

Fallen into the Chasm: Exploring Mobile Payment Failed Initiative in Lebanon

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Abstract: Several years after introducing the mobile payment service to the Lebanese market, it is clear that the new payment method has failed to take off, which brings up questions about the reasons behind these unmet expectations. The current paper uses the Technology-Organization-Environment framework to explore the factors with respect to its three pillars that could have prevented the diffusion of mobile payment into the market. Using a qualitative approach of multiple case studies, the findings suggest that the reasons for the low diffusion of mobile banking lies as much in the incompatible nor open technology as in the highly competitive organizational structure of the banking industry and, finally, the merchants' and consumers' unwillingness to adopt it.

Keywords: Mobile payment, Technology-Organization-Environment framework, network externalities, critical mass.

Introduction

Between 2014 and 2016, the Lebanese payment market has experienced a new wave of innovation with the introduction of new mobile payment initiatives launched to compete with the already existing payment methods, such as credit cards or cash payment. The key drivers behind this initiative were not only the relatively young population, who are educated and open to innovation, but as well the fairly high penetration rate of smartphones, either in terms of users' percentage or in terms of connectivity. At the time of the introduction of the innovative payment service, and according to the Pew Research Center survey ([Poushter, 2016](#)), 52% of the Lebanese population owned a smartphone. And Internet penetration was estimated at 76% in 2016, according to the Digital 2020ⁱ report.

Several years later, there is no doubt that the new payment method has failed to take off, which brings up questions about the reasons behind these unmet expectations. The first question one could ask is related to the Lebanese payment market characteristics and readiness for such

innovative service, which could be far from being adequate to stimulate large diffusion. Another argument could be examined on the service supplier's side by assessing the effectiveness of the adopted strategy to introduce the new service to the market. These two sets of arguments are supported by two theoretically well-grounded facts. Firstly, and unlike any traditional market for goods and services, the payment market is a multi-sided market, as defined by Rochet & Tirole (2003, 2006), as it involves, at least, three stakeholders, namely, the financial institution providing the payment service on one side, and the merchants and customers on the other sides who should accept it. Therefore, for any innovation in payment systems to succeed, it has to "get everybody on board", which was obviously not the case in the Lebanese payment market. Furthermore, the highly competitive financial sector, in addition to the relatively burgeoning number of mobile payment technologies, resulted, within the sector, in a "standards war", in the sense of Shapiro & Varian (1999), as each bank offered to the market a different and yet not compatible technology. Nevertheless, at the end of the battle, neither consumers nor merchants did show any enthusiasm for the innovation, regardless of the technology used.

As a consequence, it could be inferred that the failed mobile payment adoption in Lebanon lies as much in the technological immaturity as in the inter-enterprise organizational issues and, finally, the merchant-consumer lack of responsiveness. Viewed from this perspective, it is possible to group these hurdles into the three contextual categories of the Technology-Organization-Environment (TOE) framework as initially described by Tornatzky & Fleischer (1990), i.e., the technological, the organizational and the environmental contexts. However, although the original framework and its subsequent extensions were exclusively used as an organization micro-level theory that explains the elements of a single firm's context that influence adoption decisions, this analysis aims at extending it to a meso-level scope in order to explore the factors that are at stake when multiple companies – in our case banks – launch an innovative service – in this case the mobile payment service – that is supposed to be adopted by two different sides of the market, namely merchants and consumers.

Therefore, the main purpose of this paper is to look at the causes of the failed mobile payment initiative in Lebanon from a service provider's perspective. Despite the growing interest in studying mobile payment adoption from the end-users' perspective ("the demand-side"), little attention has been given to the contextual factors which may affect innovative service providers ("the supply-side") and could either enable or impede innovation diffusion. These factors challenge the global strategy deployed by the service provider in its attempt to launch a new mobile payment service and could very likely prevent the service from reaching a critical mass of consumers. Thus, the research question could be formulated as follows: *What factors make the bank's deployed strategy for mobile payment introduction effective for innovation*

diffusion? If we assume that an innovation introduction strategy is “effective” when a “critical mass of users” is reached, then what are the factors that help cross the “chasm” – a concept borrowed from Moore (1999) – and reach large-scale diffusion? To be more specific, to what extent could the type of used technology be a critical factor for innovation diffusion? Has the competitive environment a role to play in that regard? What kind of strategy towards both merchants and consumers should be deployed in order to get “everybody on board” in a multi-sided market?

The originality of this study lies mainly in the methodology, i.e., the model used to analyse the case. In fact, as far as we know, the TOE framework has never been used to examine the interactions that exist between companies that decide collectively to adopt a new innovation (Baker, 2012). Besides, the type of technology described, i.e., payment technology, has its own dynamics, as it involves interactions between two different kinds of end adopters, merchants and consumers, where each category’s adoption decision depends upon the number of the other’s category who have adopted that innovation. Such technologies, which are known to generate “network effects” of “positive network externalities” in the sense of Katz & Shapiro (1985), have never been placed in the mould of the TOE framework. Therefore, integrating all the dynamics that come into play between multiple companies and multiple end adopters of an innovation would highly contribute to enriching the explanatory power and the external validity of the said TOE framework.

