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Consumers' Intention to Adopt HCE in Lebanon

By

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Abstract

The increased uptake in advanced mobile devices coupled with improved infrastructure has led to a global trend in mobile computing, and has redefined a lot of societal aspects and the interactions involved therein. In particular, the rise of smartphones to ubiquity has initiated nothing short of revolutionary ideas regarding the future of mobile payments and the marketplace. Mobile banking is essentially an application of mobile computing which greatly reduces spatial and temporal limitations on banking activities, and provides for more rapid and convenient interaction with the banking platform at hand. Various technologies have been used to enhance the mobile banking experience, such as Short Message Service, Quick Response code, Bluetooth, and Near Field Communication, to varying degrees of success. The most recent wireless banking technology that has refined its predecessors, and is the topic of this paper, is termed Host Card Emulation. The latter provides many salient advantages relative to technologies it aims to supersede whilst at the same time enhancing the user experience as well as benefiting financial institutions that realize its implementation.

In effect, this research aims to analyse and collect data regarding the prioritization of factors that influence the successful adoption of the innovative payment technology, Host Card Emulation. This will in turn be used to answer the question: What are the determinants of consumers' adoption of Host Card Emulation in Lebanon?

Collected data from approximately 200 respondents has been critically assessed to suggest the best practices to the banking industry in order to achieve the widespread adoption of Host Card Emulation. This is particularly important since Host Card Emulation technology is already implemented by default in recent smartphones which are already ubiquitous, and its adoption in turn provides banks with a massive market that remains untapped. The importance of its adoption cannot be overstated, because it provides a unified approach to mobile payment. Host

Card Emulation does away with the incoherence and overhead of simultaneously supporting various platform-dependent methods of payment such as ApplePay, SamsungPay, and Google Wallet for both banks and businesses, which is the case of the older Near Field Communication technology.

The present study outlines a number of factors to be probed in their capacity to predict and explain consumer behaviour in regards to novel technologies. To this end, two paradigm standards were used as a basis for the theoretical model of the paper; the Technology Acceptance Model and the Theory of Diffusion of Innovation. The findings showed that that only three of the six factors used were significant; relative advantage, ease of use, and personal innovativeness. The paper elaborates on a number of managerial and theoretical implications in the context of the aforementioned findings.

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CHAPTER 1: PREFACE

Definitions

SMS – Abbreviation of Short Message Service; A basic service which allows the exchange of short text messages between phones or a computer and a phone. The short message service provides a maximum payload of 140 octets, or 160, 140, or 70 characters with 7-bit, 8-bit, or 16-bit encoding, respectively. They are sent and received through a short message service center maintained by the mobile network operator (Jeff Brown, 2007).

QR code – Abbreviation of Quick Response Code; a matrix barcode made readable by photographing them by smartphones. They are sometimes referred to as 2d codes, 2d barcodes, or mobile codes. They are illustrated as being small white squares with black geometric shapes, though coloured QR images are also used. QR codes can hold much more information than a regular barcode. The information encoded in a QR code can be a URL, a phone number, an SMS message, or any text. (Ashford, 2010)

NFC – Abbreviation of Near Field Communication; a short-range wireless technology that allows mobile devices to actively interact with passive physical objects and other active mobile devices, connecting the physical world to mobile services in ways that empower and benefit users. NFC builds upon Radio-Frequency Identification (RFID) and contactless smartcard technologies that enable stored data to be actively "read" at a distance. (Cavoukian, 2012)

SIM – An abbreviation of subscriber identity module; a subscriber identity module is a physical card with an embedded chip used for mobile phones. It stores data required for communications via a cellular communications provider. Such data includes user identity, network authorization data (IMEI/IMSI), personal security keys (such as PIN codes), contact lists and stored text messages (Fadi Aloul, 2009).

Introduction

The epistemological drive responsible for the inception of this paper is the genuine interest in probing and understanding the intricate relationships that exist between the features offered by innovative payment methods and consumer behaviour regarding adoption. This will provide new insights and strategies into the inner workings that drive consumer behaviour in light of newer-generation convergence products. In addition, the scarcity of research in implementing such technology in Lebanon is also quite astonishing considering the fact that the Lebanese banking sector is one which is possibly best representative of the history, culture, and talents of the Lebanese people. Furthermore, not only is the Lebanese banking industry liquid, profitable, and a beacon of stability (Hejeij, 2015), it is also a key regional player particularly due to its adoption of stringent bank secrecy laws since 1956 (Banque du Liban, 1956).

The paradigm shifts technology has ushered in throughout the centuries cannot be overstated in terms of their profound impact on societal infrastructure and society as a whole. A prime and recent example for this statement is the smartphone, which along with rapid advances in related technology-based systems has induced a comparably fast advancement in infrastructure, fundamentally changing how companies interact with customers (Ibrahim E., 2006). In a similar manner, a new type of technology is on the horizon to revolutionize society once more, by radically transforming the traditional landscape of the marketplace and how monetary exchange is made. The technology being alluded to is mobile banking, which has immense potential for providing banking solutions

and other financial services to unbanked people through a most pertinent medium, the smartphone. Mobile banking, also referred to as M-Banking, is a means of mobile commerce enabling customers to bank virtually at any convenient time and place (Suoranta M., 2003).

Given the unrelenting expansion in the availability of smartphones, coupled with the growth of relevant infrastructure, they are undoubtedly destined to become a major component of any future society. In effect, this provides great potential for extending the provision of financial services to unbanked people if appropriate strategies are devised by the banking industry to utilize the ubiquity of smartphones (Rahmath Safeena, 2012).

Corporate focus on technological advancement in providing services in a growingly competitive and globalized market is important, as is recognizing effective factors regarding the adoption and usage of innovative technological services (Bauer, 2006).

Competitive advantage has a lot of importance in different industries including banking. Mobile banking provides many desirable features to both the clients and the banks themselves. Online banking is a technology that offers a plethora of different services, such as automatic bill payments, electronic transfer of funds, automatic teller machine services, etc. Essentially, it benefits banks by reducing operational costs and clients by enhancing the quality of banking services. Additionally, there exists an underlying motif in the unexplored area of technological convergence in the portable consumer technology sector, effectively meaning that consumers desire "anywhere technologies" which encompass essential features into a simple and portable device interface (Jin K. Han., 2009). Banks

are then quite naturally growing more dependent on the flexibility of online banking solutions in order to gain competitive advantage (Kolodinsky, 2004). Mobile banking offers a diverse set of financial utilities, such as bill-payment utilities, person to person (P2P), business to business (B2B), and person to business (P2B) transfer as we'll as long-distance remittances (Shallone K. Chitungo., 2013).

Introduction to Host Card Emulation

The latest innovative technology in the banking sector in regards to payment methods, is termed Host Card Emulation, or HCE, which employs the use of android phones to offer mobile payments. HCE is a software design that securely and accurately maps the virtual electronic identities of various cards on a mobile platform (i.e. smartphone) using only software. Before HCE architecture, Near Field Communication (or NFC) technology was traditionally used to this end with considerable compromises and restrictions (Prakash N., 2005).

Secure Element

Confidential and cryptographic data regarding payments via NFC have traditionally been stored locally on the mobile equipment inside a tamper-defiant hardware-based platform

called the secure element (SE) incorporated into operator-issued SIM cards. The Secure Element (SE) ensures that cryptographic data is stored securely and that pertinent information is given only to authorized applications. It is essentially an ID for the end-user and for the device itself. Given the security and reliability of the Secure Element (SE), it is used in a plethora of applications that require ample security such as user authentication, device integrity, secure connectivity, couponing, corporate authorization, e-government, and so on. One of its frequent uses is its application in point-of-sale (POS) terminals, wherein the cryptographic data hosted in the Secure Element (SE) can emulate debit or credit cards and allow for monetary transactions to take place. The Secure Element (SE) may also be used to hold biometric data or certificates which can be used to securely sign documents (Prakash N., 2005).

However, permission to utilize or charge for the access of the Secure Element (SE) is granted by the operators who own it. Owners of the Security Element (SE) may be the mobile network operators or mobile equipment manufacturers. Given that there are many Secure Element (SE) owners operating globally, manufacturers, operators, and businesses must retain a relationship with each other in order to provide the services offered by NFC. In effect, this inherent property of NFC in its reliance on a hardware-based Security Element (SE) creates dependencies and complexities that make it difficult and costly for businesses such as banks to operate in an NFC ecosystem. Given the logistic and economic constraints of NFC, mass market NFC services are yet to be widely deployed (Prakash N., 2005). Considering the fact that the Secure Element (SE) is hardware-dependent and can be owned by either mobile network operators or equipment manufacturers, service

providers that use NFC must have agreements with a number of different SE providers who in turn need to have agreements with the manufacturers or vice versa. Host Card Emulation (HCE) circumvents these convoluted arrangements by enabling a software-based "virtual" Secure Element (SE) that is hardware-independent and can be deployed on a wide variety of equipment without as many intermediaries as the hardware-dependent Secure Element (SE) of NFC, hence resolving the logistic, technical, and economic problem of implementing and using mobile credit card payments. This is why the payment industry has been praised for introducing Host Card Emulation (HCE) (Prakash N., 2005).

The implementation of HCE is much less tedious than that of hardware-based Secure Element (SE) NFC payment methods, because it eliminates the involvement of third-party intermediaries. Additionally, it grants application-issuers, i.e. banks, complete control over management of their HCE-based applet, providing a direct link between the issuer (e.g. bank) and the consumer (e.g. smartphone user). In effect, the benefits of HCE are many, and include issuer-independency in providing rapid release and subsequent updates to their applet, easy deployment that does not require amendments to payment terminal software, and removes the economic and technical overhead by reducing the involvement of third-parties (Prakash N., 2005).

CHAPTER 2: LITERATURE REVIEW

Consumer attitude and adoption

Adoption trends among customers are a recognized challenge for the strategic planning of banks and corporations in general. Several factors affect consumer attitudes and adoption rates regarding new technologies, such as demography, motivation, and behaviour. These are factors to consider in the design and refinement of corporate strategies aimed to facilitate or catalyse the adoption process of new technologies (Rahmath Safeena, 2012).

Given that this paper will probe the potential success of diffusing a particular innovation (HCE), it is necessary to consider various models that aim to predict consumer behaviour regarding technological adoption. In this regard, the Diffusion of Innovation theory by Rogers and the Technological Acceptance Model by Davis are used to derive a hybrid model thought to be best suited for the purposes of this paper, necessitating their discussion.

Diffusion of Innovation

The first theory to be considered is that of Rogers' Diffusion of Innovations (Rogers, 2003), which seeks to explain how innovations are diffused through a population. An innovation is defined as an idea, behaviour, or object that is perceived as new by its target audience. The Diffusion of Innovations theory offers valuable insight into the process of social change enabling the uptake of a particular innovation. It emphasizes the role of

peer-to-peer conversations in catalysing the diffusion process, and posits the existence of five adopter categories and five essential qualities that determine the success of an innovation.

Segmental populations of Diffusion of Innovation

Rogers suggests that a population can be divided into five segments according to their inclination to adopt a particular innovation: innovators, early adopters, early majority, late majority, and laggards. Each category has a unique propensity to adopt a new idea, behaviour, or object, and the diffusion process occurs sequentially through the noted population categories. The diffusion, or spread, of innovation to each segment of the population is possible only when an innovation evolves to meet the needs of the successive groups. This is possible only when there is meaningful interaction between the target category and the issuer of the innovation. The diffusion process starts with the first population segment as outlined by Rogers, termed innovators. Innovators are a tiny number of imaginative innovators and fanciful idealists, who oftentimes allocate a great deal of time, energy, and creativity in developing new ideas. It is important to invite innovators as partners in designing a particular innovation and providing them with publicity as well as support. The segment that follows is that of the early adopter, who are frequently fashion-conscious and aim to be seen as trend setters. Hence, they are likely to be loquacious regarding the usage and advantage of a certain innovation. It is this segment that largely determines the subsequent success or failure of the diffusion process. Not only do they

present the innovation to the larger populations, they also help in suggesting the necessary improvements that refine and evolve the innovation so to better suit themselves and the other segments of the population. Ideally, the increasingly apparent advantages of the innovation drive the diffusion process by attracting the early adopters, who make up the keenest segment of the population. Early majorities are pragmatists who are receptive of moderately progressive ideas, but require simple, proven, and better ways of doing what they already do. They are cost-sensitive and risk averse, requiring the testimony or endorsement of the innovation by popular or credible people. Both the early adopters and the early majority enable diffusion of innovation largely through peer-to-peer communication, by advertising the uses and advantages of the innovation. Furthermore, an independent marketing campaign can be considered, as it provides an effective tool in conveying to consumers the availability and benefits of a particular product (Michael D. Clemes, 2012). The early majority is able to influence the next segment of the population, the late majority, and enable further diffusion of an innovation. The late majority is a group composed of the strictly conservative and those who are not particularly keen on adopting an innovation. They are not only concerned with the cost-effectiveness and practical benefits of a particular innovation, but are also significantly influenced by mainstream culture, norms, and trends set by the previous segment outlined by Rogers. Essentially, they adopt innovation after the average participant. However, they are also influenced by laggards, composed of people having a strong aversion to change and those who might have appropriate criticism regarding the innovation. They are the last segment of a population to adopt a new idea or technology, and refuting their criticism with valid answers is essential in enabling the late majority to adopt the innovation in question

(Rogers, 2003). The innovation must continually evolve to meet the needs of the subsequent population categories while retaining the qualities that allowed its diffusion through the previous categories. Hence, proper support and interaction is necessary.

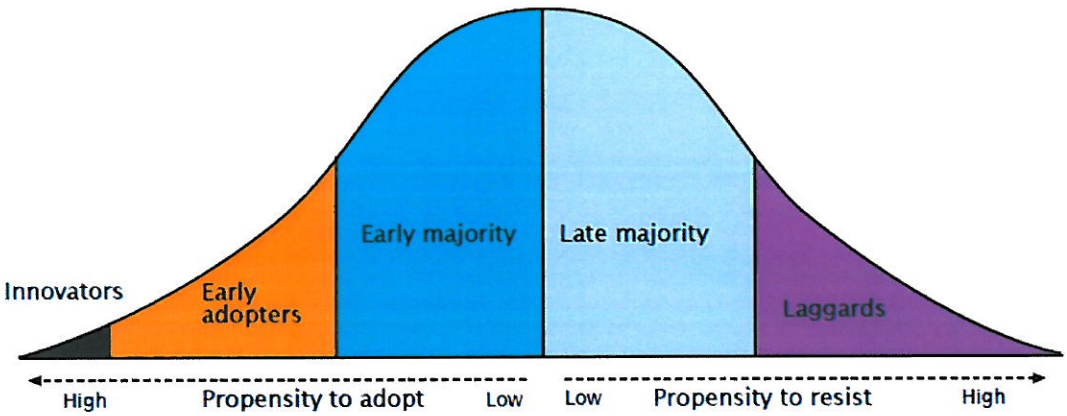

Figure 1: The 5 population segments involved in the diffusion of innovation, their general computed magnitude, and propensity to adopt a particular innovation (Rogers, 2003).

Qualities of segmental populations

The five qualities that largely determine the success of diffusion are termed "*Relative advantage*", "*Compatibility*", "*Complexity*", "*Trialability*", and "*Observability*".

The relative advantage (RA) is a particular innovation's perceived benefits over ideas or technologies it aims to supersede, and measured in terms that the users of a particular segment consider important. Relative advantage includes (but is not limited to) properties

such as convenience, satisfaction, economic advantage, and social prestige. For example, mobile banking is much more convenient than other banking channels in terms of mobility and practicality (Anckar & D'Incau, 2002). The greater the perceived relative advantage of a particular innovation, the greater its adoption rate (Rogers, 2003).

Compatibility is the property of being compatible with pre-existing or widely used platforms, while complexity relates to the innovation's ease of use. Trialability is defined as the property of a particular innovation to be used temporarily within a limited setting in order to, ideally, minimize or alleviate perceived risk and increase perceived ease of use. Observability is the degree to which the results of an innovation are apparent to the population. The more visible the advantages of an innovation, the more likely it is to be adopted. Observability makes this possible by enabling peer-to-peer discussion regarding the innovation by creating inquiry and curiosity among the population, which would subsequently generate requests for information about the innovation and its evaluation (Rogers, 2003).

Technology Acceptance Model

The other theory to be considered is the technology acceptance model (TAM), which is somewhat of a gold standard, if not a paradigm of its own. The technology acceptance model has come to be one of the most valid and widely used theories in predicting consumer behaviour in terms of the adoption process of new technologies (Doll W., 1998).

It aims to illuminate the various factors that cause people to accept or reject a particular technology. TAM, first developed by Fred Davis in his seminal paper *"Perceived usefulness, perceived ease of use, and user acceptance of information technology"* (Davis, 1989) in light of concern that workers were not using technologies provided to them. It is based on the Theory of Reasoned Action (TRA) by Ajzen and Fishbein (Ajzen I., 1980), a psychological theory seeking to explain behaviour (Li, 2010).

In regards to the Technological Acceptance Model, its author notes that future research models must address how other factors affect usefulness, ease of use and user acceptance, and ultimately the adoption process (Davis, 1989), as the two main factors outlined by the model, i.e. perceived ease of use and perceived usefulness, may not fully explain consumer behaviour and adoption trends in the future. Moreover, recent research has shown that as consumers become familiarized with the medium of propagation of particular innovation (i.e. mobile phones in regards to banking applets), the importance of ease of use becomes benign relative to other factors such as perceived usefulness or perceived risk (Mohamed Gamal Aboelmaged., 2013) . This is corroborated by a number of studies which conclude that the property of perceived ease of use becomes a significant factor in the adoption process of innovative technologies more so when users are unfamiliar with the system or medium of propagation (Agarwal R., 1998; Liaw S., 2002), such as the case with low-literacy low-income people (Indrani Medhi., 2009).

