Tarhini, A. El-Masri, M. Ali, M. and Serrano, A. 2016. Extending the UTAUT model to understand the customers’ acceptance and use of internet banking in Lebanon: A structural equation modeling approach. Information Technology and People, Vol. 29 No. 4, pp. 830-849.

Thomson, R., Higgins, A. C., and Howell, M.J. 1991. Personal Computing: Toward a Conceptual Model of Utilization. Management Information Systems Research Center, University of Minnesota.

Tod, P., Adams, D., and Nelson, R. 1992. Perceived usefulness, Perceived ease of use, and user acceptance of information technology: A replication. MIS Quarterly, 13(3) : 319-340.

Think with Google. 2017. E-commerce Series Part 2: Activation
Available at: https://www.thinkwithgoogle.com/intl/en-145/perspectives/local-articles/e-commerce-series-prepare (accessed September 2017)

Varshnet U. et al. 2000. Reliability and survivability of wireless and mobile networks, Computer, 2000 - ieeexplore.ieee.org

Venkatesh, V., and Smith, R., 1999. Creation of Favorable User Perceptions Exploring the Role of Intrinsic Motivation”, MIS Quarterly, Vol.23 NO.2, pp.239-260.

Venkatesh, V., Morris, M., Davis, G., and Davis, F. 2003. User acceptance of information technology: toward a unified view. MIS Quarterly. 27 (3): 425-478.

Wei, T.T., Marthandan, G., Chong, A.Y.L., Ooi ,K.B., and Arumugam, S. 2009. What drives Malaysian m-commerce? an empirical analysis. Ind Manag and Data Sys 109(3):370–388.

Wu, J.H., and Wang, S.C. 2005. What drives mobile commerce? an empirical evaluation of the revised technology acceptance model. Information Management 42(5):719–729.

Yee, A., and Chong, L. 2013. Understanding mobile commerce continuance intentions: an empirical analysis of Chinese consumers. Journal of Computer Information System. 53(4) : 22-30.

Zhou, T. 2011. Examining the critical success factors of mobile website adoption. Online Information Review, 35(4) : 636-652.
## APPENDIX

**Table 4. Themes derived from experts’ interviews**

| Themes                          | Sub-Themes                      |
|---------------------------------|---------------------------------|
| Apps/Services launched          | Applications                    |
|                                 |                                 |
|                                 | Services                        |
| Online Commerce type            | Products                        |
|                                 |                                 |
|                                 | Services                        |
| Reasons of Successful/ Failures | Reasons of Successful           |
|                                 | Customer service                |
|                                 | Mobile conversion               |
|                                 | Social media                    |
|                                 | Shipping mode                   |
|                                 | Target Market                   |
|                                 | Reasons of failures             |
| Barriers when launching app/service | Trust                     |
|                                 | Status of country               |
| Motivations toward mobile commerce | Technical facilities           |
|                                 | Application                     |
|                                 | Apps vs mobile version          |
|                                 | Ease of use                     |
|                                 | Social media                    |
|                                 | Credibility                     |
|                                 | Security                        |
|                                 | Privacy                         |
|                                 | Trust                           |
|                                 | Ecosystem                       |
|                                 | Government role                 |
|                                 | Agencies                        |
|                                 | Regulation restriction          |
|                                 | Payment gateways                |
|                                 | Technology                      |
| Barriers toward mobile commerce | Country’s stability             |
|                                 | Economic stability              |
|                                 | Politics stability              |
|                                 | Internet connection             |
|                                 | Payment method                  |
|                                 | Shipment mode                   |
| Price                           | Price of goods               | Cost of financial resources | Cost of internet fees and services | Cost to download an app |
|--------------------------------|----------------------------|-----------------------------|-----------------------------------|-------------------------|
| Self-efficacy                  | Personal Traits             | Resistance of change        |                                    |                         |

Digital culture (moderator variable) | Cultural behaviour |
|-------------------------------------|--------------------|
|                                     | Mentality          |
|                                     | Language           |
|                                     | Digital education  |

Demographic factors (moderator variable) | Age |
|----------------------------------------|-----|

Attitude | Positive |
|----------|----------|

| Theme                        | Interviewees |
|------------------------------|--------------|
| **Motivation toward mobile commerce utilization** | **I 1** | **I 2** | **I 3** | **I 4** | **I 5** | **I 6** | **I 7** | **I 8** | **I 9** | Total | Frequency |
|-------------------------------|--------------|
| Credibility (Security and privacy) | 1 | 2 | 2 | 1 | 2 | 8 | 0.33 |
| Financial transaction        | 8 | 1 | 2 | 2 | 1 | 1 | 16 | 0.67 | 0.43 |
| Personal information         | 24 | 3 | 2 | 3 | 2 | 1 | 14 | 0.25 |
| Trust                        | 0.25 | 3 | 2 | 3 | 2 | 1 | 14 | 0.25 |
| Usefulness                   | 0.11 | 2 | 1 | 1 | 1 | 1 | 6 | 0.11 |
| Ease of use                  | 0.21 | 2 | 1 | 4 | 1 | 2 | 12 | 0.21 |
| Total                        | 1.00 | 56 | 1.00 |
Table 6. Consumer interviews analysis- Barriers toward mobile commerce utilization