The rest of the paper is structured as follows. After reviewing the literature on the various models used to explain the reasons for mobile payment (un)successful adoption, a TOE-extended model will be drafted and tested in the context of mobile payment adoption in the Lebanese market. To this end, data was collected and interviews were conducted with key individuals in four large Lebanese banks, three of them being commercial banks and one specialized bank. Discussion of results and conclusions will end the paper.

Mobile Payment Adoption across Competing Models and Perspectives in the Literature

The mobile payment literature is largely dominated by models analysing the factors or variables that affect consumers’ attitudes towards mobile payment. Listing the most used models chronologically, as done by Liu, Ben & Zhang (2019), shows that to analyse consumers’ behaviour in terms of mobile payment adoption researchers used either the Theory of Reasoned Action (TRA) of Fishbein & Ajzen (1975), or Roger’s (1983) theory of “diffusion of innovation” (DOI). Later, Davis, Bagozzi & Warshaw (1989) suggested the first version of the Technology Acceptance Model (TAM), followed by two other extensions, namely TAM2 and TAM3, adding for each version new determinants and variables reflecting a more in-depth

analysis of the personal characteristics and perception of individuals towards innovation ([Venkatesh & Davis, 2000](#); [Venkatesh & Bala, 2008](#)). The most recent models show a more unified and synthetic view of all variables and are known as “Unified Theory of Acceptance and Use of Technology”, UTAUT and UTAUT2 models ([Venkatesh et al., 2003](#); [Venkatesh, Thong & Xu, 2012](#)). Researchers also borrowed from other fields of study theories that explain the factors that lead consumers to “migrate” or “switch” from one technology to a new one, namely the Push-Pull-Mooring framework, initially elaborated by Lee ([1966](#)) to explain geographic migrations ([Liu, Ben & Zhang, 2019](#); [Loh et al., 2021](#); [Wirth & Maier, 2017](#)). Also, the *Status quo bias* theory of Samuelson & Zeckhauser ([1988](#)) has been used to explain the reasons why consumers decide to resist change and prefer sticking to their old and well established habits ([Gong et al., 2020](#); [Loh et al., 2021](#); [Zhang et al., 2016](#)).

The major limitation of these models relies in their exclusive focus on the consumers’ perceptions and characteristics that could affect, either positively or negatively, their attitude towards mobile payment and therefore their intention to adopt or continue using it. In fact, it should be taken into consideration that, sometimes, positive attitude does not necessarily translate into adoption; the attitude-behaviour relationship, as initially suggested by Fishbein & Ajzen ([1975](#)), shows the complexity of factors that are at play, either socially or psychologically, in the decision-making process. Besides, the mobile payment technology involves several stakeholders interacting in a “multi-sided platform”, as defined by Rochet & Tirole ([2003](#)). One important feature of such platforms is the presence of “cross-side network effects” along with the same-side network effects ([Hagiu & Wright, 2015](#)). In other words, for the consumers (one side of the platform) to be attracted by mobile payment, not only should there be a significant number of consumers who have “joined” the platform (same-side network externalities) but, as well, and not less importantly, there should be enough merchants (the other side) that have accepted the said payment technology (cross-side network effect). This would help reaching a “critical mass” of users and result in a successful innovation diffusion ([Evans & Schmalensee, 2010](#)).

Inferring that the “blockage” could come from the merchants’ side has also been documented in the literature, even though to a lesser degree ([Boateng, Yeboah-Afeti & Afful-Dadzie, 2019](#); [Moghavvemi et al., 2021](#); [Khan & Ali, 2018](#); [Liébana-Cabanillas & Lara-Rubio, 2017](#); [Mallat & Tuunainen, 2008](#)). However, here as well, analysing the merchants’ perspective in isolation from the consumers’ would give again scant knowledge of the interactions existing between both sides of the market.

In an earlier study, Mallat & Dahlberg ([2005](#)) analysed the adoption of mobile payment solutions by consumers and merchants and suggested drivers and barriers that could help or, on the contrary, prevent both sides’ adoption. Similarly, work was also carried out on how to

attract users on both sides in order to “get everybody on board”, resulting in the commonly called “chicken and egg” dilemma ([Caillaud & Julien, 2003](#)) or the “which one to attract first” question. That is to say that, in order to attract consumers to the new payment method, there should be enough merchants who accept it, and vice versa.