TAM involves two primary predictors, perceived ease of use (PEoU) and perceived usefulness (PU). Perceived usefulness (PU) is defined as the extent of the belief that using a particular good or service will enhance a user's performance. In other words,

perceived usefulness (PU) is the potential adopters' assessment of desirability with regards to usefulness derived from the adoption of a particular innovation or technology. Perceived ease of use (EU) is defined as the extent of ease and effortlessness in using a particular good or service (Davis, 1989), and may negatively or positively influence performance, and hence perceived usefulness. Frustration derived from a lack of needed information in using a particular device or technology, for example, may impede the adoption process (Davis, 1989).

Prior research has concluded an empirical finding regarding a positive relationship between perceived ease of use (EU) and perceived usefulness (PU) as the two main critical factors in the usage of e-banking. Hence an application perceived to be useful and perceived to be easier to use than another is more likely to be accepted by users (Poon W., 2008). As a corollary it is necessary to state that NFC and by extension HCE, is preferred by a significant margin over its competing platforms such as QR codes, Bluetooth Beacons, and browsers, and provides for a better in-store experience, increased sales, and enhanced consumer loyalty (Cassidy, 2015).

As mentioned above, the original literature by Davis (1989) proposed only two aspects of behavioural inclination regarding the adoption process of new technology in his Technology Acceptance Model. While studies show the two predictive factors of TAM, i.e. perceived ease of use (EU) and perceived usefulness (PU) are positively related to behavioural intention in the adoption of mobile banking (Chung N., 2009), other studies have revealed that there are additional factors that must be considered and extended to the Technology Acceptance Model. Factors that might affect the adoption process of mobile

banking include perceived risk or uncertainty (Chung N., 2009), social norms (Riquelme H. E. & Rios R. E., 2010), financial cost and overhead (Chian-Son Yu, 2012), and demographics (Lee K.S., 2007).

Theoretical Framework

A plethora of research has been conducted in assessing consumer behaviour towards the adoption of new technologies and various trends of a technological nature. Below is a table recapitulating studies and the variables involved, as well as their conclusions regarding the relevant subject matter.

Authors	Theories	Sampling & Countries	Main Findings
Mattila [2003]	Bass diffusion model and IDT	1253 samples drawn from one major Finnish bank by the postal survey in Finland	Information sources (i.e., interpersonal word-of-mouth), age, and household income significantly influence mobile banking adoption.
Shin-Yuan Hung [2003]	DIT, TPB, TAM	267 respondents using systematic sampling method in Taiwan	Satisfaction, personal innovativeness, ease of use, peer influence, and facilitating conditions are all more important for the adoption of wireless application protocol (WAP)
Chan and Lu [2004]	Extended TAM and SCT (social cognitive theory)	499 respondents from Hong-Kong universities	Perceptions of image and risk are important factors in the initial stages of adoption, while subjective norm and perceived usefulness were most important for sustained usage of IT

Luarn and Lin [2005]	Extended TAM	180 respondents surveyed at an e-commerce exposition and symposium in Taiwan	Perceived self-efficacy, financial costs, credibility, easy-of-use, and usefulness had remarked influence on intention to adopt mobile banking
WC Poon [2007]	convenience of usage, accessibility, features availability, bank management and image, security, privacy, design, content, speed, and fees and charges	324 responses using a questionnaire in Malaysia	Privacy, security and convenience factors play an important role in determining users' acceptance of e-banking services regardless of age group, education level and income level.
Lee [2009]	TAM and TPB	368 respondents in Taiwan using non-random convenience sampling	Security risk, financial risk, perceived behaviour control, subjective norm, attitude, perceived benefit, and perceived usefulness were found to be important factors in the adoption of IB
Riquelme and Rios [2010]	TAM, TPB, and IDT	681 samples drawn from the population of Singapore	Usefulness, social norms, risk influences the intention to adopt mobile banking
Rahmath Safeena [2010]	Extended TAM	55 respondents surveyed using convenience sampling in Mumbai, India,	Perceived usefulness, perceived ease of use, consumer awareness and perceived risk are the important determinants of online banking adoption.
Dasgupta et al. [2011]	TAM	325 usable questionnaires gathered from MBA students in India	Perceived usefulness, easy-of-use, image, value, self-efficacy, and credibility significantly affect intentions toward mobile banking usage.
Alafeef M. et al. [2011]	Demographics and Personal Innovativeness	80 respondents in Jordan using an online survey	Age, gender, income, and education level have strong effects on the adoption of mobile banking in Jordan

Table 1: Illustration of various relevant studies with their authors, theories, samples, and findings.

The diverse set of studies regarding the subject of consumer intention to adopt novel mobile/online technologies seems to have a number of common elements relating to the factors that influence the primary behaviour being probed. The aforementioned factors are Perceived Risk, Social Norms, and Perceived Usefulness. The factors of Perceived Ease of Use and Personal Innovativeness were also significant, but to a lesser extent than those noted previously. However, it is worth noting that the overwhelming majority of such studies do not encompass the Middle East and North Africa region (MENA). Of the studies listed above, only that conducted by Mohammad Alafeef focused its efforts in the MENA region, specifically Jordan. However, the factors that the study employed are neither popular nor of primary interest in behavioural consumer research, i.e. age, gender, income, and educational level. In effect, this study adopted paradigm standards in terms of factors, while also employing a number of moderating factors that are of curious interest for consumer intention to adopt novel technologies. The denouement of this study is to capture a snapshot of consumer behaviour regarding mobile payment technologies in Lebanon.

A note on acceptance or rejection

The process of adoption or rejection of a particular innovation initially requires consumers becoming aware of the product itself. Adoption is not only the acceptance of the product of interest but also its sustained usage. Consumers first follow "a process of knowledge, persuasion, decision and confirmation" before they are able to consciously make the decision of adoption (Sathye M., 1999).

Consumers will naturally seek out financial products and suppliers which provide the best value for money. However, clients must first be aware of said products and also be given information as to what benefits these products provide them with. Hence, the adoption of mobile banking has as a precedent of making potential customers aware of this nascent service and how it contributes pragmatically to their lives (Sathye M., 1999).

CHAPTER 3: THE RESEARCH

Research objectives and Hypotheses development

The purpose of the study is to address the lacuna in m-banking research in Lebanon, and the paper itself is expected to provide lucid findings regarding the strategies and factors that are important in materializing the adoption of HCE.

This research investigates the relationship between new banking service technologies (i.e. HCE) and customers' willingness to adopt them. In addition, it aims to probe and prioritize the importance of the various factors composing the model used in this paper. This paper is to provide a more complete view on the existing social framework that exists in developing countries such as Lebanon on which the banking sector can rely on in order to present and facilitate the adoption of innovative banking technologies such as HCE. The anticipated results are expected to provide ample and ideally novel information and strategies which can be entrusted in maximizing the adoption of HCE and very possibly other innovative technologies in similar developing countries. The paradigm

shift from traditional banking to mobile banking also rapidly increases market penetration, one of many reasons why Lebanese banks are fervently exploring methods in spreading the adoption of innovative technologies such as HCE, coupled with a greater level of personalization and customization in providing the best possible experience to customers. Our model, then, adopts an inclusive approach and incorporates elements from both the Technology Acceptance Model and the Theory of Diffusion of Innovation.

With the purpose of attaining its objectives, this paper tries to answer the following question:

- What are the determinants of consumers' adoption of Host Card Emulation in Lebanon?

In order to examine the relationship between new banking service technologies (HCE) and customers' willingness to adopt them, we need to assess the customers' perception (personal innovativeness, perceived risk, social norm, relative advantage, perceived usefulness and perceived ease of use) as well as their concerns regarding new mobile payment service (service features, security, use, etc.).

Determinants and Hypotheses

Based on the fact that many research papers have stipulated the presence of additional factors in shaping consumer behaviour, we will incorporate both the Diffusion of Innovation and Technology Acceptance Model theories in our study, as well as factors that have recently been outlined as pertinent.

From the Diffusion of Innovation theory, this paper will use the properties of personal innovativeness (PI), social norm (SN) and relative advantage (RA), plus those from the Technology Acceptance Model, i.e. perceived usefulness (PU) and perceived ease of use (EU), in addition to the common factor in regards to our subject; perceived risk (PR). To this effect, our framework of study encompasses the two theories noted above. In addition, this paper will be extended to include other factors, namely, gender, occupation, educational background, and income bracket as moderating factors. The above factors will be discussed and their use justified as follows:

a. Perceived Risk

Perceived risk (PR) entails the consideration of various concerns relating to the usage or adoption of a particular innovation (Gerrard Philip., 2003). The concerns that affect the adoption process of electronic or mobile banking include factors such as the protection of password and data integrity, personally identifiable information and privacy in general, encryption reliability, and protection against hackers (John Benamati., 2007). In addition, security related to the platform or the platform-issuer also contributes to perceived risk and the adoption of innovative technology (Ja-Chul Gua., 2009). It is thought that perceived risk has a negative influence on mobile banking adoption. Research indicates a pattern of gender-based modulation of this factor, with women being more concerned about security (i.e. perceived risk) than men (Riquelme H. E. & Rios R. E., 2010).

An inordinate amount of behavioural research attests to the usage of these risk factors in assessing consumer behaviour with respect to their inclination to adopt and use various services such as mobile banking (Ki Soon Lee, 2007). Given this, we derive the following:

H1: Perceived Risk (PR) has a negative effect on an individual's intention to adopt HCE in Lebanon.

H1a: Gender moderates the relation between PR and HCE adoption, with men being more risk takers than women.

b. Personal Innovativeness

Personal innovativeness (PI) represents an amalgam of technology-related beliefs which jointly contribute to determining an individual's inclination to embrace and adopt technology and technological innovations such as mobile devices and their related services. Therefore, given the same level of beliefs and perceptions about an innovation, individuals with higher personal innovativeness are more likely to develop positive attitudes towards adopting it than less innovative individuals (Agarwal R., 1998). Prior research (Agarwal R., 1998) indicates that personal innovativeness has a strongly positive influence on the adoption of mobile banking services (Hung S. Y., 2003); personal innovativeness is a factor that plays an important role in the diffusion of innovation wherein innovative users have a higher inclination to adopt innovations and initiate a particular innovation's diffusion

(Rogers, 2003). For example, higher levels of education are suggestive of open-mindedness which may in turn contribute to one's inclination to adopt a new technology (Guangping Wang., 2008). People with tertiary education are more likely to have an internet-enabled smartphone (Mattila M., 2003). Literature has also indicated that education in general renders people more receptive to innovative technologies. Specifically, individuals with a university degree are more likely to adopt new technologies than people with no such degree. Furthermore, a university-level education is correlated with the attribute of Personal Innovativeness (PI) (Noraini Mohamed Noh, 2016). In effect, we will probe the exact relation between educational background and the inclination it allows regarding the adoption process. Age, which may be thought to have some differential effect on the adoption process of people with differing educational backgrounds, is not probed because no such effect is seen in its ability to sway one's inclination to either accept or reject a new consumer product (Guangping Wang., 2008). Consequently, this justifies the need to probe the antecedent of personal innovativeness in the adoption of mobile banking services in Lebanon with regards to educational level. Given this, we conclude the following:

H2: Personal Innovativeness (PI) has a positive effect on an individual's intention to adopt HCE in Lebanon.

H2a: Education moderates the relation between PI and HCE adoption; higher the level of education, stronger the relation between the two.

c. Social Norm

Social norm (SN) is defined as the influence of significant others such as family and friends, as well as other social factors, in the adoption or rejection of a particular behaviour, such as the diffusion of technological innovation or its usage. Interestingly, social influences are more potent in the earlier phases of the adoption process, and begin to wane with sustained usage of the innovation at hand (Ajzen I., 1980); behavioural literature supports the notion that social norms have a considerable positive effect on the adoption process in regards to mobile banking. The relationships, identities, and professions of individuals come to define them and their self-image within a social context, which in turn has considerable influence on their inclination to accept and adopt a particular behaviour, including technological innovations such as mobile banking (Per E. Pedersen & Rich Ling., 2003). Thus, it is not surprising that social norms have been widely validated by a number of studies, such as those regarding I.T. usage behaviour (Taylor S. & Todd P., 1995), the adoption of email (Karahana E., 2000), internet banking (Chan SC. & Lu MT., 2004) and mobile banking adoption (Riquelme H. E. & Rios R. E., 2010).

H3: Social Norm (SN) has a positive effect on consumer intention to adopt HCE in Lebanon.

d. Relative advantage

Relative advantage (RA), as noted previously, embodies the advantage(s) provided to the end-user relative to the idea or technology it aims to replace. Examples of relative advantage are personal convenience, temporal and spatial practicality, heightened self-image or social status, etc. (Anckar & D'Incau, 2002). In particular, relative advantage plays a significant role in the adoption of a new technology in its early stages (Rogers, 2003).

It has been asserted that convenience and efficiency in mobile banking payments, which can be considered as part of the relative advantage factor, make for a significant driving force in the adoption process of m-banking technologies (Tang, 2001).

The effect of this relative advantage factor, then, is to be assessed, given that HCE is a newly introduced banking payment technology in the Lebanese market.

H4: Relative Advantage (RA) has a positive effect on consumer intention to adopt HCE in Lebanon.

e. Perceived usefulness

As noted previously, Perceived Usefulness (PU) is defined as the degree to which one derives an inclination to adopt a particular technology in terms of its ability to enhance

productivity (Davis, 1989). Given that a gender gap in mobile usage is insignificant, the differential usage of mobile technology is much less so. For example, women are more likely than men to use geolocation services (comScore, 2011), while men are more likely to use quick response codes. Additionally, women are more likely to have mobile devices, but men are more likely to have smartphones (comScore, 2011). However, men are more inclined to adopt mobile banking technology than are women (Wendy W.N. Wan, 2005), and are more concerned about its perceived usefulness than its perceived risk relative to women (Riquelme H. E. & Rios R. E., 2010). Clearly then, a differential usage of the services the mobile platform provides exists, which will in effect justifiably be probed in this study. Moreover, one particular limitation of existing research regarding the matter of m-banking adoption rates is that they fail to take into account or overlook the effect of income (J. Nel., 2012), although many see it necessary to query income as a formality when the research incorporates a survey whilst probing demographics. Income may be an important factor that should be properly assessed when it comes probing consumers' motivation of adoption towards innovative technologies since those with low-income usually resist adopting such technologies fearing running-costs or harbouring suspicion of hidden costs (Porter C. E., 2006). Moreover, those with a high-income have a penchant for time-saving technologies and are more likely to adopt innovations that offer such a feature (Punj Girish., 2011).

On the other hand, banks can positively motivate people in low-income brackets to adopt online banking services by charging lower fees for online deposits relative to those made in bank branches, or reduce home loan interest rates for online accounts, or having the bank

pay higher interest rates on online deposits (Michael D. Clemes., 2012). Given this deduction:

H5: Perceived usefulness (PU) has a positive effect on consumer intention to adopt HCE in Lebanon.

H5a: Gender moderates the relation between PU and HCE adoption, with men being more concerned about usefulness than women.

H5b: Income moderates the relation between PU and HCE adoption; higher the level of income, stronger the relationship between the two.

f. Perceived Ease of Use

Perceived Ease of Use (EU) is defined as the degree to which a particular innovation enjoys freedom from difficulty and effort. In concomitance with Perceived Usefulness (PU), it forms the basis of the Technology Acceptance Model as outlined by Davis (Davis, 1989). A greater Perceived Ease of Use (EU) is generally associated with a greater inclination to adopt a new technology or product. Moreover, as is the case with Perceived Usefulness (PU), there is a gender-based moderation on the EU factor in regards to the adoption of a particular technology. Specifically, women are more greatly influenced by perceived ease of use than are men. (J. Nel., 2012). Occupation will also be taken into account in its moderating effect, if any, on Perceived Ease of Use (EU) since one's profession affects the use of technologies and how they are regarded (Reese Stephen D., 1988). Even still,

numerous publications that have investigated occupation as a factor in electronic banking have been inconsistent (Chian-Son Yu, 2012). Within this contradiction lies the interest in querying any tangible effect of different occupational sectors on one's intention to adopt HCE in Lebanon. Hence, we conclude the following:

H6: Perceived Ease of Use (PEoU) has a positive effect on consumer intention to adopt HCE in Lebanon.

H6b: Occupation moderates the relation between PEoU and HCE adoption, where those whose occupational responsibilities involve computer literacy are more likely to adopt HCE than those whose occupation does not.

H6a: Gender moderates the relation between PEoU and HCE adoption, with women being more concerned about ease of use than men.

Graphical Representation of Relationships

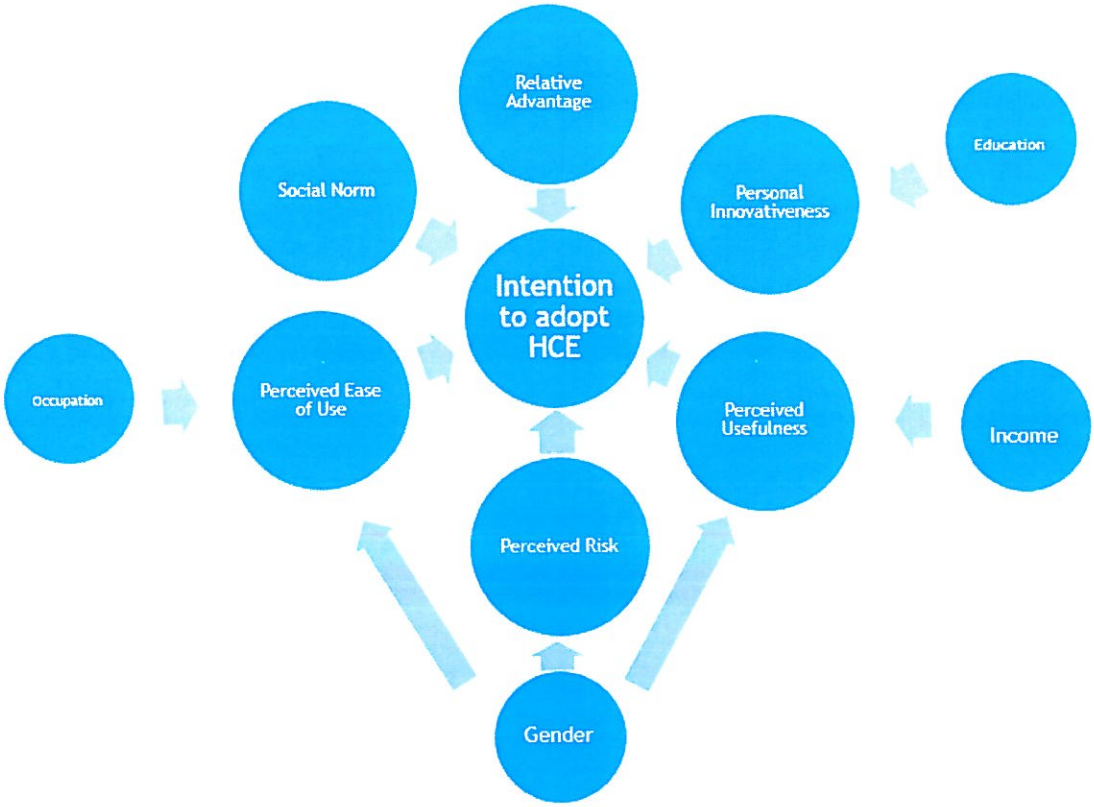

Figure 2: An illustration of the layout concerning the determinants of consumer intention to adopt HCE in Lebanon.

