Primary submission: 21.03.2017 | Final acceptance: 26.07.2017

The Promise of Fintech in Emerging Markets: Not as Disruptive

Tatiana Zalan[1], Elissar Toufaily[1]

ABSTRACT

Fintech innovations – innovations by financial services providers based on digital technology – are widely believed to have a disruptive effect on the financial services industry. The purpose of the paper is to investigate how financial services industry participants perceive the effect of digital disruption as well as to explore what strategies are being adopted by incumbents in the face of potential disruption from fintech challengers. Based on an exploratory study with stakeholders from the financial ecosystem in the Middle East and North Africa (MENA), the findings show that the fintech sector is still nascent, but is likely to be disruptive in selected product and customer segments. Multiple regulatory, structural, and cultural obstacles stand in the way of fintech adoption. Incumbents' preferred strategy to face the future disruption is the bank-fintech collaboration, which will create new value for ecosystem partners and speed up innovation. Our study adds useful insights to the body of knowledge related to disruptive innovations in general and fintech in emerging markets in particular. Specifically, the collaborative response is inconsistent with the strategies usually recommended for incumbents in disruptive innovation theory. We hypothesize that our participants' preference for partnering can be explained in the light of the distinctive characteristics of the digital economy. We propose a framework for creating a financial services platform embedded in a broader ecosystem to facilitate the bank-fintech collaboration.

KEY WORDS: disruptive innovation, fintech, financial services industry; emerging markets; banks

JEL Classification: G21, G23, L1

[1] American University in Dubai, UAE

Introduction

At the end of 2015, Forbes concluded: *the banking industry is ripe for change with the rise of fintech start-ups, the growing popularity of blockchain technology*[1], *and the dominance of millennials* (Sorrentino, 2015). Fintech, financial services providers based on digital technology, is revolutionizing the way in which financial services are conducted, with increased convenience and lower operational costs being its key differentiators (Arner, Barberis, & Buckley, 2015; Chuen, Lee, & Teo, 2015). Examples of innovations that are central to fintech today include cryptocurrencies and blockchain, new digital advisory and trading systems, AI (artificial intelligence) and machine learning, equity crowdfunding, peer-to-peer (P2P) lending and mobile payment systems (Philippon, 2016).

The fintech sector is experiencing a third era in its evolution – Fintech 3.0 – whereby new start-ups and established technology companies have started to provide financial products and services directly to the public, underpinned by a shift in consumer mindset as to who within the industry has the le-

Correspondence concerning this article should be addressed to: **Tatiana Zalan**, American University in Dubai, UAE, DL : +971 4 318 3341, F : +971 4 399 8899. E-mail: tzalan@aud.edu

gitimacy and resources to deliver financial services (Arner et. al, 2015). While the financial services sector has innovated, these financial innovations have not improved the overall efficiency of the economic system, which can be explained by a lack of new entry and competition (Philippon, 2016). Indeed, McKinsey (2016) suggests that $90 billion of banks' profits may be at risk globally by 2025, with developed-market banks most vulnerable. The banks' most profitable part of the value chain is fee-based products (e.g., investment advice and payments, or around 60% of bank's profits), where ROE is high, at 22% (Dietz, Khanna, Olanrewaju, & Rajgopal, 2016), and it is precisely this profitable, fee-based, part of the bank's value chain that is most vulnerable to disruption.