All these elements of thought suggest that, when looking at factors of innovation adoption, not only adopter-side variables significantly influence innovation, but also supply-side variables ([Frambach *et al.*, 1998](#)), i.e., the strategy deployed by the technology provider to reach the market. And this strategy should be implemented upon a close and intense scrutiny of the context in which the innovation is about to be deployed. That is to say that our approach is a rather integrative one, as it analyses the mobile payment ecosystem as a combination of forces and powers between technology producers, consumers, merchants and regulators that interact simultaneously in a dynamic model ([Au & Kauffman, 2008](#); [Dahlberg, Guo & Ondrus, 2015](#)).

Analysing mobile payment adoption from the suppliers’ perspective leads to considering the Technology-Organization-Environment (TOE) framework as a potentially powerful analytical tool. In fact, it helps companies assess their readiness toward an innovation target market by exploring all the contextual elements in terms of technology, organization and environment that could impact the implementation of the technology. Nevertheless, this framework will be challenged in a different analytical perspective

In fact, the original TOE framework by Tornatzky & Fleischer ([1990](#)) has been used, in the literature, mainly to explain the factors that lead SMEs to adopt the mobile payment technology ([Kwabena *et al.*, 2021](#); [Khan & Ali, 2018](#); [Uwamariya & Loebbecke, 2020](#)), as it was used, as well, to predict the performance of companies that have adopted it ([Mahakittikun, Suntrayuth & Bhatiasevi, 2021](#)). Some attempts have also been made by researchers to extend the original TOE framework by integrating elements related to the theories of technology adoption by consumers, resulting in a TOE-DOI framework ([Khan *et al.*, 2021](#)).

However, all these works were conducted from the perspective of a single company, i.e., the merchant who decided to choose the technology to adopt according to some specific criteria, like compatibility or relative advantage. There is no study done, so far, that focuses upstream in the process on the supply of the mobile payment service by financial institutions and its delivery to both merchants and consumers. Moreover, most studies were done on mobile payment third-party platforms (like Apple Pay or Google Pay) while overlooking the case of a bank-centred model, although banks could show a significant competitive advantage in the mobile payment ecosystem ([Gaur & Ondrus, 2012](#)).

The main contribution of this paper is to fill this gap by highlighting the contextual factors that are at stake when several banks decide to launch a new payment service intended for two

different categories of customers. The TOE framework will be used as a road map to structure our reasoning in analysing the determinants of mobile payment adoption when multiple firms, i.e., banks, offer a technology to multiple kinds of customers, i.e., merchants and consumers. In doing so, the TOE framework is extended to a meso-level analysis as a tool aimed at predicting the readiness of not only a single company like all previous studies, but rather that of the whole payment multi-sided market in its three components: banks, merchants and consumers, all interacting together.

A TOE Extended Model

For each one of the three poles of the TOE framework, namely the technology, the organization and the environment, there will be a listing of the main factors that were used by researchers in defining each pole, complemented with an in-depth reflection into how to transpose it to a market, multiple-firm, meso-level analysis.

The Technological Context

From the companies' perspective, the technological context refers to all the technologies that are at their disposal, whether they are already in use inside the company or available in the marketplace ([Baker, 2012](#)). The decision of choosing a specific technology relies on the type of innovation the company is considering in terms of the pursued scope of change, be it a radical or an incremental change. Most of the literature that used the TOE framework to analyse mobile payment adoption agreed, to different extents, to the technological criteria defined by Orr ([2003](#)), namely the comparative advantage, compatibility, complexity, testability and observability.

However, from the perspective of the entire mobile payment market, when several companies decide to venture out and offer a radically new technology, the necessary condition of reaching a "critical mass" of users ([Evans & Schmalensee, 2010](#)) for a successful adoption brings into play new considerations. Firstly, as several and yet incompatible mobile payment technologies exist, banks are expected to engage in a battle for market dominance *à la* Shapiro & Varian ([1999](#)) with the aim of imposing their own technology as a standard. And, as in any battle, collateral damage could occur, especially when no standard dominant model emerges, preventing the technology from taking off. Specifically, the technological, service design and business model competition could blur the market and consequently lead to a lack of stakeholders' support, which ultimately would prevent the emergence of a dominant design in the payment market ([Dahlberg et al., 2008](#); [Ozcan & Santos, 2015](#)).

Another consideration to be thought of as regarding the different competing technologies is in terms of their "openness" at both the "technology level" and the "user level", as suggested by

Ondrus, Gannamaneni & Lyytinen (2015) in their study on multi-sided platforms. The first dimension, i.e., openness at the technology level, is related to the compatibility and interoperability of a technology with related technologies; while the second one, the openness at a user's level, is its aptitude to be accessible in indiscriminate ways to users. The same concept could be transposed here to assess the extent to which the chosen mobile payment technology is compatible with, interoperable between, or discriminates between different segments of the customer base, affecting through this the potential of any market to reach a critical mass.