CHAPTER 4: METHODOLOGY ADOPTED

Methodology adopted

The prominent Technology Acceptance Model (TAM) is employed as a basis in determining some of the factors that affect one's willingness to adopt a certain technology, with predictive power. In addition, the theory of Diffusion of Innovation is also considered

in extending the framework of TAM and outlining a more robust set of factors in this regard.

As for the reasoning, this research adopts hypothetico-deductive reasoning, meaning it begins with a theoretical supposition regarding the adoption of innovative technology and proceeds to employ deductive reasoning to conclude and interpret the results after statistical treatment. Hence, it begins with general principles, assumptions, and ideas, and derives more particular statements about the realities of life. The hypotheses are then tested by gathering and analysing data and the theory is then either supported or rejected by the results. This research will hence focus on revealing the different factors and influences that have driven the adoption of various innovative banking technologies (e.g. mobile banking, tap to pay, etc.) and coalesce them into a coherent and potent strategy for the widespread adoption of HCE in Lebanon.

Considering that we are studying consumers' adoption of Host Card Emulation (HCE) in Lebanon, the research strategy and data collection technique were achieved by linking potential respondents to the pertinent Monkey Survey (online questionnaire) through the use of social media services, for example Facebook, WhatsApp, and LinkedIn. The survey was propagated through the employment of the snowball technique. However, considering its main drawback; bias, vis-à-vis interviews were also conducted. This was particularly useful because whilst Lebanon enjoys a high rate of literacy, the small minority who are illiterate are of equal importance for our study due to the fact that education was taken to be a moderating factor regarding personal innovativeness as mentioned in the literature review. In this regard, questionnaires were handed to respondents in populous shopping

centres that attract people from all socioeconomic classes, demographics, and regions. Such centres included CityCenter in Hazmiye, LeMall in Sen-El-Fil, ABC in Dbayeh, and Beirut Souks in Downtown Beirut. All the respondents were Lebanese.

It is observed that quantitative research methods such as the survey method provide an objective measure of phenomena using close-ended questions. Quantitative methods are reliable and objective, which can cautiously be used to generalize a particular finding and facilitate the task of establishing potential causal relationships between variables (Williams, 2007).

Quantitative research is then conclusive in its findings and can help derive projectable results. For this type of study, we collect data through the quantitative survey method.

This choice of strategy and technique is mainly justified by time and budget constraints. As for the questionnaire's components, they are twofold. The first part comprises a set of questions inquiring about the sample's demographic information such as age, education level, gender, and income bracket.

The second set of questions aims to collect opinions and answers related to the research's variables. The questions related to the research's variables consist of Likert scale type answers. The questionnaire is composed of 28 items and its parameters are measured using a five-point Likert-type scale (1=strongly agree, 2=agree, 3=neutral, 4=disagree, 5=strongly disagree). It enquires about pertinent information such technological proficiency, use of internet services, the importance of various factors such as Ease of Use (EU), Perceived Usefulness (PU), and other such variables related to the Technology Acceptance Model and theory of Diffusion of Innovation described above.

Taking into account the form of the questionnaire and the need to validate the chosen scales, conducted the following statistical methods; factor analysis, regression analysis, F-tests, T-tests. The outcome will be divided into four main categories or titles: descriptive statistics, validation of scales, inferential statistics and test of hypotheses.

This paper examines and prioritizes the various factors (i.e. perceived risk, relative advantage, social norms, perceived usefulness, perceived ease of use, personal innovativeness) influencing the adoptions process of HCE. We focus on the adoption decision from the perspective of the retail banking customer, instead of the commercial bank perspective as is traditionally considered. We ask what would cause a retail customer to adopt HCE soon after its introduction. We develop a methodology of applying this extended Technology Acceptance Model to consumer adoption behaviour of HCE. In closing we present our statistical treatment of obtained data, discuss the results given thereby as well as their limitations, conclude, and acknowledge their implications for future studies.

CHAPTER 5: RESEARCH FINDINGS

Data Analysis

In total, from an approximate 1500 invitations sent, 454 responses to the survey were obtained. Of the 454 questionnaires, 39 were incomplete and hence discarded. Of the remaining 415, an additional 211 were rejected as they did not meet some of the criteria for proceeding with the questionnaire. Namely, the aforementioned questionnaires noted

that their corresponding respondents did not have any of the HCE-supported phones and do not plan to get one. Thus, 204 questionnaires were completed fully and were statistically treated in order to quantify collective attitudes towards HCE. Of the 204 acceptable questionnaires, 26 noted that while they do not have a phone that supports HCE, they do indeed plan to own one in the near future. The remaining 178 questionnaires were deemed acceptable also. Of the 204 total responses, 27 of them were obtained through vis-à-vis interviews, while the rest were obtained using the online surveying service.

Demographic factor analysis

The demographic profile of the respondents is assessed by the following factors:

Gender, age, income, education level, and occupation. In regards to gender, data shows an almost equal distribution between male and female, with 49.5% (101) of respondents being male, and 50.5% (104) being female. It is also noted that respondents between the ages of 26-35 composed the large majority of those surveyed, consisting of 47.05% (96) of total respondents. In contrast, those between the ages of 45-55, the range of which constitutes the penultimate age-bracket employed by the survey, composed the smallest percentage at 4.9% of total respondents. In terms of education, the overwhelming majority of respondents had academic experience at a university level, making up 92.16% (188) of total respondents.

Hitherto, the demographic profile indicates that those surveyed represent a primarily young and educated group. This composition was expected, as younger and more educated

individuals are generally understood to having a penchant for modern technology and innovation, such as mobile banking. In regards to income, 48.05% of respondents fall within the first two brackets, signifying that they earn less than $1500 per month. Approximately half (50.98%) of all respondents are employed as skilled labourers (Banker, Supervisor, Executive/Administrative Assistant, etc.) Finally, supplemental information was obtained; 87.25% of all respondents use a computer on a daily basis, 90.2% use a credit or debit card, and 68.63% are already enrolled in mobile banking services. A more detailed overview of the profile of the respondents is illustrated in the table below:

Demographics	Frequency	Percentage
Gender		
Male	101	49.50%
Female	103	50.50%
Age		
18-25	52	25.49%
26-35	96	47.06%
36-45	33	16.18%
46-55	10	4.90%
55 and above	13	6.37%
Occupation		
Unemployed	33	16.18%
Labour & Technical jobs	10	4.90%
Intermediate jobs	16	7.84%
Skilled Trade jobs	104	50.98%
Management & Professional jobs	41	20.10%
Income Bracket (In USD)		
Below 500	26	12.75%
Between 500 & 1500	72	35.29%
Between 1500 & 2500	64	31.37%
Between 2500 & 3500	20	9.80%
3500 & above	22	10.78%

Education		
No Certified Education	3	1.47%
Elementary Education (till 6th grade)	3	1.47%
Secondary Education (7th till 12th grade)	10	4.90%
Undergraduate student or Bachelor's degree	79	38.73%
Graduate Student or Master's degree	102	50.00%
Postgraduate student or degree	7	3.43%

Table 2: Demographic profile of respondents in terms of factors defined in the section *Determinants and Hypotheses.*

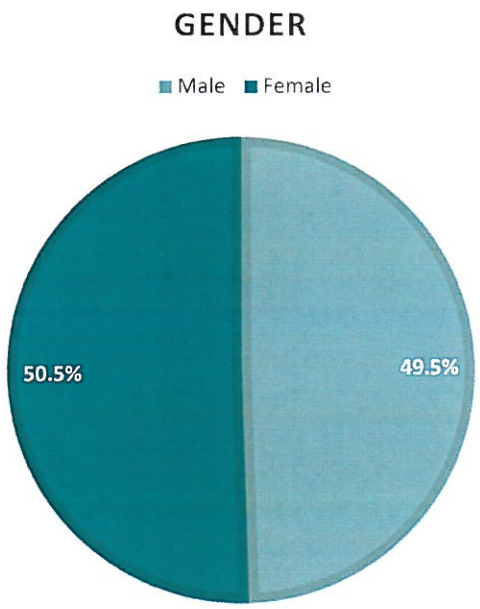

Figure 3: Pie Chart for gender distribution.

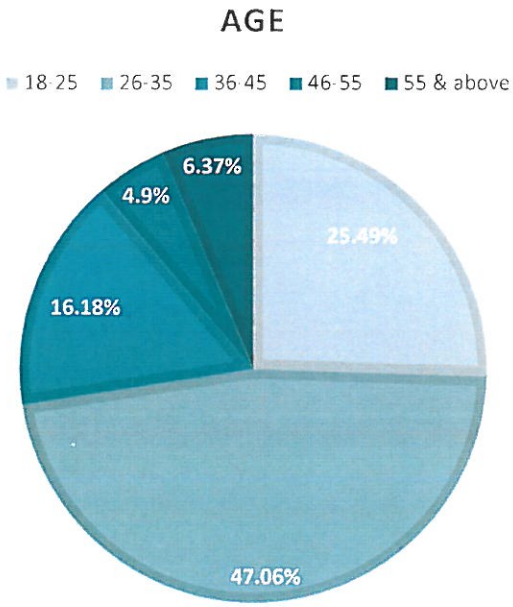

Figure 4: Pie Chart for age distribution.

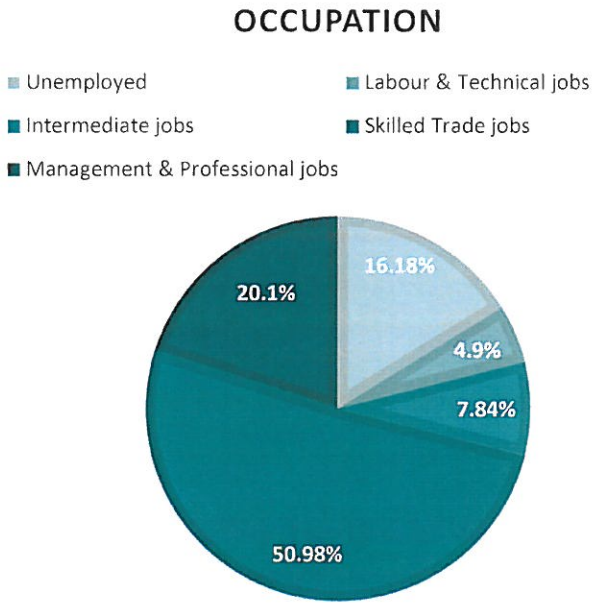

Figure 5: Pie Chart for occupation distribution.

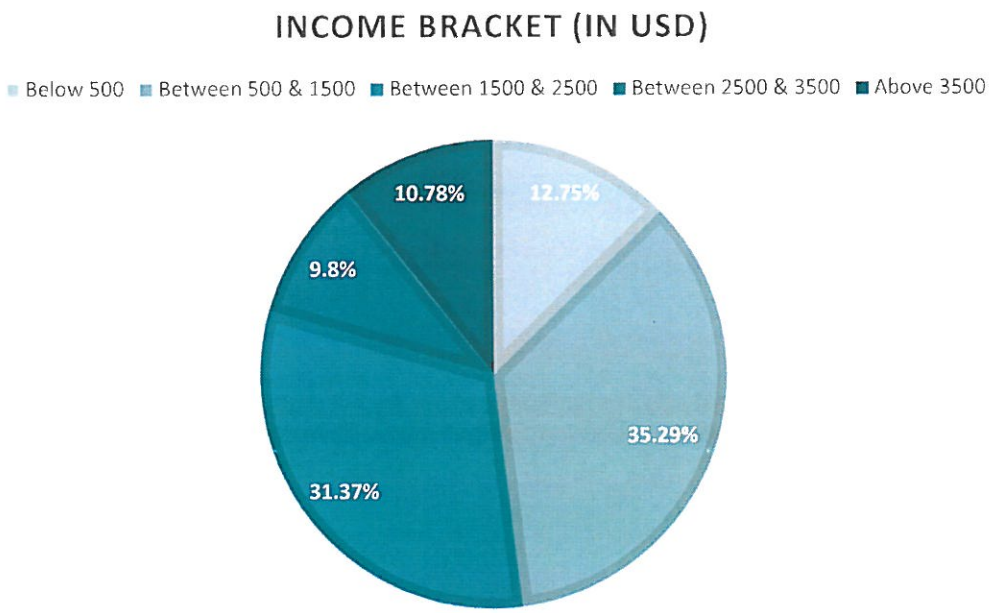

Figure 6: Pie Chart for income bracket (in USD) distribution.

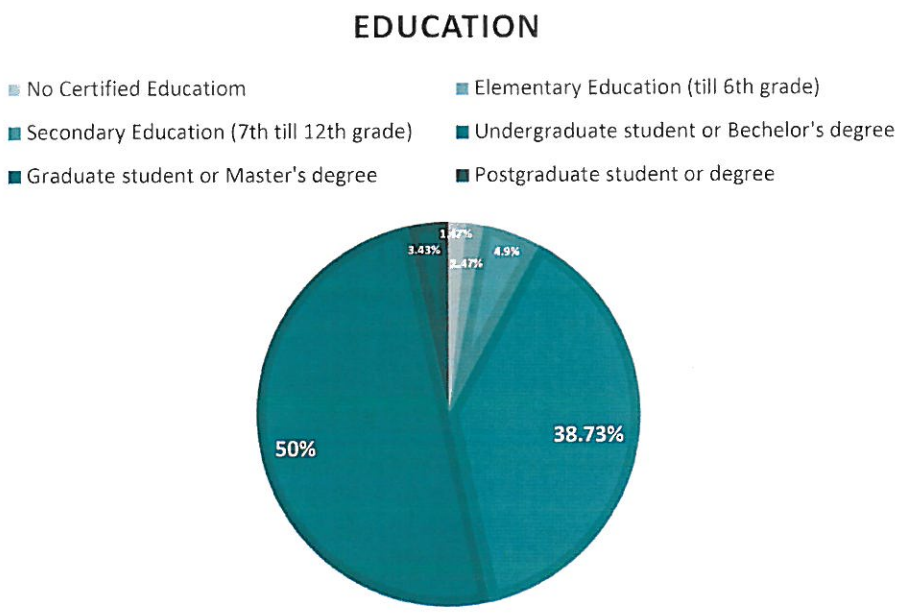

Figure 7: Pie Chart for education distribution.

Assessment of Measurement Properties

Correlation analysis was conducted using E-Views software in order to assess the relationship between the independent variables (combined their principal component). All the independent variables exhibited some degree of linearity with one another, with most of them showing a strongly positive relationship. The smallest value was recorded as being r=0.38 between the factors "Social Norms" and "Ease of Use", while the strongest was r=0.75 between the factors "Relative Advantage" and "Perceived Usefulness". All the obtained results were statistically significance as the p-values recorded were invariably $p<0.001$.

Coefficient t-Statistic Probability	PCEU	PCPI	PCPR	PCPU	PCRA	PCSN
PCEU	1 ----- -----					
PCPI	0.529658 8.830926 0	1 ----- -----				
PCPR	0.462673 7.380685 0	0.634480 11.60880 0	1 ----- -----			
PCPU	0.665274 12.60167 0	0.503539 8.242289 0	0.428456 6.705999 0	1 ----- -----		
PCRA	0.582802 10.14266 0	0.497228 8.104768 0	0.401399 6.197863 0	0.746133 15.84854 0	1 ----- -----	
PCSN	0.384492 5.890338 0	0.571804 9.856930 0	0.445546 7.038163 0	0.461200 7.350818 0	0.501326 8.193872 0	1 ----- -----

Table 3: Correlation Analysis across Independent Variables (using Principal Component).

Factors affecting the intention to adopt HCE

There are six main factors that theory suggests are important: Perceived Innovativeness (PI), Perceived Usefulness (PU), Perceived Risk (PR), Ease of Use (EU), Social Norms (SN), and Relative Advantage (RA). Each factor comprises different but related questions. PI is probed using 5 questions, PU 4 questions, PR 5 questions, EU 3 questions, SN 3 questions, RA 4 questions. Then for each factor we test whether the embodied questions are significantly related to each other by calculation the coefficient of correlation and testing its significance. Afterwards, we extract the first principal component and consider this component as a representative to each factor. Additional, some factors were considered in their moderating effect on the six main factors noted above; occupation was taken to be tested as a moderating factor on EU, education on PI, income on PU, and gender on EU, PU, and PR.

Preliminary data regarding respondent input is tabulated below in the form of percentages in terms of Likert's scale, as well as the mean and standard deviation of each question. The colour scheme is in such a way that the darker the colour, the higher the percentage and vice versa.