| Themes and sub-themes: | Interviewees |  |  |  |  |  |  |  | Total | Frequency |
|------------------------|--------------|----|----|----|----|----|----|----|--------|-----------|
| Environmental conditions | 11 | I 2 | I 3 | I 4 | I 5 | I 6 | I 7 | I 8 | I 9 | To tal |
| Cost |  |  |  |  |  |  |  |  |  |  | 0.94 |
| Cost Fees of service or application | 2 | 2 | 2 | 2 | 3 | 1 | 3 | 1 | 16 |  |
| Cost of goods |  |  |  |  |  |  |  |  |  | 1 | 0.06 |
| Total |  |  |  |  |  |  |  |  |  | 17 | 0.30 |
| Comparison to other countries |  |  |  |  |  |  |  |  |  |  |  |
| Internet connection |  |  |  |  |  |  |  |  |  |  | 0.45 |
| Cost of services |  |  |  |  |  |  |  |  |  |  | 0.55 |
| Total |  |  |  |  |  |  |  |  |  | 11 | 1 |
| Infrastructure |  |  |  |  |  |  |  |  |  |  |  |
| Internet connection |  |  |  |  |  |  |  |  |  |  |  |
| Speed | 1 | 1 | 5 | 2 | 2 | 4 | 1 | 2 | 18 | 2 |
| Internet coverage |  |  |  |  |  |  |  |  |  | 2 | 0.6 |
| Wi-Fi VS 3G/4G | 2 | 1 | 3 | 2 | 1 | 7 |  | | 29 | 0.51 |
| Electricity |  |  |  |  |  |  |  |  | 1 | 1 | 0.03 |
| Total |  |  |  |  |  |  |  |  |  | 19 | 1 |
| Shipment mode |  |  |  |  |  |  |  |  |  |  |  |
| Delivery time | 1 | 1 | 1 | 1 | 1 | 1 |  | | 5 | 1 | 0.1 |
| Delivery address | 2 | 2 | 1 | 2 | 7 |  | | | 10 | 0.17 |
| Delivery cost |  |  |  |  |  |  |  |  |  | 1 | 0.2 |
| Total |  |  |  |  |  |  |  |  |  | 11 | 1 |
| Payment Methods |  |  |  |  |  |  |  |  |  |  |  |
| Credit card | 1 | 1 | 1 | 1 | 1 |  | | | 5 | 1 | 0.36 |
| Cash on delivery |  |  |  |  |  |  |  |  | 1 | 2 | 0.14 |
| Internet card | 1 | 1 | 1 | 1 | 4 |  | | | 9 | 0.29 |
| PayPal |  |  |  |  |  |  |  |  | 1 | 3 | 0.21 |
| Total |  |  |  |  |  |  |  |  |  | 14 | 1 |
Table 7. Experts interviews analysis - Motivations toward mobile commerce

| Themes and sub-themes: | Experts |
|------------------------|---------|
| **Motivations toward mobile commerce** | E1 | E2 | E3 | E4 | E5 | Total | Frequency |
| Technical facilities Application | 1 | 3 | 5 | 9 | 0.75 |
| Apps vs mobile version | 1 | 2 | 3 | 12 | 0.25 | 0.21 |
| Ease of use | 1 | 2 | 1 | 2 | 6 | 0.10 |
| Social media | 1 | 1 | 0.02 |
| Credibility Security | 3 | 1 | 1 | 5 | 0.26 |
| Privacy | 3 | 2 | 2 | 7 | 19 | 0.37 | 0.33 |
| Trust | 1 | 4 | 2 | 2 | 11 | 0.19 |
| Ecosystem Government role | 1 | 1 | 2 | 0.22 |
| Agencies | 1 | 1 | 0.11 |
| Regulation restriction | 2 | 2 | 0.22 |
| Payment gateways | 1 | 2 | 3 | 0.33 |
| Technology | 1 | 1 | 9 | 0.11 | 0.16 |
| **Total** | 58 | 1.00 |

Table 8. Experts interviews analysis - Barriers toward mobile commerce

| Themes and sub-themes: | Experts |
|------------------------|---------|
| **Barriers toward mobile commerce** | E1 | E2 | E3 | E4 | E5 | Total | Frequency |
| Cultural Environment Cultural behaviour | 2 | 4 | 2 | 2 | 10 | 0.34 |
| Mentality | 1 | 4 | 1 | 6 | 0.21 |
| Language | 1 | 1 | 0.03 |
| Digital education | 2 | 4 | 2 | 4 | 12 | 29 | 0.41 | 0.39 |
| Country’s stability Economic stability | 2 | 1 | 3 | 0.60 |
| Politics stability | 2 | 2 | 5 | 0.40 | 0.07 |
| Internet connection | 1 | 3 | 2 | 6 | 0.08 |
| Payment method | 2 | 3 | 1 | 2 | 8 | 0.11 |
| Shipment mode | 4 | 2 | 6 | 0.08 |
| Price Price of goods | 2 | 2 | 4 | 0.40 |
| Cost of financial resources | 1 | 1 | 0.10 |
| Cost of internet fees and services | 2 | 2 | 0.20 |
| Cost to download an app | 3 | 3 | 10 | 0.30 | 0.14 |
| Self-efficacy Personal Traits | 2 | 2 | 4 | 0.40 |
| Resistance of change | 2 | 2 | 0.20 |
| Habit | 2 | 2 | 4 | 0.40 | 0.14 |
| **Total** | 74 | 1.00 |