From this perspective, and with respect to the technological context, the following proposition could be formulated:

Proposition 1 – For the mobile payment market to reach a critical mass, a standard open technology should be deployed across the market

The Organizational Context

From a company's perspective, the organizational context refers to its characteristics in terms of organizational structure (organic and decentralized or mechanistic and centralized), as well as in terms of intra-firm communication processes and resources (financial and human) that influence its receptiveness to the adoption of innovation (Baker, 2012). Most studies that used the TOE framework adopted proxies like top management support, technological competency and employees' readiness to assess the organizational context (Khan *et al.*, 2021; Kwabena *et al.*, 2021). These factors relate to a firm's internal processes that should be linked together in a "coherent whole" and consistent with the adopted innovation strategy to guarantee success.

At a broader market level, one could extrapolate the reasoning by looking at inter-firm relationships, i.e., the type of competitive patterns that rule the market, specifically when an innovation is deployed. In that regard, three different kinds of inter-firm organizational models were identified in the literature, namely the competition, the collaboration and the co-opetition models (Hedman & Henningsson, 2015; Ondrus, Gannamaneni & Lyytinen, 2015). The competition model is when one firm provides a technology and competes against the others in the ecosystem. On the other side of the spectrum, the collaboration model is when multiple firms from different industries collaborate to provide an inter-industry model. Between these two patterns, the co-opetition model is when competing firms within the same industry decide to collaborate and provide a single intra-industry model within the ecosystem.

The last model seems to draw more of our attention. In fact, for a competition model to succeed, go-it-alone firms have the tough challenge not only to show technological superiority but also to deploy an aggressive strategy towards stakeholders to build trust and dependencies

([Reuver & Ondrus, 2017](#)); whereas the co-opetition model has the merit of reducing the clash between competitors and, in accordance with what has been said earlier, would increase the potential of the market ([Hedman & Henningsson, 2015](#); [Ondrus, Gannamaneni & Lyytinen, 2015](#)). In a similar way, the co-opetition model has proven to be efficient in terms of innovation performance in markets characterized by high positive network externalities and low competition intensity ([Ritala, 2012](#)). Although the mobile payment market in Lebanon is a rather highly competitive one, it would be of interest to challenge this assumption by formulating the following proposition:

Proposition 2 – For the mobile payment market to reach a critical mass, the co-opetition model between banks is superior to the competition model.

The Environmental Context

The environmental context of a firm refers to all factors that fall outside its borders and could affect the adoption of innovation. These factors include the competition intensity, the size and age of the industry, the pressure from suppliers and consumers and, finally, government regulation.ⁱⁱ

Given that our aim is to explore the mobile payment market from an integrative perspective, the environmental context will comprise all factors that fall outside the banking sector and could affect the successful adoption of innovation. Hence, the focus will be on the critical role of both merchants and suppliers in their acceptance of the new payment service and the multiple dynamics resulting from the network externalities that come into play in a multi-sided market, as suggested by Rochet & Tirole ([2003](#)), both in terms of same-side effects and cross-side effects ([Hagiu & Wright, 2015](#)). Several researchers highlighted the fact that these externalities could be the most influential driver of mobile payment acceptance ([Qasim & Abu Shanab, 2016](#); [Wang, Lo & Fang, 2008](#); [Mallat, 2006](#)). Besides, Pantano & Viassone ([2014](#)) pointed to the fact that, when retailers are neither prepared for – nor supportive of – a technology-based innovation that could improve their business, the diffusion process is hindered and expectations of both retailers and customers fail to be met. Therefore, for a successful adoption of innovation, firms have to implement a strategy aimed at “getting everybody on board” and, in doing so, they would be “internalizing” the externalities and reaching more rapidly and easily the critical mass.

The following proposition could be formulated as a result:

Proposition 3 – For the mobile payment market to reach a critical mass, a merchant-consumer joint incentive strategy should be deployed by the banks.

Research Methodology

The research methodology used to answer the question of assessing the readiness of the Lebanese payment market to mobile payments is a qualitative case-study-based methodology. According to Robert Yin (2009), this strategy “contributes to our knowledge of individual, group, organizational, social, political, and related phenomena”, as it also allows one to get in-depth and holistic insights of “real-life events such as individual life cycles, small group behaviour, organizational and managerial processes, neighbourhood change, school performance, international relations and the maturation of industries” (Yin, 2009). In that respect, this study seeks an in-depth understanding of the strategies deployed by mobile payment service providers in order to identify the factors that were at stake when the service was launched and that could have caused its failure. Therefore, focusing on the “why” adoption failed and on the specific “organizational behaviours” perspective gives credit to the chosen qualitative research approach.