Factors influencing the intention to adopt HCE in Lebanon							
Variables	**Degree of Agreement in %**						
Perceived Risk	1	2	3	4	5	Mean	std. dev.
PR1	60.78	32.35	4.9	1.47	0.49	1.49	0.71
PR2	49.51	38.24	10.29	1.96	0	1.65	0.74
PR3	42.16	45.59	11.27	0.98	0	1.71	0.7
PR4	36.27	34.8	20.1	8.82	0	2.01	0.96
PR5	31.86	48.53	14.71	4.41	0.49	1.93	0.83
Average	44.12	39.90	12.25	3.53	0.20	1.76	0.79
Personal Innovativeness							
PI6	33.33	46.08	14.22	5.88	0.49	1.94	0.87
PI7	26.47	50.49	20.59	1.96	0.49	2	0.77
PI8	34.31	50	12.25	2.94	0.49	1.85	0.78
PI9	42.16	49.51	5.88	1.47	0.98	1.7	0.73
PI10	34.8	52.45	9.8	2.9	0	1.8	0.73
Average	34.21	49.71	12.55	3.03	0.49	1.86	0.78
Social Norm							
SN11	23.04	54.9	14.71	6.37	0.98	2.07	0.85
SN12	22.06	54.9	16.17	5.88	0.98	2.09	0.84
SN13	18.14	50	23.04	8.33	0.49	2.23	0.86
Average	21.08	53.27	17.97	6.86	0.82	2.13	0.85
Relative Advantage							
RA14	21.57	50.49	21.08	4.9	1.96	2.15	0.88
RA15	21.57	40.2	25	10.78	2.45	2.32	1
RA16	24.02	29.9	20.1	22.55	3.43	2.51	1.18
RA17	22.06	44.61	22.06	9.8	1.47	2.24	0.96
Average	22.31	41.30	22.06	12.01	2.33	2.31	1.01
Perceived Usefulness							
PU18	31.37	50	13.73	4.41	0.49	1.93	0.82
PU19	22.55	50.49	18.14	7.35	1.47	2.15	0.9
PU20	20.69	64.53	10.83	3.45	0.49	1.99	0.71
PU21	19.12	56.37	20.59	2.45	1.47	2.11	0.79
Average	23.43	55.35	15.82	4.42	0.98	2.05	0.81
Perceived Ease of Use							
EU22	20.69	60.1	17.24	1.97	0	2	0.68

EU23	30.88	57.84	8.82	2.45	0	1.83	0.68
EU24	32.84	55.39	9.31	2.45	0	1.81	0.7
Average	28.14	57.78	11.79	2.29	0.00	1.88	0.69
Dependent Variable							
DV26	25.49	49.51	21.57	3.43	0	2.03	0.78
DV27	15.69	28.93	39.22	14.71	1.47	2.57	0.97
DV28	6.38	18.14	38.24	28.92	8.33	3.15	1.02
Average	15.85	32.19	33.01	15.69	3.27	2.58	0.92

Table 4: Illustrative table of the statistically-treated data.

Moreover, a reliability test employing Cronbach's Alpha coefficient was conducted; a Cronbach Alpha of 0.7 or above is generally believed sufficient to accept a particular measure as reliable. All factors have a Cronbach's Alpha value above 0.77, as shown in the table below:

Construct Reliability

Variable	No of Items	Cronbach's alpha
PR	5	0.816030
PI	5	0.847019
SN	3	0.806661
RA	4	0.816228
PU	4	0.853786
EU	3	0.771299

Table 5: The reliability test for the measures of intention to adopt HCE.

a. Perceived Risk (PR)

Previous studies reveal that Perceived Risk is an important factor influencing customers' intention to adopt HCE. A plethora of studies (Chan SC. & Lu MT., 2004) (Lee K.S., 2007) (Poon W., 2008) indicates that security is a primary concern among potential customers and the population at large in matters involving mobile banking.

The influence of Perceived Risk was probed with the use of 5 questions pertaining to its nature; privacy was deemed to be the most critical factor in the adoption of HCE, with 60.78% of respondent in strong agreement regarding its importance (PR1) – the highest of any question. Furthermore, while the sample's trust in banks' reliability and helpfulness regarding their services is generally positive, the issue of monetary compensation due to security failings seems to garner some noteworthy importance; approximately 9% of respondents disagree that the bank will be willing to compensate for their losses in such a case (PR4). Of the 5 questions probing the factor of Perceived Risk, 4 had to do with respondent's relationship and perception of the bank. In this regard, the responses to the 4 questions showed a strong positive correlation with one another (questions 2-5), with the lowest being 0.5 (between PR3 and PR4) and the highest 0.7 (between PR4 and PR5); however, the first question (PR1), which had to do with privacy, was shown to only have a weak positive relationship with the remaining four, with values 0.22 and 0.34 between PR1 and PR4 and 0.34 between PR1 and PR2, respectively. The t-values were found to have a range between 3.13 and 14.02 with a p-value <0.001, meaning that the correlation between the responses is positive and highly significant statistically.

Correlation Analysis

Coefficient t-Statistic Probability	PR_1	PR_2	PR_3	PR_4	PR_5
PR_1	1 ----- -----				

PR_2	0.337116	1			
	5.089234	-----			
	0	-----			
PR_3	0.285056	0.652154	1		
	4.226766	12.22665	-----		
	0	0	-----		
PR_4	0.215048	0.517351	0.503830	1	
	3.129631	8.592168	8.289822	-----	
	0	0	0	-----	
PR_5	0.310559	0.607903	0.576455	0.702151	1
	4.643471	10.88137	10.02653	14.01553	-----
	0	0	0	0	-----

Table 6: Correlation analysis across Perceived Risk's 5 questions.

Thus, principal component analysis (PC) was conducted regarding the 5 questions having to do with PR in order to have a single indicative measure of this factor and to test the significance of PR's susceptibility to the moderating effect of gender. The first PC provides an explanation of 59.03% of the variation in the 5 questions.

Principal Component Analysis (PR)	Cumulative Value	Cumulative Proportion
1	2.951293	0.5903
2	3.800837	0.7602
3	4.374202	0.8748
4	4.719589	0.9439
5	5	1

Table 7: Principal Component Analysis for Perceived Risk.

Regarding gender's moderating effect on PR, it was found that it had a p-value of 0.34 (>0.05), and a t-statistic of 0.95 (<1.96).

Moderating Factor on PR	T-statistic	Probability	Coefficient	Std. Error
Gender	0.947608	0.3445	0.228585	0.241223
R-squared 0.004426 Adjusted R-squared -0.000503				

Table 8: Gender as moderating factor on Perceived Risk.

In effect, gender's moderating effect on PR is not statistically significant and does not explain any of the variance shown in the regression, thus we reject the below hypothesis, H1a:

H1a: Gender moderates the relation between PR and HCE adoption, with men being more risk takers than women.

Moreover, as per Table 27, the regression analysis data regarding the effect of PR on consumers' intention to adopt HCE in Lebanon shows that its effect is statistically insignificant, for it showed a p-value of 0.19 (>0.05) and a t-statistic of 1.33 (<1.96). Adjusted r^2 =0. Thus we reject the hypothesis below, H1:

H1: Perceived Risk (PR) has a negative effect on an individual's intention to adopt HCE in Lebanon.

b. Personal Innovativeness (PI)

Many studies have consistently shown that a high degree of personal innovativeness is strongly correlated with one's intention to adopt a particularly novel technology (Agarwal

R., 1998) (Hung S. Y., 2003). In order to probe this characteristic within Lebanese society, 5 questions were devised. In this regard, an average of 84% of respondents noted that they generally consider themselves consistent with the traits of personal innovativeness, with 91.67% displaying a sentiment of general agreement concerning an inclination to seek out novel technologies. In fact, the question which queried this sentiment (PI9) had the highest percentage of respondents answering with "strongly agree" in this category. Additionally, the 5 questions showed a strong positive relationship with one another; $0.43 < r < 0.63$, hence they are statistically significantly correlated. Regarding t-statistic data on question relating to PI, it is important to mention that it ranges between 6.84 and 11.5 (>1.96) between questions PI6 and PI10, and PI9 and PI10, respectively, with a p-value of <0.001, meaning that the 5 questions are statistically significant in their correlation. Hence, they may indicate the same factor.

Covariance Analysis

Correlation t-Statistic Probability	PI_10	PI_6	PI_7	PI_8	PI_9
PI_10	1 ----- -----				
PI_6	0.433855 6.843910 0	1 ----- -----			
PI_7	0.533076 8.954889 0	0.550268 9.366322 0	1 ----- -----		
PI_8	0.583452 10.21048 0	0.430357 6.776125 0	0.620297 11.23975 0	1 ----- -----	

PI_9	0.628968	0.427910	0.536844	0.575834	1
	11.49852	6.728922	9.043683	10.01037	-----
	0	0	0	0	-----

Table 9: Correlation analysis across Perceived Innovativeness's 5 questions.

To this effect, principal component analysis was conducted for the 5 questions, and the first component explains 62.73% of the variation in the 5 questions.

Principal Component Analysis (PI)	Cumulative Value	Cumulative Proportion
1	3.136596	0.6273
2	3.798148	0.7596
3	4.282103	0.8564
4	4.654781	0.9310
5	5	1

Table 10: Principal Component analysis of Personal Innovativeness.

As far as the moderating effect of education is concerned, the data showed that education indeed has a significant effect on PI, with a p-value of <0.001 and a t-statistic of -5.66 (<-1.96); The negative value is explained by the fact that the Likert scale for the questions (strongly agree, agree, neutral, disagree, strongly disagree) and the order of the education-level choices (0=no certification, 1=elementary education, 2=secondary education, 3=undergraduate, 4=graduate, 5=post-graduate) were to have an inverse relationship, i.e. people with a high level of education were expected to generally agree with the questions, while those who have little to no educational background were to predominantly disagree.

Moderating Factor on PI	T-statistic	Probability	Coefficient	Std. Error
Education	-5.657120	0	-0.795152	0.140558
R-squared 0.136763 Adjusted R-squared 0.132490				

Table 11: Education as moderating factor on Personal Innovativeness.

In effect, we fail to reject the pertinent hypothesis H2a, noted below:

H2a: Education moderates the relation between PI and HCE adoption; higher the level of education, stronger the relation between the two.

Adjusted r^2=0.1325, meaning that 13.25% of the variance is explained by education level. As education level increases the stronger becomes its moderating effect on PI. Furthermore, as per Table 27, the regression analysis data regarding the effect of PI on consumers' intention to adopt HCE in Lebanon proves that its effect is statistically significant, for it showed a p-value of 0.04 (<0.05) and a t-statistic of 2.12 (>1.96), thus we fail to reject the hypothesis H2, noted below:

H2: Personal Innovativeness (PI) has a positive effect on an individual's intention to adopt HCE in Lebanon.

c. Social Norm (SN)

Individuals often respond to normative influences to establish a favourable image in a reference group. Numerous studies have shown that Social Norms influence one's intention to adopt innovative technologies (Per E. Pedersen & Rich Ling., 2003) (Riquelme H. E. & Rios R. E., 2010). Our study, which devised 3 questions in this regard, indicates that the Lebanese population is influenced by its social circles as well as by a positive word of mouth regarding a particular technology. An average of 74% of respondents generally agree that Social Norms influence their decision in adopting HCE. Moreover, it is important to note that all the questions have a strong positive correlation with one another because r is greater than 0.5 ($r \geq 0.53$). Among the 3 questions, the t-statistic value for the linear regression analysis ranged between 8.78 and 11.93 with a p-value of <0.01, meaning that the answers to the questions is statistically significant in their correlation.

Correlation Analysis n

Coefficient t-Statistic Probability	SN_11	SN_12	SN_13
SN_11	1 ----- -----		
SN_12	0.642944 11.93080 0	1 ----- -----	
SN_13	0.577927 10.06495 0	0.525525 8.779164 0	1 ----- -----

Table 12: Correlation analysis across Social Norm's 3 questions.

Furthermore, principal component analysis was conducted for responses of the 3 questions, which showed an explanation of 72.19% of the variation in the 3 questions.

Principal Component Analysis (SN)	Cumulative Value	Cumulative Proportion
1	2.165596	0.7219
2	2.650575	0.8835
3	3	1

Table 13: Principal Component Analysis on Social Norm.

Regarding the influence of SN on consumers' intention to adopt HCE in Lebanon, as per Table 27, the relationship showed a t-statistic 0.32 (<1.96) and p-value of 0.75 (>0.05), hence we reject the hypothesis H3 shown below:

H3: Social Norm (SN) has a positive effect on consumer intention to adopt HCE in Lebanon.

d. Relative Advantage

Relative Advantage is an important driving force in the adoption of new technologies (Tang, 2001) (Anckar & D'Incau, 2002), for which 4 questions were devised; clients are more likely to adopt mobile banking if they believe that using mobile banking will grant them a relative advantage instead of using other channels of banking (Shallone K. Chitungo., 2013). Therefore, the higher the perceived relative advantage of a particular technology, the higher its chances of being adopted by consumers. Regarding our data, an

average of approximately 65% of respondents generally agree that using HCE is more convenient than other means of payment, as it does not require a signature or a replacement SIM or CHIP card. Moreover, only 55% of respondents generally agree that they are more likely to forget their credit cards than their phones (RA16). The compiled data regarding the effect of RA showed a t-statistic range between 5.07 and 13.02 between RA14 and RA16, and RA15 and RA17, respectively, with a p-value of <0.01, meaning the answers to the questions are statistically significant.

Correlation Analysis				
Coefficient t-Statistic Probability	**RA_14**	**RA_15**	**RA_16**	**RA_17**
RA_14	1 ----- -----			
RA_15	0.624633 11.36829 0	1 ----- -----		
RA_16	0.335694 5.065020 0	0.483973 7.860451 0	1 ----- -----	
RA_17	0.546362 9.271403 0	0.675440 13.01819 0	0.571247 9.891764 0	1 ----- -----

Table 14: Correlation analysis across Relative Advantage's 4 questions.

Furthermore, principal component analysis was conducted for the 4 questions, and the first component explains 65.81% of the variation in the 4 questions.

Principal Component Analysis (RA)	Cumulative Value	Cumulative Proportion
1	2.632542	0.6581
2	3.319608	0.8299
3	3.694981	0.9237
4	4	1

Table 15: Principal Component Analysis of Relative Advantage.

Moreover, as per Table 27, the effect of RA on consumers' intention to adopt HCE in Lebanon, H4, was shown to be significant, because the t-statistic is 5.13 (>1.96) and the p-value <0.01, thus we fail to reject the hypothesis, shown below:

H4: Relative Advantage (RA) has a positive effect on consumer intention to adopt HCE in Lebanon.

e. Perceived Usefulness

Many studies have corroborated the notion that Perceived Usefulness (PU) has a significant effect on consumers' intention to adopt novel technologies (Dasgupta Siddhartha, 2011) (Rahmath Safeena, 2012). In our study, probing the usefulness and benefits of HCE (PU20) recorded the highest percentage of respondents who agreed with the pertinent question (64.53%). The answers to the 4 questions showed a t-statistic range between 0.53 and 0.67 between PU19 and PU20, and P18 and P19, respectively, with a p-value of <0.001, hence they are strongly positively correlated.

Correlation Analysis				
Coefficient t-Statistic Probability	**PU_18**	**PU_19**	**PU_20**	**PU_21**
PU_18	1 ----- -----			
PU_19	0.672882 12.89590 0	1 ----- -----		
PU_20	0.598159 10.58224 0	0.530418 8.870651 0	1 ----- -----	
PU_21	0.628252 11.44846 0	0.568828 9.805405 0	0.588967 10.33220 0	1 ----- -----

Table 16: Correlation analysis across Perceived Usefulness's 4 questions.

In effect, principal component analysis was conducted for the 4 questions, and the first principal component explains 69.89% of the variation in the 4 questions.

Principal Component Analysis (PU)	Cumulative Value	Cumulative Proportion
1	2.795552	0.6989
2	3.283932	0.8210
3	3.687275	0.9218
4	4	1

Table 17: Principal Component Analysis on Perceived Usefulness.

The effect of gender as a moderating factor on PU is statistically insignificant, as it showed a t-statistic of 1.34 (<1.96) and a p-value of 0.18 (>0.05).

Moderating Factor on PU	T-statistic	Probability	Coefficient	Std. Error
Gender	1.340541	0.1816	0.314788	0.234822
R-squared 0.008861 Adjusted R-squared 0.003930				

Table 18: Gender as moderating factor on Perceived Usefulness.

Hence gender cannot explain the variance noticed in the regression; in effect, we reject hypothesis H5a, shown below:

H5a: Gender moderates the relation between PU and HCE adoption, with men being more concerned about usefulness than women.

Regarding the moderating effect of income on PU, linear regression data shows a t-statistic of 0.08 (<1.96) with a p-value <0.93 (>0.05), meaning that it is statistically insignificant.

Moderating Factor on PU	T-statistic	Probability	Coefficient	Std. error
Income-Bracket	0.082861	0.9340	0.008539	0.103052
R-squared 0.000034 Adjusted R-squared -0.004941				

Table 19: Income-Bracket as moderating factor on Perceived Usefulness.

Also, EU showed an adjusted r^2 of 0, meaning that income does not explain any of the variation seen in the regression. Thus, we reject the hypothesis H5b:

H5b: Income moderates the relation between PU and HCE adoption; higher the level of income, stronger the relationship between the two.

Finally, as per Table 27, linear regression analysis data regarding the effect of PU on consumers' intention to adopt HCE in Lebanon is statistically insignificant, with a t-statistic of 1.05 (<1.96) and a p-value of 0.29 (>0.05), thus we again reject the hypothesis, H5, shown below:

H5: Perceived usefulness (PU) has a positive effect on consumer intention to adopt HCE in Lebanon.

f. Perceived Ease of Use

Perceived Ease of Use (EU), which is of central importance in the Technology Acceptance Model, has time and time again shown to be a major factor in the adoption process of new technologies (Mohammad Alafeef, 2011) (Rahmath Safeena, 2012). Firstly, questions 22 and 25, which essentially ask the same question, were devised in order to assess respondents' reliability and consistency in their answers. As previously defined, EU is a particular task's easiness and effortlessness. The correlation coefficient between the aforementioned two questions was r=0.68 with a p-value of $p<0.001$, meaning that the two questions are strongly correlated and statistically significant. In effect, the respondents' answers are taken to be valid and consistent. Furthermore, since questions 22 and 25 essentially are of a similar nature, and hence redundant for study, question 25 was arbitrarily removed during the statistical treatment of the data.