While there is much apocalyptic hype about financial services industry "disruption" by fintech in the media, we have little doubt that digital entrants will change the industry in profound ways (Mills & McCarthy, 2017). One of the key issues at the heart of current academic, practitioner, and policy debate on banking and fintech (Chiu, 2016; Gurdgiev, 2016; Zetzsche, Buckley, Arner, & Barberis, 2017) is whether these new entrants will eventually displace traditional banking institutions much in the same way as digital media has disrupted traditional publishing and advertising or, alternatively, hurt banks' profitability, as is currently the case with online education eroding higher education industry profits. In fact, some industry observers believe that fintech's disruptive impact would be particularly large in emerging markets such as the MENA (Middle East and North Africa) region (Diemers, Lamaa, Salamat, Steffens, 2015; World Bank, 2015), where a major proportion of the population (about 85%) is unbanked and access to finance for SMEs is among the lowest in the world. Accordingly, the purpose of our research is to (1) investigate how the participants in the financial industry perceive the effect of digital disruption on the established financial services industry in the context of an emerging market; and (2) explore what strategies are being adopted in the face of disruption from fintech challengers. Understanding the extent and effect of the disruption as well as the strategies adopted by financial industry players will add useful theoretical insights to the body of knowledge related to disruptive innovations in general and fintech in emerging markets in particular. Thus, by exploring the level of disruption in an emerging market, executives in the financial services industry could make more informed decisions on how to better face fintech challengers. Our study makes a contribution to the existing theories of disruption (Christensen & Raynor, 2003) and substitution (Ghemawat, 2006) by identifying the strategy of collaboration and partnership between start-ups and incumbents as a novel response to potential disruption, which applies even to the segments that are believed to be genuinely disruptive to the banks' mainstream business (e.g., wealth management and P2P lending). Our proposed framework for creating a financial services platform embedded in a broader ecosystem goes some way in addressing the bank-fintech collaboration.

It is important to highlight some of the unusual structural characteristics of the financial services industry in the GCC[2] and the MENA, the immediate setting of our research. According to the World Bank (2015), the banking industry in the GCC is bank-based, with NBFIs (non-bank financial institutions) having a limited presence, and has low penetration rates (Bahrain and the UAE are exceptions). The sector is largely domestically owned due to high barriers to entry; public ownership and concentration are common. The long-term impact of the financial services sector on the economic growth has been weaker than in other regions, most likely because of the limited access to financial services, and to credit in particular. Diemers et al. (2015) report that the GCC countries have not established particularly deep fintech ecosystems, even though their key elements are already present in the GCC.

We start the paper with a literature review, with a focus on research on fintech and theories of substitution and disruption. This section is intentionally brief, as its purpose is to orient the reader, rather than develop hypotheses / propositions. This is followed by a research methods section. Next, we present and discuss our results. The paper concludes with implications for further research and limitations.

Literature Review

Fintech research

Fintech refers to innovative financial services or products delivered via technology. According to PwC

 DOI: 10.5709/ce.1897-9254.253

(2016), fintech is "the segment that is at the intersection of the financial services and technology sectors where technology-focused start-ups and new market entrants innovate the products and services currently provided by the traditional financial services industry". To capture its multifaceted nature, Catalini, Halaburda, King, and Vergne (2017) put forward a high-level definition of fintech as "a movement toward the digitization, decentralization, and disintermediation of economic transactions, powered by information technologies such as peer-to-peer networking, big data analytics, machine learning, blockchain technology, and open APIs."

Systematic academic research on the topic of fintech is still in its infancy, typically focuses on one issue and lacks a robust theoretical and empirical base; most research so far has been done by consultants and banks, with notable exceptions such as Iansiti and Lakhani (2017) and Mills and McCarthy (2017). Several theoretically grounded papers are related to crowdfunding as an important source of financial capital for nascent entrepreneurs (e.g., Allison, Davis, Short, & Webb, 2015; Bruton, Khavul, Siegel, & Wright, 2015). Bruton et al. (2015), in particular, investigate new financial options for entrepreneurs, such as crowdfunding and P2P lending, and propose a framework for a systematic approach that entrepreneurs can use to start and grow new financing ventures. Research on blockchain technologies is also gaining momentum. For example, Lindman, Rossi, and Tuunainen (2017) propose a research agenda on the opportunities and risks of blockchain technologies in payments, by focusing on three sets of organizational, technological design and competitive environment issues. Lemieux (2016) explores the value of blockchain technology as a solution to creating and preserving trustworthy digital records. Chuen, Lee, and Teo (2015) discuss the LASIC (Low margin, Asset light, Scalable, Innovative, and Compliance easy) principles for successful fintech firms, such as Alibaba and M-PESA, and examine the benefits of investing in fintech start-ups for financial inclusion. Academic research that focuses on an industry-level analysis of the extent of disruption that fintech innovations can bring to the financial services system is still sparse (see Mills & McCarthy, 2017, for an exception). Our empirical study is a step in this direction.