Our case study covers the four large Lebanese banks that implemented a mobile payment initiative during the period from 2014 to 2016,ⁱⁱⁱ three of them being commercial banks and one a specialized bank. The originality of this sample of banks relies on the fact that each bank implemented, at that time, a different mobile payment technology, which has the great potential of enriching our study by helping cover and compare the four different scenarios implemented. The four deployed technologies^{iv} could be grouped into two main categories, namely the NFC-enabled technologies and the mobile payment applications. Hence, two banks implemented two variations of the NFC-enabled technologies, namely the “SIM Based Secure Element” and the Host Card Emulation technology. The two other banks deployed mobile payment applications in the form of QR code technology and a “white-label mobile payment solution”.

Another originality of the sample stems from the strategy adopted by each bank to reach the market. The three commercial banks fit into the “competition model”, as described earlier, as they decided to compete against each other by providing different technologies, strategies and approaches to the market. Conversely, the fourth bank, which is specialized in offering innovative payment solutions to the banks that are members of its network, adopted a horizontally-integrated solution by providing a single intra-bank technology within its network. Fourteen banks in this network were invited to collaborate and adopt the suggested mobile payment “white-label” application and provide the service to their respective customers. Therefore, the resulting organizational scheme fits into the “co-opetition framework” of competing banks within the same industry offering a single intra-industry technology.

The data collected was twofold. First, secondary data was collected from the websites of the four banks in relation to their mobile payment initiatives, as well as from the press releases and other media supports in which they announce and advertise their technology. The messages these banks want to convey through the media usually provide meaningful insights into their implementation strategy. Secondly, primary information was collected through interviews conducted with representatives of the four banks, who were directly involved in the mobile payment initiative since its inception until the end of its implementation. The main points discussed during these interviews aimed at gaining more insights into the technology deployed and the strategy implemented by the bank towards the merchants on one side and towards customers on another. The aim was also to highlight the major obstacles encountered by the banks during implementation and the strategy adopted to overcome them.

The interviews lasted for an average of one-and-a-half hours and the “conversation” was led on the basis of a semi-structured interview guide. The rationale for using semi-structured interviews for data collection stems both from its flexible and versatile nature, as it allows space for participants’ expression, especially on issues that are meaningful for them, and where they have to discuss their own perceptions ([Cridland et al., 2015](#)) specifically on sensitive subjects like success or failure. The interview guide was elaborated following the five-step process as presented by Kallio et al. ([2016](#)). The main discussed themes were a reflection of the formulated propositions and cover mainly four topics: a thorough description of the used technology; the strategy adopted towards both customers and merchants; the obstacles that were encountered and how they were dealt with; and, finally, an overall assessment of the success of the mobile payment initiative as compared to other innovative services offered by the bank. In order to gain accurate, in-depth and optimal information, follow-up questions were pre-designed with the aim of guiding the discussion. These follow-up questions were then refined and enriched after the first interview, which served as a pilot field-test. In doing so, not only has the coverage of the interview guide been improved, but, as well, the complete guide gained in terms of reliability as it allowed for identical data collection across cases and consequently enabled optimal comparability.

The main case study findings are presented within a cross-case display, as suggested by Miles & Huberman ([1994](#)), more specifically in a *case-ordered predictor-outcome matrix*, where the main outcome (or *criterion variable*) is “reaching a critical mass for mobile payment” in the Lebanese market, what we considered as being a successful adoption; whereas the predictors (or *antecedent variables*) are related to the specific technology deployed (its characteristics and the technical constraints imposed on adopters) and to the strategy adopted by the bank during the implementation process; and finally the hurdles it had to face. Such cross-case display allows for making contrasts and comparisons between cases in order to see whether

the antecedents account for the criterion variable. Table 1 shows the main findings within the said cross-case display.

Table 1. Cross-case main findings matrix

	NFC Technology		Mobile payment application	
	Competition models			Co-opetition model
	SIM-Based Secure Element	Host Card Emulation	QR Code Technology	White-label mobile payment solution
Initiative launch date (press release)	April 2014	November 2016	February 2016	February 2016
Technological characteristics	Secure element tied to the SIM card.	Cloud-based secure element	Mobile app. Authentication system. Card-not-present method.	Mobile app. Authentication system. Technology supplied by a specialized bank to 14 member-banks technically integrated to their system/network. “white-label” app.
Technical needs of customers	NFC enabled smart-phone or contactless watch, bracelet or sticker.	Any Android 4.4 device that supports the HCE technology	Any device equipped with a camera – QR code scanner.	Application available both on the Google and Apple Stores – Should have an account in any of the 14 member banks who should in turn offer the service.
Technical needs of merchants	Contactless NFC terminal at the POS	Contactless NFC terminal at the POS	QR code reader tablet.	Tablets with the App on it.
Strategy towards customers	Advertising awareness campaigns targeting young consumers/activities with long payment lines – Monetary incentives cash back	Awareness of young population on social media to a “trendy” way of payment No monetary incentive.	Targeted consumers: university students – “On-campus” demos and trials. Monetary incentives.	The primary customers are the affiliated banks to the network. Strategy towards banks: turnkey technology , no investment expenses – no upgrading fees – no membership fees – no administrative constraints Banks have to promote the MP app to their own customers. Targeted niche: the delivery market.
Strategy towards merchants	Monetary incentive: initial set-up and NFC enabled terminal	No specific action towards merchants. They are “supposed” to be equipped with	Tablets offered to merchants – Training of cashiers, employees –	Tablets that accept the App offered to merchants – plus