Correlation Analysis		
Coefficient t-Statistic Probability	**EU_22**	**EU_25**
EU_22	1 ----- -----	
EU_25	0.684596 13.31531 0	1 ----- -----

Table20: Correlation analysis between 2 Ease of Use questions; EU22 & EU 25.

An average of 86% of respondents generally agree that EU is an important factor in their decision to adopt HCE. In fact, all 3 questions pertaining to EU failed to record strong disagreement among respondents, perhaps indicating that the Lebanese people absolutely covet simplicity and clarity in HCE applets. All the questions were shown to exhibit a strongly positive relation with one another ($r>48$) and recorded to be statistically significant ($p<0.001$). The correlation between the questions displayed a range between $r=0.48$ and $r=0.6$, between questions EU22 and EU24, and EU23 and EU24, respectively, with a p-value of <0.01.

Correlation Analysis			
Coefficient t-Statistic Probability	**EU_22**	**EU_23**	**EU_24**
EU_22	1 ----- -----		

EU_23	0.501967	1	
	8.228372	-----	
	0	-----	
EU_24	0.481640	0.603142	1
	7.791725	10.72048	-----
	0	0	-----

Table 21: Correlation analysis across Ease of Use's 3 questions.

In effect, principal component analysis was conducted, which showed an explanation of 68.66 % of the variation in the 4 questions.

Principal Component Analysis (EU)	Cumulative Value	Cumulative Proportion
1	2.059689	0.6866
2	2.6041583	0.8681
3	3	1

Table 22: Principal Component Analysis of Ease of Use.

Regarding the moderating effect of occupation on EU, while considering only those who use a computer on a daily basis, linear regression data shows a t-statistic of -3.96 (<-1.96) with a p-value <0.001, meaning that it is statistically significant.

Moderating Factor on EU	T-statistic	Probability	Coefficient	Std. Error
Occupation	-3.956949	0.0001	-0.346290	0.073067
R-squared 0.082123 Adjusted R-squared 0.076878				

Table 23: Occupation as moderating factor on Ease of Use.

Also, EU showed an adjusted r^2 of 0.077, meaning that 7.7% of the variance is explained by educational level. In effect, we fail to reject the hypothesis H6b, shown below:

H6b: Occupation moderates the relation between PEoU and HCE adoption, where those whose occupational responsibilities involve computer literacy are more likely to adopt HCE than those whose occupation does not.

Furthermore, data shows that the moderating effect of gender on EU is statistically insignificant, having an adjusted r^2 of 0, with a p-value of 0.39 (>0.05) and a t-statistic of 0.86 (<1.96).

Moderating Factor on EU	T-statistic	Probability	Coefficient	Std. Error
Gender	0.855859	0.3931	0.172962	0.202092
R-squared 0.003631 Adjusted R-squared -0.001326				

Table 24: Gender as moderating factor on Ease of Use.

Effectively, gender does not explain the variance in the regression and hence we reject the hypothesis H6a, noted below:

H6a: Gender moderates the relation between PEoU and HCE adoption, with women being more concerned about ease of use than men.

Finally, the effect of EU on consumers' intention to adopt in Lebanon is statistically significant (Table 27), as linear regression analysis resulted in a t-statistic of 2.23 (>1.96) and a p-value of 0.03 (<0.05). Thus, we fail to reject the hypothesis H6, seen below:

H6: Perceived Ease of Use (PEoU) has a positive effect on consumer intention to adopt HCE in Lebanon.

g. Dependent Variable

In our study, the dependent variable dealt with respondents' current and prospective use of HCE; three questions were asked in this regard, and unlike the independent variables, the answers were relatively inconsistent with previous patterns recorded throughout the questionnaire. For example, this category recorded the highest percentage of neutral respondents on average, as well as those with sentiments of general disagreement, with 33.01% and 18.95% respectively. Moreover, 75% of respondents generally agreed that they are willing to use HCE in the near future. However, this figure drops to approximately 45% when respondents were asked if they will use HCE in their next payment, with 39.22% adopting a neutral attitude. Regarding the last question which asked respondents whether or not they have any doubts about using HCE, 24.52% of respondents generally agreed that they do, 38.24% were neutral, and 37.25% generally disagreed. DV28 showed a negative correlation with the other two questions, DV26 and DV27 with r=-0.41 and r=-0.31 respectively, signifying that the respondents were genuine in their answers. The answers were statistically significant in their correlation with a p-value of <0.001.

Correlation Analysis			
Coefficient **t-Statistic** **Probability**	**DV_26**	**DV_27**	**DV_28**
DV_26	1 ----- -----		
DV_27	0.645868 12.02375 0	1 ----- -----	
DV_28	-0.407026 -6.333277 0	-0.308711 -4.612915 0	1 ----- -----

Table 25: Correlation analysis across Dependent Variable's 5 questions.

Furthermore, principal component analysis was conducted, which showed an explanation of 64.13 % of the variation in the 3 questions.

Principal Component Analysis (DV)	Cumulative Value	Cumulative Proportion
1	1.924001	0.6413
2	2.656382	0.8855
3	3	1

Table 26: Principal Component Analysis on Dependent Variable.

Additionally, the results of the linear regression analyses regarding the effect of the principal component of each independent variable on consumer's intention to adopt HCE in Lebanon is illustrated in the table below:

Dependent Variable: PCDV				
Variable	**t-Statistic**	**Probability**	**Coefficient**	**Std. Error**
PCEU	2.229816	0.0269	0.149754	0.067160
PCPI	2.118413	0.0354	0.120938	0.057089
PCPR	1.327402	0.1859	0.069113	0.052067
PCPU	1.051345	0.2944	0.071596	0.068100
PCRA	5.127697	0.0000	0.338104	0.065937
PCSN	0.324322	0.7460	0.019157	0.059068
R-squared				
0.537218				
Adjusted R-squared				
0.522979				

Table 27: Regression Analysis of PCDV across Independent Variables.

In effect, it is important to note that the prospective use of HCE lies in shifting those who hold a neutral attitude regarding its usage. To further attest our findings, a Wald Chi-Squared Test was performed; three of the insignificant independent variables were in concomitance (PR, PU, and SN) shown to be insignificant in their effect on the dependent variable, having a p-value of 0.35 (>0.05).

Wald Test DV	
	Probability
F-statistic	0.3523
Chi-square	0.3496
Null Hypothesis: C(PR)=C(PU)=C(SN)=0	

Table 28: Wald Test on the Dependent Variable.

Additionally, three of the significant independent variables (EU, PI, and RA) were in concomitance shown to be significant in their effect on the dependent variable. The t-statistic values for EU, PI, and RA were 3.16, 3.59, and 7.16, respectively with a p-value

of <0.05 for all three. Adjusted r^2=0.52, meaning that 52% of the variance is explained by these three factors.

Dependent Variable: PCDV				
Variable	**t-Statistic**	**Probability**	**Coefficient**	**Std. Error**
PCEU	3.155829	0.0018	0.193502	0.061316
PCPI	3.589843	0.0004	0.168209	0.046857
PCRA	7.161358	0.0000	0.380083	0.053074
R-squared				
0.527703				
Adjusted R-squared				
0.520583				

Table 29: Regression Analysis of statistically significant independent variables on the Dependent Variable.

Finally, the principal component of each independent factor was on its own right probed in its significance for each of the questions pertaining to the dependent variable.

***DV26*: "I intend to use HCE in the future"**

A regression analysis was conducted and showed that factors EU, PI, and RA were significant with t-statistic values of 3.15, 2.72, and 3.68 (>1.96) respectively and a p-value of <0.001 for all factors. Factors PR, PU, SN, were shown to be insignificant, with t-statistic values of 0.87, 1.29, 0.04 and p-values of 0.38, 0.2, and 0.97 (>0.05) respectively.

Dependent Variable: DV-26				
Variable	**t-Statistic**	**Probability**	**Coefficient**	**Std. Error**
PCEU	3.154840	0.0019	0.121449	0.038496
PCPI	2.718381	0.0072	0.088954	0.032723
PCPR	0.871189	0.3847	0.026000	0.029845
PCPU	1.287488	0.1995	0.050257	0.039035
PCRA	3.683557	0.0003	0.139220	0.037795
PCSN	0.039668	0.9684	0.001343	0.033858
R-squared				
0.518148				
Adjusted R-squared				
0.503322				

Table 30: Regression Analysis of independent variables on the DV26.

To further attest our findings regarding the insignificant factors (PR, PU, and SN), a Wald Chi-Squared Test was performed, which registered a p-value of 0.46 (>0.05) once again proving that they are insignificant.

Wald Test DV-26	
	Probability
F-statistic	0.4645
Chi-square	0.4627
Null Hypothesis: C(PR)=C(PU)=C(SN)=0	

Table 31: Wald test on DV26.

As noted, EU, PI, RA were significant; to this effect, the three factors were similarly tested in concomitance regarding their effect on DV26, which produced t-statistic values of 4.18, 3.97, 5.47 respectively, and a p-value of <0.01.

Dependent Variable: DV-26				
Variable	**t-Statistic**	**Probability**	**Coefficient**	**Std. Error**
PCEU	4.184242	0.0000	0.146630	0.035043
PCPI	3.966604	0.0001	0.106225	0.026780
PCRA	5.472711	0.0000	0.166005	0.030333
R-squared				
0.511084				
Adjusted R-squared				
0.503713				

Table 32: Regression Analysis of statistically significant independent variables on the DV26.

These independent variables showed an adjusted r^2 of 0.5037, meaning that 50.37% of the variance is explained by EU, PI, and RA, i.e. intention to adopt HCE in the foreseeable future is under the direct influence of these three factors.

DV27: *"I will use HCE in my next POS payment"*

A regression analysis was conducted and showed that factors RA and SN were significant with t-statistic values of 3.66 and 2 respectively and a p-value of <0.05 for all factors. Factors EU, PI, PR, and PU were shown to be insignificant, with t-statistic values of 0.93, 1.06, 0.46, and 0.99 and p-values of 0.35, 0.29, 0.15 and 0.32 (>0.05) respectively.

Dependent Variable: DV-27				
Variable	**t-Statistic**	**Probability**	**Coefficient**	**Std. Error**
PCEU	0.929147	0.3540	0.048881	0.052609
PCPI	1.059709	0.2906	0.047390	0.044720
PCPR	1.455967	0.1470	0.059383	0.040786
PCPU	3.655360	0.0003	0.188802	0.051651
PCRA	2.002750	0.0466	0.092667	0.046270
PCSN	0.989382	0.3237	0.052779	0.053345

R-squared	
0.416979	
Adjusted R-squared	
0.399040	

Table 33: Regression Analysis of independent variables on the DV27.

However, after conducting the Wald Chi-Squared Test, only three factors were shown to be insignificant, which are EU, PI, and PU, with a p-value of 0.17 (>0.05).

Wald Test DV-27	
	Probability
F-statistic	0.1770
Chi-square	0.1733
Null Hypothesis: C(EU)=C(PU)=C(PI)=0	

Table 34: Wald Test on DV27.

To this end, PR, RA, and SN were significant; the three factors were similarly tested in concomitance regarding their effect on DV27, which produced t-statistic values of 2.7, 6.63, and 2.69 respectively, and a p-value of <0.01 for all three factors.

Dependent Variable: DV-27				
Variable	**t-Statistic**	**Probability**	**Coefficient**	**Std. Error**
PCPR	2.702852	0.0075	0.095392	0.035293
PCRA	6.625179	0.0000	0.256338	0.038691
PCSN	2.686894	0.0078	0.117228	0.043630
R-squared				
0.405021				
Adjusted R-squared				
0.396096				

Table 35: Regression Analysis of statistically independent variables on the DV27.

These independent variables showed an adjusted r^2 of 0.396, meaning that 39.6% of the variance is explained by PR, RA, and SN, i.e. the usage of HCE is under the direct influence of these three factors.

DV28: *"I have doubt in using HCE"*

A regression analysis was conducted and showed that only one factor, RA, is significant, with a t-statistic value of -3.46 and a p-value of <0.01. The rest of the factors were deemed to be insignificant as their t-statistic value ranged between -0.45< t < 1.43 and the p-value between 0.15 < p < 0.94 (>0.05).

Dependent Variable: DV-28				
Variable	**t-Statistic**	**Probability**	**Coefficient**	**Std. Error**
PCRA	-3.457575	0.0007	-0.226371	0.065471
PCEU	-0.645735	0.5192	-0.043061	0.066686
PCPI	-0.706754	0.4806	-0.040063	0.056686
PCPR	-0.446915	0.6554	-0.023105	0.051699
PCPU	0.069937	0.9443	0.004729	0.067619
PCSN	1.431357	0.1539	0.083950	0.058651
R-squared				
0.157311				
Adjusted R-squared				
0.131382				

Table 36: Regression Analysis of independent variables on the DV28.

The Wald Chi-Squared Test confirms the results above, with a value above 0.6.

Wald Test DV-28	
	Probability
F-statistic	0.6473
Chi-square	0.6469
Null Hypothesis: C(EU)=C(PU)=C(PI)=C(PR)=C(SN)=0	

Table 37: Wald Test on DV28.

In effect, the linear regression of RA's principal component regarding question DV28 produced a t-statistic value of -5.68 (<-1.96) and a p-value of <0.01. The negative value is due to the nature of the question asked; disagreement would produce a negative value while agreement would produce a positive one. Hence, the negative value obtained herein is indicative of a sentiment of disagreement regarding consumers' doubt in using HCE.

Dependent Variable: DV-28				
Variable	**t-Statistic**	**Probability**	**Coefficient**	**Std. Error**
PCRA	-5.679187	0.0000	-0.232909	0.041011
R-squared 0.137685 **Adjusted R-squared** 0.133416				

Table 38: Regression Analysis of statistically significant independent variable on the DV28.

The factor RA showed an adjusted r^2 of 0.133, meaning that 13.3% of the variance is explained by RA, i.e. doubt in using HCE is directly affected by relative advantage.

After such extensive statistical analysis of the various factors involved, RA was consistently shown as being the dominant factor in its influence on the dependent variable, the intention to use HCE. Similarly. Factor PU were invariably insignificant in this regard.

CHAPTER 6: EVALUATION OF RESEARCH FINDINGS

Discussion

To recapitulate, our study selected the factors of Relative Advantage, Perceived Risk, Perceived Usefulness, Social Norm, Ease of Use, and Personal innovativeness as the main determinants of consumer intention. Additionally, four moderating factors were selected; gender, income, education, and occupation.

a. Perceived Risk

Perceived Risk was not found to be a significant factor in consumer's intention to adopt HCE in Lebanon. However, similar to Social Norm, it becomes a significant influence in consumer behaviour beyond the point of adoption; while it is not significant in consumer's intention to adopt HCE, it plays a significant role in driving consumer usage of the service. This can be explained by considering the possibility that users reported an overwhelming sense of disagreement regarding the potential of the bank to reimburse any financial losses resulting from malevolent usage of the payment method or theft of financial information.

Furthermore, gender was taken as a moderating factor on Perceived Risk; in this regard, it was found to be insignificant. This can be possibly explained by the notion that males and females in Lebanese society have similar risk-aversion profiles regarding novel technologies.

b. Personal Innovativeness

Numerous prior studies (Agarwal R., 1998) (Hung S. Y., 2003)found that personal innovativeness has a largely positive influence on the adoption of novel mobile banking technologies. In this study, our finding concurred with such studies in that personal innovativeness was found to be a significant factor influencing consumer behaviour. This means that consumers with higher level of personal innovativeness are more likely to explore new venues of technological novelty and more likely to adopt them. Indeed, the Theory of Diffusion of Innovation deals with the characterization of such individuals at length; they are the trend setters and fashionistas of society, constantly trying new products and initiating social trends. They tend to gravitate toward the helm of consumerist social trends, and effect social behaviour henceforth.

Additionally, education is oftentimes considered as a moderating factor for personal innovativeness. Indeed, an educated community is better at adopting novel mobile banking technologies (Mattila M., 2003). This holds true in our study as well, as people with higher levels of education showed higher levels of personal innovativeness. This data is promising, as Lebanon holds a relatively high rate of literacy of approximately 94% (UNESCO, 2015) . All in all, the proposition that high levels of personal innovativeness, moderated by education, is generally indicative of adoptive consumer behaviour, is sound and firm in its consistency.

c. Social Norm

The factor of Social Norm was largely insignificant in its influence on consumers' intention to adopt HCE. However, in terms of its influence on the actual usage of HCE, it was found to be significant. Individuals often respond to social-normative influences to establish a favourable image of themselves in a reference group. Hence, it is important to note that while Social Norm is not particularly significant on the adoption process, consumers who are unsure of using this service are likely to be dependent on others' opinions and perception when using it.

d. Relative Advantage

The factor of Relative Advantage was invariably shown to be the most significant factor in consumers' intention to adopt HCE. Consumers are more likely to adopt novel technologies particularly if they provide high relative advantage as compared to other traditional banking channels. This result highlights that the Lebanese are more likely to adopt HCE if it is deemed to be superior to other modes of payment, in particular credit cards, and holds greater value.

e. Perceived Usefulness

The factor of Perceived Usefulness was found to be insignificant in consumers' intention to HCE, in contrast with most of the literature. Additionally, its allotted moderating factor, income, was similarly found to be insignificant. A possible explanation for this

could be Lebanese people's circumstantial unconditional affinity to novel products regardless of its perceived usefulness. Moreover, income being insignificant as a moderating factor can possibly be attributed to the already persistent trend of procuring instalment or low-value loans.