Substitution and disruption

Given the focus of our research, our theoretical points of departure are notions of sustained competitive advantage in the face of substitution (Ghemawat, 2006) and disruptive innovation theory (Christensen & Raynor, 2003; Christensen, Raynor, & McDonald, 2015). A firm's sustained competitive success in the marketplace is often threatened by substitution, or displacement of scarce resources (e.g., brand, reputation, capabilities, proprietary knowledge) with other strategically equivalent valuable resources. The latter enable current or potentially competing firms to implement the same strategies, but in different ways, using different resources (Barney, 1991, p. 111). Challenged by substitution, firms can employ a broad array of possible strategic responses: *not responding*; *migrating* (redeploying resources to uses that are less susceptible to substitution threat); *harvesting* (a shift toward exploiting existing resources instead of building them up); *defending* (by either increasing a customers' willingness to pay, reducing costs or doing both in the existing business); *straddling* (establishing a foothold in both the existing and new market); *switching* (shifting to the substitute); *recombining* (exploiting hybrid possibilities); and *leapfrogging* (out-substituting the substitution threat through value innovation) (Ghemawat, 2006).

The concept of disruption is closely related to substitution (Ghemawat, 2006). "Disruption" describes a process whereby a new entrant with fewer resources is able to successfully challenge established incumbents (Christensen et al., 2015). Christensen and Raynor (2003) capture the dilemma that many senior executives are facing: whether to persist with the status quo and the existing set of customers and solutions or to radically change the business. The theory of disruption makes a clear distinction between *sustaining innovations* and *disruptive innovations*. The former are aimed at existing customers and can be either incremental improvements or radical breakthroughs, yet both enable firms to sell enhanced products with higher margins to the most profitable customers (Christensen, 2003; Christensen et al., 2015). Disruptive innovations, by contrast, originate in low-end or new markets (i.e., they target non-consumption) and provide 'good enough' solutions (i.e., they are faster, cheaper, more flexible, less complex) that are considered inferior by mainstream customers, but may be attractive to a small segment of less demanding or new customers. *Efficiency innovations* (lowering cost and making the same products cheaper) tend to serve the same markets better.

Once the disruptive technology gains a foothold in these markets, the improvement cycle begins: the pace of technological progress eventually outstrips customers' ability to use the technology, and the previously not-so-good technology improves enough to intersect with the needs of more demanding customers in the mainstream. Once these customers adopt the technology in large volumes and accept the lower prices, this sets disruptors on a path that may ultimately displace the incumbents. Disruptions paralyze industry leaders, because incumbents' organizational capabilities, resource allocation processes and reward systems are geared toward supporting sustaining innovations (Christensen & Raynor, 2003).

Christensen et al. (2015) clarify some of the misconceptions about disruption. Disruption is a process that takes time: complete substitution, if it happens at all, may take decades. This dynamic helps to explain why incumbents, who have the resources to defend their established positions, often overlook disruptors, who gradually erode incumbents' margins and ultimately profits. Disruptors often build business models that are quite different from those of incumbents. Success in the marketplace is not an inherent feature of disruptive innovation theory: some disruptive innovations will succeed, while others will fail. Finally, the popular slogan "disrupt or be disrupted" may be misleading, and incumbents should not overreact to disruption by divesting their profitable established businesses. Strategic change for incumbents in the face of disruption is difficult. One response to disruption is straddling – for example, creating a new division focused exclusively on opportunities opened up by disruptive innovations, which means that the straddling firm will be running two rather different businesses simultaneously (Christensen et al., 2015).