	NFC Technology		Mobile payment application	
	Competition models			Co-opetition model
	SIM-Based Secure Element	Host Card Emulation	QR Code Technology	White-label mobile payment solution
	rented to merchants at reduced fare – Training of merchants Awareness raised as to its benefits: shorter queues – more benefits – competition	the necessary upgraded terminal.	Reduced commissions – Earliest value redemption date	Internet and maintenance. Training of cashiers Monetary incentives: zero commission – Cash-back (compensated by the specialized bank/service provider) - Immediate cash receipt
Adoption hurdles	From customers' perspective: need to change the SIM card – Young customers not enthusiastic for “plastic” bracelets nor watches and even for sticker on the I-phone. From merchants' perspective: need to invest in the new NFC enabled terminal – Did not find the worth of using it – customers are not asking to pay through it. Existence of widely admitted payment substitutes	From customers' perspective: Not all customers / not all payment cards: Android devices only and “credit” cards only. Visa cards. Security concerns – Resistance to change.	From customers' perspective: limited market niche. From merchants' perspective: cumbersome “another terminal to put on the counter” – tablet not charged – the trained cashier is not on duty.	From the affiliated banks' perspective: did not take ownership of the solution – did not see relative advantages compared to payment substitutes. Did not promote it. Asked for exclusivity. From the merchants' perspective: Excessive turnover of cashiers: training lost. Too many payment terminals: confusion.
Overall banks' assessment of its MP initiative	Not a success – Better results not expected – Market exploration – Technical constraints admitted – Improved solutions to come (“e-wallet”)	The bank is rather satisfied, although adoption rate is low. Same importance given to all payment methods delivered by the bank. No strategy of cannibalization between products.	The P2M (pay to merchant) success is limited due to lack of interest/education/awareness. P2P option more successful.	MP was not largely adopted by both banks and merchants. Banks did not collaborate: no effort (advertising) for a solution that could benefit competitors as well. Merchants confused: too many payment alternatives and limited volume of transactions.

Results and Discussion

The main finding according to all respondents is that the diffusion of mobile payments to the Lebanese market was rather limited in terms of the percentage of customers who adopted this

innovative payment method. Despite this, the reduced outcome did not seem to disappoint the banks, as one respondent said that “*they did not expect any better results*”, while others even expressed rather satisfaction with the outcome even though in its limited scope.

It seems obvious that the banks’ objective was more focused on proactively exploring a new payment method rather than on improving market share or benefits. As one respondent said, “*it’s just another payment option that is added to the already existing and various methods*”. Similarly, another respondent added that “*it is just an exploration of the market to test its receptiveness to new ideas, and improved solutions are on their way in terms of e-wallet*”.

This leads us naturally to question the “readiness” of the Lebanese mobile payment market in regard to the type of technology deployed and its diffusion, as well as to the competitive pressure that was prevailing in the market and the consequent behaviours of the technology’s “adopters”, i.e., merchants and customers. In other words, it is all about bringing together the pieces of the TOE framework puzzle, namely the technology, the organization and the environment, and challenge them at the market level, as specified in this research, rather than at a company’s scope.

Concerning the first proposition related to the technological context, it was stipulated that, in order to reach a critical mass of adopters, the deployed technology should have reached a certain level of maturity and standardization; as it should, as well, be characterized by its openness, allowing the intended mass to adopt it. There is clear evidence that these two conditions were far from being met, especially given that the market is a rather small market in the volume of transactions being made. In fact, this small market has experienced within two years four different types of mobile payment technologies and no model could make it to the end and impose itself as a standard model. Moreover, and as stipulated by Dahlberg *et al.* (2008) and Ozcan & Santos (2015), it blurred the market, especially as concerning merchants who were cluttered with the myriad of technical supports associated with each technology, as well as the various technological drawbacks each one holds. This led them to naturally leave this payment method behind and rather opt for easier and well-established payment alternatives.