Additionally, gender was likewise shown to be insignificant as a moderator of Perceived Usefulness.

f. Perceived Ease of Use

In light with other studies (Davis, 1989) (Rahmath Safeena, 2012), Ease of Use was found to be a significant factor on respondents' intention to adopt HCE in Lebanon. Effectively, the easier is perceived the applet or the technology itself, the higher the likelihood of its adoption. This is particularly important for novel technologies, as a sense of effortlessness in use is essential in providing an attractive user experience.

Occupation was taken as a moderating factor for Ease of Use; our results show that if a certain individual's occupation involves the daily use of computers, he or she finds a relatively higher ease of use regarding the product, and hence more likely to adopt it.

Gender was taken as a moderating factor also; our results show that gender is not a significant moderating factor of Ease of Use. This finding contradicts previous research. A possible explanation for this could be that in Lebanese society, men and women are equally well-versed in the usage of mobile applets or are comparable in their perspicacity regarding mobile payment methods.

CHAPTER 7: IMPLICATIONS OF STUDY

Research Implications

One primary aspect of behavioural research is the investigation of the factors that influence consumer reception and the response to new goods and services. In this regard, a multitude of situational approaches have been adopted in consumer research with understandably varying results. The goal of our current study is to combine and extent the Technology Acceptance Model and Theory of Diffusion of Innovation and hope to ascertain the factors that best reflect the reality of the Lebanese reaction to novel technologies. In our case, the technology in question is termed HCE, which is a method of wireless payment destined to supersede credit cards. There have been many a studies employing the aforementioned factors and experimental settings to try and better understand large-scale consumer behaviour (Poon W., 2008) (Riquelme H. E. & Rios R. E., 2010) (Rahmath Safeena, 2012); however, their findings have been inconsistent, or rather, consistent in their inconsistency. What is meant in this regard is that the findings are acknowledged as not being applicable or truly reflective of consumer behaviour on a global scale, or even a regional scale. Rather, it seems that different cultures gravitate towards different factors as the driving factors in adopting new technologies. In this regard, we can say that at the very least, our results are applicable to Lebanon, and at most, possibly, to the greater Middle East and North Africa region, assuming a comparable socioeconomic environment.

Theoretical Implications

From a theoretical standpoint, the study was successful in its aim to produce a reflective image of consumer behaviour regarding the adoption of HCE, and by extension, of novel technologies. In this sense, it refined the previous models in their investigative ability regarding technologies relating to wireless mobile payment methods. Our study dispelled the potency or even requirement of certain factors, while corroborating and solidifying that of others.

The results of our study showed that out of the six selected factors, only three were significant in consumers' intention to adopt HCE in Lebanon. Namely, the factors of Relative Advantage, Ease of Use, and Personal Innovativeness; in this regard, Perceived Usefulness, Social Norms, and Perceived Risk showed to be inconsequential. Furthermore, during regression analyses of the six noted factors regarding the extent of their influence on the dependent variable (DV26, DV27 and DV28), which is consumers' intention to adopt HCE, the factor of Relative Advantage was consistently shown as being significant. Interestingly, the factors of Social Norm and Perceived Risk were further shown to be significant in one particular question probing consumer behaviour; when respondents were asked if they were likely to use HCE in their next POS payment, along with, of course, Relative Advantage. This interesting finding has already been expanded in the *Discussion* section above. Moreover, this study provides a robust scaffold on which future research can be based on, for it expounds consumer behaviour in a region largely ignored by relevant research. In this sense, it provides original content and contributes to filling the lacuna in this area of study. It can be used as a basis to

conduct further research into consumer behaviour in the MENA region, ideally with a larger sample population to corroborate or refine the accuracy of these findings.

Managerial Implications

From a practical standpoint, it is of paramount importance to design effective strategies that are of a commensurately dynamic nature as the ever-changing behaviour of the consumer. It is important to reshape, refine, and adapt to the changing attitudes of the targeted consumer. Generally, banks must accept that HCE is simply another method of wireless mobile payment that customers can use to handle their finances. Consumers, naturally, will come to accept novel technology depending on various factors that most influence their decision to do so. In this regard, relative advantage is by far the most important, followed by Ease of Use and Personal Innovativeness. With the massive investment in developing mobile banking facilities, the varieties of convenient functions offered by mobile banking has greatly encouraged consumers to adopt their usage.

There are various suggestions of considerable importance that could be employed by banking institutions to accelerate the adoption of HCE and materialize its success as a pervasive mode of payment. Firstly, banks should emphasize the benefits of using HCE over alternative methods of payment. Relevant benefits include the particularly convenient facets of the service such as the lack of the requirement for signatures, faster processing, and its incorporation into a device more ubiquitous than anything, the smartphone, and potentially, its permissive social aspect of paying for goods of low value for which other methods, such as credit card or cheque, are less than desirable. This is the

case since the present study shows that relative advantage is an important factor driving the potential adoption of HCE. In this regard, HCE seems to appeal to consumers in its capacity to reduce payment times and convenience (RA15, RA16, RA17).

Additionally, adopting HCE would reduce overhead and expenditure if its adoption would minimize costs of dealing with credit card issuers (Prakash N., 2005). This, of course, requires first the successful adoption of HCE.

In regards to the relevant factors influencing consumer adoption of HCE, the study shows that it is important to capitalize on Ease of Use, Personal Innovativeness, and most importantly, Relative Advantage. Additionally, in terms of the actual and sustained usage of HCE, the factor of Social Norm and Perceived Risk were shown to be significant and hence to be highlighted to that effect.

Also, there should be a marketing campaign to raise awareness regarding the introduction of HCE in Lebanon, as marketing conveys to customers that a specific service is available and persuades them of the benefits it is able to provide, as well as motivates customers to act (Michael D. Clemes, 2012). Such marketing should emphasize on the aforementioned factors.

A mobile banking service that is consistent with customer's existing beliefs, lifestyle, values, and past experiences, makes the adoption process faster and easier (PI6, PI7, PI8, PI9, PI10).

To attract more users and encourage the adoption of HCE, banks should develop the connecting applet with ease of use in mind, since the latter was shown as being a significant factor in driving consumer adoption. Moreover, personal bankers at branches

should provide guidance brochures, or even demonstrations, in order to prove the extent of ease involved in using the applet. This is because of an effective marketing campaign is necessary to raise awareness of a certain product's availability. Furthermore, personal bankers is considered the backbone of communication in service marketing, and provides costumers reassurance about their decision. (Michael D. Clemes, 2012). This was also corroborated in the study in questions EU22, EU23, EU24, which were significant. Hence, it can be said that customer service is an important aspect in the successful adoption of HCE.

In effect, the focus of advocates and practitioners should be twofold; any effort taken to encourage the adoption of HCE should not only focus on one aspect of HCE. That is to say, both the advantages of using HCE as a payment method and the ease of use relating to the HCE application should be delivered to the consumer.

Additionally, because HCE is newly introduced in Lebanon, consumers prefer to first fully understand what it has to offer as a new service before adopting it.

It is important for service providers to project higher security when providing mobile banking technology in order to yield higher consumer acceptance. Banks and service providers should continuously innovate and offer better security and reliable applications to enhance users' confidence towards mobile banking services in specific and the bank in general (Lee, 2009) (Riquelme H. E. & Rios R. E., 2010) (Rahmath Safeena, 2012).

Finally, it is important to make it so that the general environment is permissive in allowing these factors in being the only ones relevant in driving consumer behaviour (Fereshteh Farzianpour, 2014). To elaborate, directors, managers, and relevant lobbying

groups should encourage the government to legislate regulations in order to waiver any legal or communication barriers that would hinder the new technology's succession independent of consumer behaviour. In this regard, Appendix 3 is an excerpt from the Central Bank of Lebanon's mandate in its original Arabic language that covers the operational and legal guidelines and procedural details concerning the conception, implementation, and extent of all that pertains to HCE and payments that derive therefrom.

CHAPTER 8: CONCLUSION

Conclusion

As smartphones become more versatile and more ubiquitous especially in the financial services industry, they can play a significant role in the interaction between customers and banks. Moreover, it is highly recommended that financial institutions adopt new technologies that improve their cost structure, their efficiency and most importantly heighten their competitive position, particularly in Lebanon where banks constitute one of the major pillars of the country's economy. Thus, we can say that our research can provide advantageous knowledge to banks as well as to service developers in enhancing consumer's intention to adopt HCE in Lebanon. HCE is a promising payment method given consumers' desire for convergence products and innovative technologies, but its implementation and success in Lebanon remains to be seen. Banks should accentuate the need and convenience of using HCE over traditional modes of payment, and should do so

for their benefit and for that of their customers by means of reducing operational overhead, enhancing customers' experience, providing convenience, and generally embracing the age of technology. This paper outlines the factors that most influence consumers' intention to adopt HCE in Lebanon and provides salient suggestions to drive its success.

Limitations

Firstly, the collection of data concerning the quantitative properties of the factors probed regarding consumer intention towards HCE was undertaken at a specific time-frame, ergo the data collected is only valid for that time reference. It is recommended to conduct another such study in the near future after proper effort and investment is executed regarding the adoption of the suggestions drawn in this study, as well as other corporate considerations, so that the future institutional policies are in line with the dynamic attitudes within the population. This is especially prudent given that HCE is a relatively novel technology having relatively little exposure to the public. Secondly, the effects of six factors were investigated; however, more factors can be taken into consideration in future studies, factors such as trialability and compatibility in order to have a more comprehensive understanding of consumer intention to adopt. Thirdly, in order for the study to procure a significant number of respondents, compromises regarding the scope, extent, redundancy, and number of questions involved were limited in order to minimize respondent fatigue and premature termination of the survey. Furthermore, the online

survey method and snowball sampling, while controlled to a certain extent, may not be properly representative of the entire Lebanese population.

Finally, intention to adopt needn't necessarily reflect a causal relationship with actual adoptive behaviour. In effect, a retrospective study should be conducted in order to address this facet of the research.

Avenues for Future Research

A research should always be up-to-date because of the dynamic behaviour of consumer attitude and therefore such a study should be conducted again and ideally with a much larger sample size and perhaps even additional or different factors depending on the market attitude of that time. Factors such as perceived quality, trialability, geography (rural/urban), or ones that are culture-specific may bring about interesting findings that could expand our understanding of consumer behaviour regarding the adoption of novel finance-related technologies in Lebanon. Last but not least, it is worth mentioning that there still remains a lot to learn about consumer behaviour towards mobile banking in a developing country such as Lebanon.

CHAPTER 9: LIST OF APPENDICES

Appendix 1

Questionnaire

This questionnaire is to be used in full confidentiality for the purpose it is to be collected for. Namely, to support research for a Master's degree for which the thesis is regarding the adoption of Host Card Emulation (HCE) technology in Lebanese society.

HCE is a new technology allowing users to make payments using their android phones, in a way that is faster and more convenient than credit cards.

HCE is securely linked to one's Credit or Debit card. It is used to pay bills just by a single tap of the phone to the POS terminal without any further interaction such as signatures or physical cards. The setup and service are free, and simply need one to take a picture of the relevant card, using the app associated with the service. It is just a mobile application that should be downloaded; no need to change the SIM card or embed a chip in the phone. The app can be used offline, locally, and even abroad.

The survey will take approximately 5 minutes of your time. Your assistance will be highly appreciated and will be the driving force behind innovations in the Lebanese banking sector and a means to improve customer satisfaction.

Do you own one of the mobiles below?

- Yes
- No

If No, are you planning to own one of the mobiles listed below?

- Yes
- No

- Samsung Galaxy S4 or newer
- Samsung Galaxy Tab S2 or newer
- HTC One M7 or newer
- LG G2 or newer
- Sony Xperia Z2 or newer
- Motorola Moto X or newer
- Nexus 5 or newer

Gender:

- Male
- Female

Age Range:

- 18-25
- 26-35
- 36-45
- 46-55
- Above 55

Are you a student?

- Yes
- No

Are you employed?

- Yes
- No

If yes, what's your occupational classification?

- Labor & Technical Jobs (plumber, technician, laborers in different industries…)
- Intermediate Jobs (Clerk, Collector, Receptionist, Salesperson…)
- Skilled Trade (Banker, Supervisor, Executive/Administrative Assistant…)
- Management & Professional Jobs (Doctor, Architect, Engineer, Professor, Lawyer, Manager…)

Do you use computer on daily basis?

- Yes
- No

What is your approximate monthly income bracket in USD?

- Below 500
- Between 500 & 1500
- Between 1500 & 2500
- Between 2500 & 3500
- Above 3500

Education level:

- No certified education
- Elementary Education (till 6^{th} grade)
- Secondary Education (7^{th} till 12^{th} grade)

- Undergraduate student or Bachelor's degree
- Graduate Student or Master's degree
- Postgraduate degree

Do you use mobile banking services?

- Yes
- No

Do you use either a debit or credit card?

- Yes
- No

Appendix 2

Timetable

Steps/Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Identifying the main literature	x													
Production of initial draft		X	x											
Correction of Initial draft				x	X									
Applying adjustments and production of final draft						x	x							
Preparation of the questionnaire								x	x					
Time for the completion of the questionnaire										x				
Data collection, entry and processing											x			
Analysing the results												x	x	
Finalizing the report														x

17(RA)	It is more convenient for me to pay using my phone via HCE than other mode of payments.	1	2	3	4	5
18(PU)	I am more likely to adopt HCE if the payment method is done more quickly.	1	2	3	4	5
19(PU)	Using HCE would improve my shopping experience, since it would not require taking out a credit card or money.	1	2	3	4	5
20(PU)	The usefulness or benefits of HCE will influence my decision to adopt it.	1	2	3	4	5
21(PU)	Using HCE makes my payment process easier.	1	2	3	4	5
22(EU)	Using HCE would be an easy task for me.	1	2	3	4	5
23(EU)	I am likely to use HCE if the interface is clear, understandable and simple to use.	1	2	3	4	5
24(EU)	I am likely to use HCE if I know that customer service will help me in case of any inconvenience or problem.	1	2	3	4	5
25(EU)	I believe using HCE does not require considerable effort.	1	2	3	4	5
26(DV)	I intend to use HCE in the future.	1	2	3	4	5
27(DV)	I will use HCE in my next POS payment.	1	2	3	4	5
28(DV)	I have doubts in using HCE.	1	2	3	4	5
7 (PI)	Previous interest in technology and internet/mobile services motivate me to adopt HCE.	1	2	3	4	5
8 (PI)	I consider myself knowledgeable regarding the devices and technologies I use.	1	2	3	4	5
9 (PI)	I am interested in finding or exploring technologies that may be useful for me.	1	2	3	4	5
10 (PI)	Knowledge/experience in electronic devices will help me develop interest in adopting HCE.	1	2	3	4	5
11(SN)	If people surrounding me use HCE, I would be more inclined to adopt it.	1	2	3	4	5
12(SN)	A positive word-of-mouth would encourage me in using HCE.	1	2	3	4	5
13(SN)	My decision to adopt HCE is based on the recommendations of people close to me.	1	2	3	4	5
14(RA)	I would rather use HCE than other wireless payments since it does not require amendment of SIM or CHIP card.	1	2	3	4	5
15(RA)	I would rather use HCE than Credit Cards since no signature is required.	1	2	3	4	5
16(RA)	I am more likely to forget or lose my credit card than my phone.	1	2	3	4	5

Appendix 3

مصرف لبنان
BANQUE DU LIBAN

تعميم أساسي للمصارف رقم ٦٩
موجه ايضاً الى المؤسسات المالية والمؤسسات التي تتعاطى العمليات المالية والمصرفية بالوسائل الالكترونية

نودعكم ربطا نسخة عن القرار الاساسي رقم ٧٥٤٨ تاريخ ٢٠٠٠/٣/٣٠ المتعلق بالعمليات المالية والمصرفية بالوسائل الالكترونية .

بيروت، في ٣٠ آذار ٢٠٠٠
حاكم مصرف لبنان
رياض توفيق سلامه

مصرف لبنان
BANQUE DU LIBAN

قرار أساسي رقم ٧٥٤٨

العمليات المالية والمصرفية بالوسائل الالكترونية

ان حاكم مصرف لبنان،

بناء على قانون النقد والتسليف، لا سيما المادتين ٧٠ و ١٧٤ منه،

بناء على القانون رقم ١٣٣ تاريخ ١٩٩٩/١٠/٢٦ المتعلق بمهام مصرف لبنان،

بناء على قرار المجلس المركزي المتخذ في جلسته المنعقدة بتاريخ ٢٠٠٠/٣/٢٩،

يقرر ما يأتي :

القسم الاول: العمليات المالية والمصرفية بالوسائل الالكترونية: [1]

المادة ١[2]: لغاية تطبيق احكام هذا القرار، تعتبر "عمليات مالية ومصرفية بالوسائل الالكترونية" العمليات او النشاطات كافة التي يتم عقدها او تنفيذها او الترويج لها بواسطة الوسائل الالكترونية او الضوئية (هاتف - حاسوب - انترنيت - صراف آلي...) من قبل المصارف او المؤسسات المالية او اي مؤسسة اخرى .

ويشمل هذا التعريف ايضاً العمليات التي يجريها مصدرو او مروجو بطاقات الايفاء او الدفع او الائتمان الالكترونية على انواعها كافة والمؤسسات التي تتعاطى التحاويل النقدية الكترونياً ومواقع العرض والشراء والبيع وتأتية سائر الخدمات المصرفية الالكترونية.

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[1] - أضيف عنوان هذا القسم بموجب المادة الثانية من القرار الوسيط رقم ١١٤٤٥ تاريخ ٢٠١٣/٦/٦ (تعميم وسيط رقم ٣٢٥)

[2] - أدخل آخر تعديل على هذه المادة بموجب المادة الأولى من القرار الوسيط رقم ١١٩٣٧ تاريخ ٢٠١٥/١/٢٦ (تعميم وسيط رقم ٣٨٥)

المادة ٢ [*]: يسمح بممارسة "العمليات المالية والمصرفية بالوسائل الالكترونية" من قبل:

١- المصارف وسائر المؤسسات المسجلة لدى مصرف لبنان، باستثناء مؤسسات الصرافة، بعد اعلام هذا الاخير مسبقاً برغبتها بالقيام بالاعمال الداخلة ضمن موضوعها، كلياً او جزئياً، باي من الوسائل الالكترونية وذلك قبل ٣٠ يوماً من مباشرتها للنشاط أو للترويج المسبق له أو من أي تعديل لاحق للنشاط المصرح به سابقاً.