Research Design

Because of the relative novelty of the topic in academic research, particularly in the MENA context, an exploratory research design was adopted. In-depth, semi-structured interviews were conducted in English with different stakeholders from the financial ecosystem in the MENA region, starting in mid-2016. Twenty-five participants from inside and outside the banking industry were interviewed; each interview lasted on average 50 minutes, was tape-recorded and transcribed. Heeding the advice of Miles and Huberman (1994), we used a purposeful sampling technique to identify the specific interviewees representing the spectrum of knowledge and experience in the fintech innovation area.

The participants in this research came from diverse backgrounds, representing 15 senior executive bankers and CEOs in the financial sector, 5 Fintechs entrepreneurs and CEOs, 4 IT senior executives and strategists at large technological companies and one regulator. Most of the respondents (93%) were male and the average age was 45 years. The profile of banks was also diverse, from corporate, commercial, investment to retail banks, both local and global. Reflecting the cultural diversity of the region, all of our respondents (based in the UAE) had international experience across the region and so a wider perspective on the most recent developments in the sector. According to Mollenkopf, Frankel, and Russo (2011), interviewing multiple profile respondents (e.g., bankers, starts-up entrepreneurs, regulators, IT executives) supports the validity of the findings and offers a varied perspective on the topic of interest.

While we did not have a "start list" of codes (Miles & Huberman, 1994), the interview guide was nevertheless informed by the received literature on fintech and disruptive innovation and included about 30 questions grouped around six core topics: strategy, disruption and business models; competition; technological capabilities and omni-channel strategies for consumers; regulations and government support; entrepreneurship and innovation, and the future of the two sectors. Some questions in the interview guide were occasionally adjusted to the profile of the respondent. The questionnaire was pre-tested with peers and an industry participant for clarity and relevance.

The analysis of the interview data focused on comparing the interviewees' responses to identify similarities and differences (Charmaz, 2000; Flick, 2014) on the aims of qualitative analysis) in the participants' perceptions of the extent of disruption in the financial sector. We were especially interested in identifying the differences between the two groups of respondents – bankers and non-bankers (e.g., fintech managers and entrepreneurs). We extracted the most relevant interview excerpts under each of the questions and tabulated these excerpts as a data management technique recommended by Miles and Huberman (1994) and Roulston (2014). This allowed us to further code the data (initially as open codes and then axial codes) (Saldaña, 2015) in order to prepare the data for interpretation. The outcomes of coding, categorization and reflection became 'themes' (Saldaña, 2015), which were interpreted by the researchers with references to the received literature, whenever possible. We organize our subsequent discussion of results around these five core themes: competition and disruption from fintech, segments at risk of disruption, challenges in ecosystem development, complementarity of assets and capabilities, and strategies to face disruption.

Results and Discussion

Competition and disruption from fintech

The interviewees' perceptions of the state of the financial services industry in the MENA region varied considerably. Some believed that the industry is saturated, competitive and highly volatile due to its high dependency on the U.S. dollar and reliance on oil revenues. Other interviewees, however, stated that the industry still has some room to grow, particularly in the UAE, where the sector is more advanced and profitable compared to the region. By contrast, the interviewees were markedly more in agreement regarding the fintech sector's state of development. Fintech in the region is still at a nascent stage despite the favorable demographics (i.e., educated people, high levels of income, particularly in the GCC, and high mobile penetration rates), and several high-profile digital initiatives driven by governments, such as the 2020 UAE government blockchain initiative.

Our interviewees' responses to the question whether fintech is disruptive to the traditional banking sector fell largely into two categories. The first group took the position that fintech innovations should not be considered as an existential threat to financial service providers. Some executive bankers in the study believe that disruption has not yet arrived: " There is no disruption yet, banks need to open their APIs "; "Tech companies (Beehive, Payfort) will not affect the business"; "Fintech does not have to disrupt the market; it may stimulate it". The second, smaller, group of bankers saw it as a threat to the industry: "The disruption is there, the technical financial solutions are there, they are in a better position than banks as they are less regulated. They have the technology to provide better solutions than banks."