Furthermore, as concerning the openness of the deployed technologies, it is made clear that none of the four initiatives could be considered as “open”, in the sense of Ondrus, Gannamaneni & Lyytinen (2015) of a technology that “is compatible and does not discriminate segments of the customer base”. On one hand, the NFC-enabled technologies inevitably lead to exclude those customers with devices that do not support such technology. Although, an attempt has been made by the SIM-Based Secure Element technology provider to find solutions to get these customers back on track, through contactless watches, bracelets or

stickers, the attempt was rather unsuccessful. On the other hand, the banks who provided the mobile payment application scheme, although offering a technically compatible solution, divided the market by segments of customers, addressing the service to young university students for one of the cases, and to the “delivery market” for the other. Obviously, these banks targeted a segment of the market that could be receptive to such a technology and value its comparative advantage. However, and although the strategy of “targeting a point of attack” was considered as key by Moore (1999) in order to cross the chasm, a no less critical issue is that the selected market niche should provide, by virtue of its connections, an entry point to a larger segment, which was obviously not the case given the limited diffusion of the payment service. Therefore, the many technological obstacles added to the rather low-scale and closed target niche market prevented the dynamics or process of reaching a critical mass of users.

As regarding the second proposition, which relates to the organizational context of the banking industry, the aim was to compare the effectiveness of the mobile payment implementation across two competing models, namely the competition and the co-opetition models; and, as stipulated earlier, the collaboration between competing banks through the deployment of a single intra-industry solution, the so-called co-opetition model, should theoretically result in better implementation results. The fourth case study describing the technology deployed by the specialized bank provides a perfect illustration of this model, since it was a “white-label” application intended to be adopted by fourteen of its member banks, who were, in turn, supposed to provide the mobile payment service to their respective customers.

Such a different scenario, compared to the three others, leads us to consider the member banks not only as intermediaries between the service provider bank and the potential customers, but also and more importantly as “facilitators”. In fact, since they were asked to take ownership of the technology and put their own label on it, they were supposed to invest in the necessary resources and effort to support its diffusion to the market. Obviously, “*not enough coordination between member banks was witnessed*”, as one respondent acknowledged, despite the many facilitating conditions that were provided to them. Moreover, by noting that “*banks asked for exclusivity*” and that they “*did not see the worth in advertising for a solution that could benefit competitors as well*”, one could infer something about the intensity of the competitive pressure that prevails in the payment market, which compromised the diffusion of innovation. This allows for the conclusion that, in accordance with Ritala (2012), in a highly competitive industry, the co-opetition model did not prove to be efficient in terms of innovation performance as regards mobile payment adoption in Lebanon.

Finally, as concerning the third proposition related to the environmental context, it was suggested that the banks should deploy a strategy that aims at involving actively both merchants and customers in order to get them “on board”. Indeed, the incentives provided to

customers ranged from advertising awareness campaigns, to live demos and monetary incentives; whereas the strategy adopted towards merchants included monetary incentives, either in terms of offered equipment or reduced commissions or even reduced value dates, as well as training and awareness-raising campaigns. However, all these stimuli did not yield positive feedback in terms of large-scale adoption of mobile payments.

It could be inferred from the interviews that, as far as customers are concerned, two main factors could account for their low adoption rate. The first one is in relation to the *switching costs* associated with adopting the payment solution, either in terms of the incompatible device they possess or in terms of the learning costs related to changing a well-established habit. This assumption is in line with the major contribution of the *push-pull-mooring framework*. Moreover, the second adoption hurdle lies in the competition among the various payment alternatives and substitutes that exist in the Lebanese market, which leads us to reflect on the need for this additional alternative. It suggests that the success of the mobile payment initiative in sub-Saharan countries, like Kenya, Uganda, Tanzania, Zimbabwe and Somalia, stems from the important fact that, apart from creating an enabling regulatory environment, it was intended to meet the urgent needs of a poor population characterized by low financial inclusion and was therefore “led by the market” (Burns, 2018). The context of the Lebanese payment market is quite opposite since, even though the regulatory environment is favourable, the rate of the unbanked population is relatively low compared to the sub-Saharan countries^v and the payment methods, ranging from cash payments to credit and debit cards or by cheque payments, are various and yet effective.

Therefore, this discussion raises again the old debate on whether innovation should be demand-pulled or technology-pushed. The mobile payment initiative in the Lebanese market is a typical case of a technology-push innovation that failed to pull the demand with it. The low adoption rate by customers is a clear illustration of their unwillingness to change payment habits that have proven satisfactory. The same goes for merchants who did not feel the “need” for this solution. Although banks tried to “create a need” by conveying the benefits of “*shorter checkout lines*” and “*faster money receipt*” or even “*increased number of transactions*”, the message has obviously not got through. Here, as well, the wide range of existing payment alternatives led to increased confusion at the payment desks. These findings are in line with Pantano & Viassone (2014), who pinpointed the critical importance of both retailers’ preparedness and support for technology-based innovations as well as consumers’ positive attitude towards it. Added to this, the relatively small transactions volume, linked to the rather unfavourable economic climate that was prevailing at the time mobile payment was introduced, was also an important factor to account for the low adoption by merchants of this solution. As evidence of this, when asked about the position of merchants regarding this

payment method, the answer was: “*what counts more for merchants is that the transaction be done regardless of how it is going to be settled*”; in other words, all payment methods are equal to merchants provided that the payment is done.