٢- مؤسسات الصرافة المسجلة لدى مصرف لبنان والتي تحصل على ترخيص مسبق من مصرف لبنان بتعاطي اي نشاط محدد في "المادة ١" من هذا القرار.

٣- اية مؤسسة لبنانية اخرى، غير تلك المحددة في البندين (١) و(٢) من هذه المادة والتي تحصل على ترخيص مسبق من مصرف لبنان بتعاطي اي نشاط محدد في "المادة ١" من هذا القرار.

٤- اية مؤسسة اجنبية اخرى، غير تلك المحددة في البند (١) من هذه المادة والتي تحصل على ترخيص مسبق من مصرف لبنان بتعاطي اي نشاط محدد في "المادة ١" من هذا القرار اذا كانت تتوجه بعملياتها او تعرض خدماتها على الجمهور في لبنان.

المادة ٣ [*]: أولاً: استثناءً لأحكام البند (١) من المادة الثانية من هذا القرار، يحظر القيام بالعمليات المصرفية بواسطة الاجهزة الالكترونية الجوالة والثابتة بين زبائن مصارف مختلفة الا لتلقي طلبات التحاويل المصرفية من العميل وذلك شرط:

- ان لا يتم تنفيذها بشكل آلي عبر التطبيق (Application) أو البرنامج الالكتروني المستخدمين على جهاز العميل.
- ان تتأكد دوائر الـ Back Office لدى المصرف المعني من مطابقة طلبات التحويل للقوانين والانظمة المرعية الاجراء.
- ان يتم تنفيذها، حصراً، بالطرق التقليدية المعهودة (أي بواسطة شبكة الـ SWIFT المعتمدة بين المصارف).

ثانياً: يحظر اصدار النقود الالكترونية (ElectronicMoney) من أي كان والتعامل بها بأي شكل من الاشكال.

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[*] - عدلت هذه المادة بموجب المادة الثانية من القرار الوسيط رقم ١١٤٤٥ تاريخ ٢٠١٣/٦/٦ (تعميم وسيط رقم ٣٤٥).

[*] - أدخل آخر تعديل على هذه المادة بموجب المادة الأولى من القرار الوسيط رقم ١٢٠٠٨ تاريخ ٢٠١٥/٦/٣ (تعميم وسيط رقم ٣٩٢).

نص/قسم ٦/ ٣٩/ س ٢٠١٥-٦-٣٠/

المادة ٤ [1]: على المؤسسات المحددة في المادة ٢ من هذا القرار والتي تقوم بعمليات مالية ومصرفية بالوسائل الالكترونية:

١- ان تتعاون على تسهيل اعمال الرقابة بما فيها الرقابة التقنية على اعمالها التي يقوم بها مصرف لبنان او لجنة الرقابة على المصارف.

٢- ان تزود كل من مديرية الصيرفة [2] لدى مصرف لبنان ولجنة الرقابة على المصارف بكل تعديل يطرأ على انظمة عملها وعلى القواعد التقنية التي تتبعها في تنفيذ عملياتها الالكترونية.

٣- ان تطلب من مفوضي المراقبة لديها اعداد تقارير سنوية عن عملياتها الالكترونية وعن اوضاعها التقنية والتنظيمية المتعلقة بهذه العمليات وان تزود كل من مديرية الصيرفة [3] لدى مصرف لبنان ولجنة الرقابة على المصارف نسخة عنها خلال مدة اقصاها اخر شهر نيسان من كل سنة.

٤- ان تشير على موقعها الالكتروني، في حال وجوده، الى:

أ - رقم تسجيلها لدى مصرف لبنان وذلك في ما خص المصارف وسائر المؤسسات المسجلة لدى مصرف لبنان.

ب- تاريخ اي ترخيص (والرقم عند توفره) معطى من مصرف لبنان لممارسة اي من العمليات موضوع هذا القرار.

القسم الثاني: عمليات التحاويل النقدية بالوسائل الالكترونية [4]

أولاً: الشروط المطلوبة لتقيام بعمليات التحاويل النقدية بالوسائل الالكترونية:

المادة ٥ [5]: على جميع المؤسسات غير المصرفية التي تقوم بعمليات التحاويل النقدية داخل لبنان بالوسائل الالكترونية، ان:

١ - تكون منشأة بشكل شركة مغفلة لبنانية وان تكون اسهمها اسمية.

٢ - يكون رأسمالها خمسة مليارات ليرة لبنانية، على الاقل.

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[1] - عدلت هذه المادة بموجب المادة الثانية من القرار الوسيط رقم ١١٤٤٥ تاريخ ٢٠١٣/٦/٦ (تعميم وسيط رقم ٣٢٥).

[2] - عدل اسم «مديرية الأسواق المالية» بموجب أحدث «مديرية الصيرفة» بموجب قرار مصرف لبنان رقم ١٠٠٩٤٣ تاريخ ٢٠١٥/٢/٤

- راجع الإعلام رقم ٩١٠ تاريخ ٢٠١٥/١٠/٢

[3] - أضيف عبارة هذا القسم بموجب المادة الثانية من القرار الوسيط رقم ١١٤٤٥ تاريخ ٢٠١٣/٦/٦ (تعميم وسيط رقم ٣٢٥)

[4] - عدلت هذه المادة بموجب المادة الثانية من القرار الوسيط رقم ١١٤٤٥ تاريخ ٢٠١٣/٦/٦ (تعميم وسيط رقم ٣٢٥).

٣ - تضمن نظامها الاساسي احكاماً توجب:

أ - الاستحصال على موافقة مصرف لبنان المسبقة على كل:

- تعديل في نظامها الاساسي.

- اكتتاب وتداول بأسهمها يؤدي الى اكتساب احد الاشخاص، بصورة مباشرة أو غير مباشرة، نسبة تفوق ١٠% من مجموع اسهم المؤسسة.

ب- المحافظة على السرية المهنية وتحمل كامل المسؤولية، تجاه الغير، الناتجة عن العمليات التي تقوم بها المؤسسة أو فروعها أو مواقع/نقاط خدمة التحاويل (Points of Electronic Transfers) العاملة داخل الفروع أو عبر الوكلاء الثانويين أو عبر اي مؤسسة متعاقد معها.

٤ - تباشر أعمالها ضمن مهلة ستة اشهر من تاريخ صدور قرار الترخيص تحت طائلة سحب هذا الترخيص.

٥ - يكون لديها نظام ضبط داخلي (Internal Control System) فاعل يهدف الى تدارك المخاطر التي تواجهها او يمكن ان تواجهها المؤسسة.

٦ - يكون لديها نظام محاسبة مرتبط بنظام التحاويل الالكترونية المعتمد بحيث يمكن استخراج، بشكل آلي، جداول لعمليات تحويل الاموال الصادرة والواردة.

٧ - تعيّن مسؤول تدقيق داخلي (Internal Audit Officer) للقيام بأعمال التدقيق الداخلي على عملياتها.

٨ - تتقيد بالقوانين والانظمة الصادرة عن مصرف لبنان وبصورة خاصة تلك المتعلقة بمكافحة تبييض الاموال وتمويل الارهاب.

٩ - يكون لديها نظام حماية الكتروني فعال للعمليات التي تجريها.

١٠- تعيّن مفوض مراقبة على اعمالها من بين الشركات المعروفة.

١١- تعلم كل من مديرية الشؤون القانونية ومديرية الصيرفة[1] لدى مصرف لبنان ولجنة الرقابة على المصارف:

أ - عن فتح اي فرع لها.

ب- عن عدد وعناوين مواقع/نقاط خدمة التحاويل العاملة داخل الفروع أو عبر الوكلاء الثانويين أو عبر اي مؤسسة متعاقد معها وعن اي تعديل في هذه المعلومات فور حصوله.

١٢- تعرض على مواقع/نقاط خدمة التحاويل العاملة خارج الفروع ان تكون مؤسسات مسجلة لدى السجل التجاري.

- عدل اسم «مديرية الأسواق المالية» بحيث أصبح «مديرية الصيرفة» بموجب قرار مصرف لبنان رقم ١١٩٤٣ تاريخ ٢٠١٥/٢/٤.

- يراجع الاعلام رقم ٩٠٠ تاريخ ٢٠١٥/١١/٩

نص/قسم ١/ر ٢٩/ ٥ ٣٠-٦-٢٠١٥/

١٣- تخصص مبلغ عشرة ملايين ليرة لبنانية من رأسمالها لكل من مواقع/نقاط خدمة التحاويل العاملة داخل الفروع أو عبر الوكلاء الثانويين أو عبر اي مؤسسة غير مصرفية متعاقد معها.

١٤- تلتزم بمضمون أي اعتراض من مصرف لبنان بشأن اي من مواقع/نقاط خدمة التحاويل العاملة داخل الفروع أو عبر الوكلاء الثانويين أو عبر اي مؤسسة متعاقد معها تحت طائلة سحب الترخيص المعطى لها.

١٥- تتأكد، بشكل دوري، من مؤهلات العاملين لديها او لدى مواقع/نقاط خدمة التحاويل العاملة داخل الفروع أو عبر الوكلاء الثانويين أو عبر اي مؤسسة متعاقد معها ومن الصفات الاخلاقية التي يتمتعون بها.

١٦- تقوم بمراقبة دائمة وفعالة للتحقق من عدم قيام الوكلاء الثانويين أو اي مؤسسة متعاقد معها باي نشاط مخالف للقوانين المرعية ولاالتعليمات الصادرة عن مصرف لبنان.

١٧- تعقد تأمين يغطي العمليات التي تجريها والمخاطر كافة الممكن ان تواجهها على ان يعاد النظر بهذا العقد سنوياً على ضوء مستجدات توجب ذلك (تعديل في انتشار المؤسسة وحجم عملياتها وعدد فروعها ومواقع/نقاط خدمة التحاويل العاملة داخل الفروع أو عبر الوكلاء الثانويين أو اي مؤسسة متعاقد معها...).

١٨- تطلب من مفوضي المراقبة لديها تضمين التقارير المشار اليها في البند (٣) من "المادة ٤" اعلاه معلومات عن الاوضاع التقنية والتنظيمية لفروعها ولمواقع/نقاط خدمة التحاويل، عند وجودها، وذلك في كل ما يتعلق بعمليات التحاويل النقدية الالكترونية.

١٩- تطلب من مفوضي المراقبة لديها اعداد التقرير السنوي المتعلق بالتحقق من اجراءات مكافحة تبييض الاموال وتمويل الارهاب المطبقة في المؤسسة ومدى فاعليتها والمشار اليه في "المادة ١٣" من القرار الاساسي رقم ٧٨١٨ تاريخ ٢٠٠١/٥/١٨ (نظام مراقبة العمليات المالية والمصرفية لمكافحة تبييض الأموال وتمويل الارهاب).

٢٠- تنفذ جميع عمليات التحاويل النقدية داخل لبنان بالوسائل الالكترونية عبر شبكة محلية.

المادة ٦ [١]: على جميع المؤسسات اللبنانية غير المصرفية التي تقوم بعمليات التحاويل النقدية الخارجية بالوسائل الالكترونية أن :

١- تكون منشأة بشكل شركة مغفلة لبنانية وان تكون اسهمها اسمية.

٢- يكون رأسمالها سبعماية وخمسون مليون ليرة لبنانية، على الاقل ما لم تكن من المؤسسات التي تقوم بعمليات تحاويل داخل لبنان.

٣- تكون مرتبطة بشبكة دولية للتحاويل يقبل بها مصرف لبنان.

٤- تتقيد بالبنود من (٣) الى (١٩) من "المادة ٥" من هذا القرار.

المادة ٧ [١]: على المؤسسات الاجنبية المشار اليها في البند (٤) من "المادة ٢" اعلاه والتي تتعاطى عمليات التحاويل النقدية الخارجية بالوسائل الالكترونية ان:

١- تخصص لاعمال فرعها في لبنان مبلغ سبعماية وخمسون مليون ليرة لبنانية، على الاقل.

٢- تكون مرتبطة بشبكة دولية للتحاويل يقبل بها مصرف لبنان.

٣- تتقيد بالبنود من (٤) الى (١٩) من "المادة ٥" من هذا القرار.

المادة ٨ [١]: على المؤسسات المحددة في البندين (٣) و(٤) من "المادة ٢" من هذا القرار التي تقوم بعمليات التحاويل النقدية بالوسائل الإلكترونية ان تثبت، على الدوام، ان موجوداتها تفوق بالفعل المطلوبات المتوجبة عليها تجاه الغير بمبلغ يساوي على الاقل قيمة رأسمالها او المبلغ المخصص لاعمالها في لبنان، اذا كانت فرع لمؤسسة اجنبية.

على هذه المؤسسات اذا اصيبت بخسائر ان تعيد تكوين رأسمالها او مخصصاتها خلال ستة اشهر على الاكثر تحت طائلة سحب الترخيص الممنوح لها بممارسة عملياتها في لبنان.

المادة ٩ [١]: على المؤسسات التي تقوم بعمليات التحاويل النقدية بالوسائل الإلكترونية تضمين امر التحويل والرسائل المرفقة به كامل هوية الآمر بالتحويل بشكل دقيق (الاسم والعنوان) ورقم الحساب أو رقم مرجع خاص في حال عدم وجود رقم حساب ومصدر هذه الأموال ووجهتها وغايتها وهوية المستفيد وصاحب الحق الإقتصادي، وفقاً للحالة.

كما على هذه المؤسسات تزويد السلطات المختصة بالمعلومات المنوه عنها كاملة خلال مهلة ثلاثة أيام عمل من تاريخ طلبها.

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[١] - عدلت هذه المادة بموجب المادة الثانية من القرار الوسيط رقم ١١٤٤٥ تاريخ ٦/٦/٢٠١٣ (تعميم وسيط رقم ٣٢٥)

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المادة ٩ مكرر: على أي من المؤسسات المحددة في البندين (٣) و(٤) من المادة ٢ من هذا القرار والتي تقوم بعمليات التحاويل النقدية بالوسائل الإلكترونية التقيد على الأقل بما يلي:

١- التحقق من هوية الزبائن وعناوينهم بالاستناد الى وثائق رسمية.

٢- مسك سجلات خاصة بالعمليات التي تفوق قيمة كل منها مبلغ ١٠،٠٠٠ د.أ. أو ما يعادله.

٣- الاحتفاظ بصور عن الوثائق الرسمية (هوية الزبائن، العنوان) وعن المستندات المتعلقة بالعمليات التي تفوق قيمة كل منها مبلغ ١٠،٠٠٠ د.أ. أو ما يعادله لمدة لا تقل عن خمس سنوات.

٤- وضع نظام ضبط داخلي (Internal Control System) فاعل لمكافحة تبييض الاموال وتمويل الارهاب يشمل كحد ادنى:

أ - وضع دليل إجراءات كاف وفعال لمكافحة تبييض الأموال وتمويل الإرهاب يشمل إجراءات العناية الواجبة المطلوبة تجاه العملاء التي تتكرر عملياتهم وتفوق مبلغ معين.

ب- تعيين ضابط امتثال (Compliance Officer)، على أن يخضع باستمرار لدورات تدريبية في هذا المجال.

ج- اعتماد برامج معلوماتية لمراقبة العمليات.

د - قيام ضابط الامتثال بإعداد تقارير دورية عن مراقبة العمليات ترتكز على المخاطر (Risk Based Approach) وعن مدى التقيد بالاجراءات المطلوبة، على ان تشمل تقاريره أيضاً مدى إلتزام الوكلاء الثانويين بالإجراءات والانظمة.

هـ- تنظيم مركزية ممكننة للمعلومات المجمعة المتعلقة بعمليات تبييض الأموال وتمويل الإرهاب تتضمن على الأقل، الأسماء التي تسلم من قبل "هيئة التحقيق الخاصة" والاسماء المبلغ عنها من قبل المؤسسة المعنية الى الهيئة المذكورة وتحديثها بصورة مستمرة.

٥- إبلاغ "هيئة التحقيق الخاصة" عن تفاصيل العمليات التي يشتبه أنها تخفي تبييضاً للأموال أو تمويلاً للإرهاب.

- أضيفت هذه المادة بموجب المادة الثانية من القرار الوسيط رقم ١٨ - ١٦ تاريخ ٢٠١٥/٦/٣٠ (تعميم وسيط رقم ٣٩٣)

٦- الطلب من الموظفين لديها، تحت طائلة المسؤولية، عدم إعلام العملاء عند قيام "هيئة التحقيق الخاصة" بالإستعلام أو بالتدقيق في عملياتهم الا في حال صدور قرار عن هذه الهيئة يفيد بذلك.

٧- تزويد "هيئة التحقيق الخاصة" بنسخة عن التقرير السنوي الذي يعده مفوض المراقبة لديها والمتعلق بالتحقق من اجراءات مكافحة تبييض الاموال وتمويل الارهاب المطبقة في المؤسسة المعنية ومدى فاعلية هذه الاجراءات وذلك في مهلة اقصاها نهاية شهر نيسان الذي يلي السنة المالية المنصرمة.

المادة ١٠[١]: على المؤسسات المحددة في البندين (٣) و(٤) من المادة ٢ من هذا القرار التي تقوم بعمليات التحاويل النقدية بالوسائل الإلكترونية ان تعد بياناتها المالية وفقاً للانموذج ٢٠١٠، المرفق بالقرار الاساسي رقم ٧٧٢٣ تاريخ ٢٠٠٠/١٢/٢ (المتعلق بوضعية المصارف).

المادة ١١[١]: يتم سحب الترخيص الممنوح لممارسة عمليات التحاويل النقدية بالوسائل الالكترونية في حال التوقف عن ممارسة هذه العمليات لمدة ستة اشهر متتالية.

ثانياً: مستندات الترخيص:

المادة ١٢[١]: بغية الحصول على ترخيص من مصرف لبنان للقيام بعمليات التحاويل النقدية بالوسائل الالكترونية، على المؤسسات اللبنانية المشار اليها في البند (٣) من المادة ٢ من هذا القرار التي تقوم بعمليات التحاويل النقدية بالوسائل الإلكترونية، أن تتقدم بطلب على ثلاث نسخ، واحدة منها اصلية، مرفقاً به:

١- مستند مثبت لهوية المؤسسين والاشخاص الذين سيساهمون بالاكتتاب والاشخاص المتوقع تكليفهم بمهام ادارية عليا (اخراج قيد الفرادي أو هوية أو جواز سفر، أو نسخة عن ملف التسجيل في السجل التجاري اذا كان أي من المؤسسين أو المساهمين شخصاً معنوياً).

٢- بيانات موقعة من كل من الاشخاص المحددين أعلاه تتضمن سيرة كل منهم الذاتية (الشهادات والخبرات وغيرها من المعلومات المادية) وتقييم دقيق لذممهم المالية.

٣- خلاصة عن السجل العدلي تعائد لكل من هؤلاء الاشخاص لا يعود تاريخها لاكثر من ثلاثة أشهر.

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[١] - أضيفت هذه المادة بموجب المادة الثانية من القرار الوسيط رقم ١١٤٤٥ تاريخ ٢٠١٣/٦/٦ (تعميم وسيط رقم ٣٢٥ نص) قسم ١/ ر ٩٩/ ش ٣٠-٦-٢٠١٥/

٤- بيان بنسبة المساهمة لكل من الذين ينوون الاكتتاب في الرأسمال، على أن يتضمن فئات الاسهم، ان وجدت، وكيفية توزيعها.
٥- مشروع كل من النظام الاساسي للشركة والهيكلية الادارية المزمع اعتمادها.
٦- المستندات المتعلقة بأنظمة العمل وبقواعد التقنية التي ستتبعها في تنفيذ عملياتها الالكترونية والتي تثبت ان لديها نظام حماية الكتروني فعال للعمليات التي تجريها على ان تتضمن على الاقل المستندات المحددة في الملحق رقم (١) المرفق بهذا القرار.
٧- نسخة طبق الاصل عن العقد الموقع مع الشبكة الدولية للتحويل في ما خص المؤسسات التي تقوم بعمليات التحاويل النقدية الخارجية.
٨- نسخة طبق الاصل عن عقد تأمين يغطي العمليات التي تجريها والمخاطر كافة الممكن ان تواجهها.

<u>المادة ١٣ [1]</u>: على مؤسسات الصرافة التي ترغب بالقيام بعمليات التحاويل النقدية بالوسائل الالكترونية ان تتقدم بطلب ترخيص على ثلاث نسخ، واحدة منها اصلية، مرفقاً به المستندات المشار اليها في البنود (٦) و(٧) و(٨) من "المادة ١٢" اعلاه.

<u>المادة ١٤ [1]</u>: بغية الحصول على ترخيص من مصرف لبنان للقيام بعمليات التحاويل النقدية الخارجية بالوسائل الالكترونية، على المؤسسات الاجنبية المشار اليها في البند (٤) من "المادة ٢" اعلاه أن تتقدم بطلب الترخيص على ثلاث نسخ، واحدة منها اصلية، مرفقاً به:
١- النظام الاساسي للمؤسسة الاجنبية والهيكلية الادارية المزمع اعتمادها في لبنان.
٢- قرار الهيئة المختصة في المؤسسة الاجنبية يتضمن الموافقة على ممارسة عملها في لبنان وتعيين ممثل لها وتحديد صلاحياته.
٣- المستندات المشار اليها في البنود (٦) و(٧) و(٨) من "المادة ١٢" اعلاه.

<u>المادة ١٥ [1]</u>: على المؤسسات المشار اليها في البندين (٣) و(٤) من "المادة ٢" من هذا القرار التي تقوم بعمليات التحاويل النقدية بالوسائل الإلكترونية، بعد الحصول على الترخيص من مصرف لبنان وقبل مباشرة اعمالها في لبنان، ان تستكمل معاملات التأسيس القانونية والنظامية وان تزود مديرية الشؤون القانونية لدى مصرف لبنان بالمستندات المثبتة لذلك مصادقاً عليها وفقاً للاصول.

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[1] - أضيفت هذه المادة بموجب المادة الثانية من القرار الوسيط رقم ١٠٤٤٥ تاريخ ٢٠١٢/٦/٢ (تعميم وسيط رقم ٢٩٥).

ثالثاً: مستندات دورية

المادة ١٦ [1]: على المؤسسات غير المصرفية التي تقوم بعمليات التحاويل النقدية بالوسائل الالكترونية تزويد:

١- كل من مديرية الصيرفة [2] لدى مصرف لبنان ولجنة الرقابة على المصارف بتقارير مفوضي المراقبة السنوية المشار اليها في البند (٣) من المادة ٤ والبندين (١٨) و(١٩) من المادة ٥ اعلاه وذلك خلال مدة اقصاها اخر شهر نيسان من كل سنة.

٢- كل من مديرية الشؤون القانونية ومديرية الصيرفة [3] لدى مصرف لبنان ولجنة الرقابة على المصارف:

أ - بنسخة طبق الاصل عن عقد التأمين المشار اليه في البند (١٧) من المادة ٥ من هذا القرار، عند تجديده.

ب- بالمعلومات المشار اليها في الفقرة (ب) من البند (١١) من المادة ٥ اعلاه وذلك وفقاً للانموذج (CET-0) المرفق والذي يتوجب اعداده، كل ستة اشهر، على اسطوانة ممغنطة وفقاً لبرنامج يتم الاستحصال عليه من مديرية الصيرفة [4] لدى مصرف لبنان.

المادة ١٧ [5]: على المؤسسات المحددة في البنود (٢) و(٣) و(٤) من المادة ٢ من هذا القرار والتي تقوم بعمليات التحاويل النقدية بالوسائل الالكترونية تزويد كل من مديرية الصيرفة [6] لدى مصرف لبنان ولجنة الرقابة على المصارف:

١- بتقارير مفوضي المراقبة السنوية عن اوضاعها المالية وذلك خلال مدة اقصاها أخر شهر نيسان من كل سنة.

٢- باللائحة بأسماء مساهمي المؤسسات المنشأة في لبنان وذلك في نهاية كل سنة وبأي تعديل قد يطرأ على هذه اللائحة فور حصوله.

٣- ببياناتها المالية خلال مهلة اثنى عشر يوماً من التاريخ الموقوفة فيه هذه البيانات وذلك:

- شهرياً، في ما خص المؤسسات التي تقوم بعمليات التحاويل داخل لبنان.
- فصلياً، في ما خص المؤسسات التي لا تقوم سوى بعمليات التحاويل الخارجية.

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[1] - أضيفت هذه المادة بموجب المادة الثانية من القرار الوسيط رقم ١١٤٤٥ تاريخ ٢٠١٣/٦/٦ (تعميم وسيط رقم ٣٢٥)

[2] - عدل اسم «مديرية الأسواق المالية» بحيث أصبح «مديرية الصيرفة» بموجب قرار مصرف لبنان رقم ١٠٩٤٣ تاريخ ٢٠١٤/٢/٤

[3] - راجع الاعلام رقم ٩١٠ تاريخ ٢٠١٥/١/٢٠.

[4] - راجع الاعلام رقم ٩١٠ تاريخ ٢٠١٥/١/٢٠.

[5] - أضيفت هذه المادة بموجب المادة الثانية من القرار الوسيط رقم ١١٤٤٥ تاريخ ٢٠١٣/٦/٦ (تعميم وسيط رقم ٣٢٥)

[6] - عدل اسم «مديرية الأسواق المالية» بحيث أصبح «مديرية الصيرفة» بموجب قرار مصرف لبنان رقم ١٠٩٤٣ تاريخ ٢٠١٤/٢/٤

المادة ١٧ مكرر[1]: على المؤسسات المحددة في البندين (٣) و(٤) من المادة ٢ من هذا القرار تزويد مديرية الاحصاءات والابحاث الاقتصادية لدى مصرف لبنان على اسطوانة مدمجة (CD):

١- بياناتها المالية المشار اليها في المادة ١٠ من هذا القرار خلال مهلة اثني عشر يوماً من التاريخ الموقوفة فيه هذه البيانات وذلك:

- شهرياً، في ما خص المؤسسات التي تقوم بعمليات التحاويل داخل لبنان.
- فصلياً، في ما خص المؤسسات التي لا تقوم سوى بعمليات التحاويل الخارجية.

٢- بيان الارباح والخسائر المعد وفقاً للنموذج (BPL-1) المرفق بالقرار الاساسي رقم ٦٥٧٤ تاريخ ١٩٩٧/٤/٢٤ وذلك ضمن مهلة اقصاها نهاية شهر حزيران من كل سنة.

المادة ١٨[2]: على المؤسسات المحددة في المادة ٢ من هذا القرار والتي تقوم بعمليات التحاويل النقدية بالوسائل الالكترونية إعلام مديرية الصيرفة [3] لدى مصرف لبنان خلال الايام العشرة الاولى من كل شهر عن:

١- حجم هذه العمليات من والى لبنان خلال الشهر المنصرم وذلك وفقاً للنموذج (CET-1) المرفق على ان يتم اعداده على اسطوانة ممغنطة، وفقاً لبرنامج يتم الاستحصال عليه من مديرية المعلوماتية لدى مصرف لبنان.

٢- العمليات التي تبلغ قيمتها أو تفوق ما يوازي مبلغ /١٠٠٠٠/ د.أ. وذلك وفقاً للنموذج (CET-2) المرفق على ان يتم اعداده على اسطوانة ممغطة، وفقاً لبرنامج يتم الاستحصال عليه من مديرية الصيرفة[4] لدى مصرف لبنان.

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[1] = أضيفت هذه المادة بموجب المادة الثانية من القرار الوسيط رقم ١١٩٣٧ تاريخ ٢٠١٥/١/٢٦ (تعميم وسيط رقم ٣٨٤)

[2] = أضيفت هذه المادة بموجب المادة الثانية من القرار الوسيط رقم ١١٩٤٠ تاريخ ٢٠١٣/٥/٢٦ (تعميم وسيط رقم ٣٣٨)

[3] - عدل اسم «مديرية الأسواق المالية» بحيث أصبح «مديرية الصيرفة» بعد صدور القرار رقم ١١٩٤٣ تاريخ ٢٠١٥/٩/٤ والاعلام رقم ٩٠١ تاريخ ٢٠١٥/١١/٢.

[4] - عدل اسم «مديرية الأسواق المالية» بحيث أصبح «مديرية الصيرفة» بموجب قرار مصرف لبنان رقم ١١٩٤٣ تاريخ ٢٠١٥/٩/٤.

- يراجع الاعلام رقم ٩٠١ تاريخ ٢٠١٥/١١/٢

القسم الثالث: أحكام مختلفة [1]

المادة ١٩ [2]: على جميع المؤسسات التي تقوم بوضع وتثبيت وتشغيل جهاز صراف آلي ان تتقيد بجميع النصوص التنظيمية الصادرة عن مصرف لبنان بهذا الخصوص .

المادة ٢٠ [2]: على كل من يتعاطى العمليات المالية والمصرفية بالوسائل الالكترونية ان يتقيد بصورة مطلقة بمبادئ الاستقامة والنزاهة والشفافية وان يتبع الاجراءات التي تؤمن أعلى درجات الامان وان يتخذ كل الاحتياطات المتوجبة لتحديد وحصر المسؤوليات المختلفة.

المادة ٢١ [2]: علاوة على المبادئ العامة الواردة في المادة ٢٠ من هذا القرار ، يقتضي، التقيد بما يلي :

١- ان لا تقل سن العميل عن الثمانية عشرة عاماً وان يكون متمتعاً بالاهلية الكاملة للتعاقد .

٢- مع مراعاة القوانين النافذة، عدم اعطاء معلومات عن حساب العميل الا لقاء موافقة خطية صريحة ومسبقة.

٣ [3] - عدم قبول التوقيع الالكتروني الا عند توفر الشروط التالية مجتمعة:

أ - اتفاق صريح بين المؤسسة المعنية والعميل:

- يبين المخاطر المحتملة عند اللجوء الى التوقيع الالكتروني،
- تحدد فيه الاجراءات المناسبة الواجب اتباعها مراعاةً لأعلى درجات الامان، وذلك على كامل مسؤولية الأطراف المعنية.

ب- استعمال الموقع لرمز تعريف شخصي .

ج- تأكيد من المؤسسة المنفذة، يرسل بالبريد الالكتروني خلال مهلة اقصاها ٢٤ ساعة من تنفيذ العملية ويتبع بالبريد العادي ضمن مهلة اسبوع الا اذا طلب المعني من المؤسسة الاحتفاظ بالبريد لديها.

د- قيام المؤسسة المنفذة بابلاغ العميل بوضعية شهرية مفصلة ترسل على عنوان مختار مسبقاً منه.

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[1] - أضيف عنوان هذا القسم بموجب المادة الثانية من القرار الوسيط رقم ١١٤٤٥ تاريخ ٢٠١٣/٦/٦ (تعميم وسيط رقم ٣٢٥).

[2] - أضيفت هذه المادة بموجب المادة الثانية من القرار الوسيط رقم ١١٤٤٥ تاريخ ٢٠١٣/٦/٦ (تعميم وسيط رقم ٣٢٥)

[3] - عدّل هذا البند بموجب المادة الأولى من القرار الوسيط رقم ١١٧٠٧ تاريخ ٢٠١٤/٣/٢٨ (تعميم وسيط رقم ٣٥٥)

نص/ قسم ١/ ر ٦٩/ ت ٣٠-٠٦-٢٠١٥/

٤- عدم تجاوز سقف اجمالي للتسليف لصالح شخص واحد حقيقي او معنوي بجميع الوسائل الالكترونية لدى مؤسسة واحدة نسبة ٢٠% من اموالها الخاصة.

اما المصارف والمؤسسات المالية فتبقى خاضعة بهذا الشأن للنصوص التنظيمية الصادرة عن مصرف لبنان والمتعلقة بالحدود القصوى لمخاطر التسهيلات المصرفية.

المادة ٢٢: اضافة الى ما ورد في هذا القرار، تطبق على "العمليات المالية والمصرفية بالوسائل الالكترونية" وعلى المؤسسات التي تمارسها، في كل ما لم يرد بشأنه نص مخالف، القوانين والانظمة والتعليمات التي ترعى هذه المؤسسات او التي ترعى العمليات المعنية المنفذة بالوسائل التقليدية غير الالكترونية .

المادة ٢٣: تمنح المؤسسات غير المصرفية التي تقوم بعمليات التحاويل النقدية بالوسائل الالكترونية والمنشأة قبل تاريخ ٢٠١٣/٦/٦ والتي تكون في وضع مخالف لأحكام المواد ٥ و٦ و٧ من هذا القرار، مهلة حدها الاقصى ٢٠١٤/٣/٣١ لتسوية اوضاعها.

المادة ٢٤[1]: يتعرض كل من يخالف احكام هذا القرار للعقوبات الادارية المنصوص عليها في القوانين والانظمة المرعية الاجراء .

المادة ٢٥[2]: يعمل بهذا القرار فور نشره في الجريدة الرسمية .

بيروت، في ٣٠ آذار ٢٠٠٠
حاكم مصرف لبنان
رياض توفيق سلامه

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[1] - أضيفت هذه المادة بموجب المادة الثانية من القرار الوسيط رقم ١١٤٤٥ تاريخ ٢٠١٣/٦/٦ (تعميم وسيط رقم ٣٢٥)

[2] - اصبح ترقيم هذه المادة "٢٤" بدلا من " الثانية عشرة " بموجب المادة الأولى من القرار الوسيط رقم ١١٤٤٥ تاريخ ٢٠١٣/٦/٦ (تعميم وسيط رقم ٣٢٥).

[3] - اصبح ترقيم هذه المادة "٢٥" بدلا من " الثالثة عشرة " بموجب المادة الأولى من القرار الوسيط رقم ١١٤٤٥ تاريخ ٢٠١٣/٦/٦ (تعميم وسيط رقم ٣٢٥)

الملحق رقم ١ [1]

المستندات المتعلقة بأنظمة العمل وبالقواعد التقنية

- مستند الوصف الوظيفي (Job Description) لجميع العاملين في المؤسسة
- دليل ووصف العمليات (User Manual)
- هيكلية ادارة النظام المعلوماتي (IT Management Organization)
- مقوّمات النظام المعلوماتي لا سيما الاجهزة والانظمة التشغيلية والبرامج التطبيقية والشبكة ...
- توزّع الصلاحيات على النظام المعلوماتي (Access Control List)
- ملفات القيود على استعمالات النظام والبرامج (Logs)
- برامج حماية الأنظمة (Antispam, Antivirus....)
- اجراءات حماية الشبكة (Firewall, Proxy, Intrusion Detection....)
- اجراءات التشفير
- اجراءات نسخ وحفظ المعلومات
- اجراءات مكافحة تبييض الاموال وتمويل الارهاب
- خطة الطوارئ ومتابعة العمل العائدة لعمليات المؤسسة ولنظامها المعلوماتي
- آليات حماية العملاء عند دخولهم على الخدمة ومنها آلية التعريف (Authentication Procedure) وآلية تثبيت العمليات (through OTP, or other secure dynamic code).

[1] - أضيف هذا الملحق بموجب القرار الوسيط رقم ١١٤٤٥ تاريخ ٢٠١٣/٦/٦ (تعميم وسيط رقم ٣٢٥)

نص/ قسط ١/ ر ٦٩/ ث ٢٠١٥-٦-٣٠/

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