By way of synthesis, emphasis should be laid on the theoretical contribution of this paper. In fact, the originality of the study lies in its applied methodology, as it extended the scope of the TOE framework from a micro-company level to a wider meso-market level. The new upgraded theoretical framework provided a strong and reliable toolkit when put into practice, as it guided the analysis by shedding light on the critical factors that are at play when a technology-based innovation is introduced. Moreover, it helped uncover the complex dynamic that sets in between stakeholders, being banks, customers and retailers, especially for innovations that need an “adoption network” to enhance their diffusion.

Conclusions

In conclusion, the main objective of this paper was to explore the readiness of the Lebanese payment market for mobile payments through three main indicators, borrowed from the TOE framework, namely the technological context, the inter-firm organizational context, and the merchants-customers’ environmental context. This model has the major advantage of allowing for an integrative approach, as it sheds light on all factors that are at stake when an innovation is introduced to a multi-sided market. As well, it shows the complex dynamics that are at play between all stakeholders, banks, merchants and customers.

Our four case-study findings suggest that the readiness of the Lebanese payment market to absorb the new payment method was not meeting expectations. The many factors accounting for this underperformance were equally linked to the multiple technologies deployed, to the inter-firm highly competitive pressure prevailing, and, finally, to the low responsiveness of both merchants and customers. The interesting fact is that these three factors were not acting in isolation, but were rather interrelated and mutually reinforcing each other.

In fact, from the deployed technology perspective, flooding the marketplace with multiple competing and incompatible technologies, together with their associated services, led to a battle of standards. Besides, this battle was all the more acute given the excessive competitive pressure in the banking industry, which prevented reaching a dominant standard model as each bank wanted to impose its own technology; all the more so, since merchants and customers did not adopt the deployed technologies, undervaluing its relative advantages compared to its costs, and significantly hindering the reach for a critical mass by any of the implemented technologies.

However, and having said that, the difficulty lies in formulating proper recommendations for the practice. Indeed, it could be suggested that imposing a unique standard-open technology could help address both issues of a standards war and competitive pressure between incumbents. But, here again, what if the end adopters reject the technology for lack of interest, need or demand? Conversely, moving from downstream to upstream by exploring the market needs on the look-out for new ideas would more likely result in a rather incremental change, given the conservative nature of economic agents, especially in terms of payment methods.

In sum, this research has contributed to enrich not only the empirical literature on mobile payment, but also the theoretical corpus by extending the scope of the TOE framework, since it cuts across many conceptual frameworks of innovation economics (technology push-demand pull models), innovation management (Moore's chasm), network economics (multi-sided market models), organization and competition theories (competition versus co-opetition models) and technology acceptance and diffusion models. Although the main originality of the research lies in its focus on the upstream of the process, i.e., the banks that provided the service, some could see it as a limitation, since all results, inferences and conclusions came out of the "bankers' viewpoint". This is certainly to be acknowledged; however, it also leads to suggest further research on more in-depth micro-behavioural analysis at both customers' and merchants' ends in order to get more insights into their own adoption decision-making process, specifically when a new disruptive service technology is at play in a highly competitive and yet complex environment of multi-sided adopters. These research topics are all the more pertinent today in view of the changing behavioural patterns resulting from the COVID-19 pandemic and its corollaries, which largely challenges the pre-COVID-19 theoretical and empirical corpus and paves the way for new opportunities for research, science and technology.

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Endnotes

ⁱ <https://datareportal.com/reports/digital-2020-lebanon>

ⁱⁱ The role of both government and financial regulatory authorities is not addressed in this study, as these entities provided the necessary agreements in principle to the deployed mobile payment service.

ⁱⁱⁱ This study is part of a larger research project conducted and financed by Saint-Joseph University and aimed at exploring the reasons of the failed mobile payment initiative in Lebanon. The project consists of two parts: a qualitative case study of the banking sectors and a quantitative survey of consumers. This paper reveals findings of the first qualitative part.

^{iv} The name of the four Banks will not be disclosed, intentionally, and we will rather be referring to each one by the mobile payment technology it deployed.

^v According to the World Bank Global Findex database for Lebanon in 2017, the rate of adults and companies who have bank accounts exceeds 45% and 92%, respectively (<https://globalfindex.worldbank.org/>). In comparison, the rate of inclusion in Kenya was around 26% for individuals before the introduction of M-Pesa (source: Kenya Economic Report, 2020 – <https://kippra.or.ke/download/kenya-economic-report-2020-2/>)