Similarly, fintech entrepreneurs assessed the state of disruption rather differently: "…there is no disruption till now. The banks will not disappear because of heavy regulations". Others believed that fintechs will take a slice of the banks' business; still others contended that banks should look at fintech innovations as an opportunity for bank-fintech collaboration. We suggest that such heterogeneity of responses is to be expected and is most likely related to the nature of uncertainty associated with any innovation. The sector in the MENA region is indeed at a very early, experimental stage of the technology lifecycle, where "only a few fintechs are making the buzz", to cite the head of digital channels at a commercial bank.

Segments at risk of disruption

Vertical segments. One of the questions related to whether fintech innovations are indeed disruptive is which segments of the banking industry are more susceptible to disruption than others. Most of our respondents agree that the financial products and services most at risk from fintechs in the MENA region are the **retail banking products**, including consumer payments solutions, consumer credits, simple saving products and current accounts. One commercial senior banker stated: "Commercial customers will be most affected. This technology is more useful for retail, personal accounts. For example, when paying bills, it's easier to use an application." Fintechs "will not affect corporate banking services or private banking ones but it might affect some retail banking segments " (Investment bank CEO).

Other than consumer banking products, **payment solutions** are one of the largest sectors, offering opportunities for innovation. Payments – comprising consumer payment services, merchant payment services and new payment types – have received the largest private equity investment as a category (30%) currently dominated by fintech (Khalil, 2016). According to a senior project manager, "payments are the biggest segment in which the fintechs are taking over. Banks will still provide loans and credit cards. The fintech can use their services for payments in which the bank will have to adapt to". Disruption in payments will continue, with ongoing innovation shaping customer behaviors, business models and the structure of the industry. For instance, alternative payment systems, such as CashU/Payfort are slowly gaining popularity on the back of increasing e-commerce transactions. However, payment solutions will need to be improved to allow e-commerce to grow. Regulators and central banks have a role to play in modernization, while entrepreneurs need to find ways through partnerships and innovative products to demonstrate real-value to customers (Hally, 2016).

Fintech start-ups in the region are also entering the **crowdfunding** (e.g., Eureeca, Aflammah and Durise) and **P2P lending** (e.g., Beehive) segments. These platforms offer innovative solutions for regional SMEs that find it difficult to obtain financing from traditional channels. According to the World Bank (2015), the average lending to SMEs in the GCC is only 2%, among the lowest in the world, and lack of credit availability is a serious obstacle to business expansion. In the MENA's highly regulated environment, P2P lending is still nascent, but is slowly gaining more acceptance across the region. According to our interviewees, simplified P2P systems could be a potential threat: "SME, entrepreneurs and innovators have faith in fintechs, because most banks only fund start-ups when they are …in the 500K-1 million segments" (Fintech Entrepreneur). Likewise, **wealth management** is a very new fintech segment. Regional regulations that cover financial advisory mean that customers are unlikely to take advantage of fintechs' low fees and user-friendly platforms (e.g. Wealthfront and Betterment). Alternative options are emerging, such as Finerd which intends to bring Sharia-compliant products to market in 2017.

In summary, fintechs in retail banking for consumers, such as digital banks and consumer/merchant payment solutions, could be considered sustaining innovations and in some cases efficiency innovations, because they are simply targeting the same customers at lower cost via an improved process. By contrast, P2P lending and crowdfunding are disruptive. The wealth management sector could be potentially disruptive (i.e., it can target non-consumption), provided regulations are relaxed. Our conclusions are largely consistent with Neagu (2016) who contends that only three sectors in fintech would qualify as genuinely disruptive innovations – marketplace lending, robo-advisers and crowdfunding.

Customer segments. According to Dietz et al. (2016), the customer segments most susceptible to disruption are millennials, small businesses and the underbanked— three segments particularly sensitive to costs and to the enhanced consumer experience afforded by digital delivery and distribution. Our findings are broadly supportive of this argument. As fintech start-ups provide more agility, innovation, customer experience and 24/7 convenient services, **millennials** are turning their interests to these alternative financial providers (e.g., digital wallets) (Mesropyan, 2016). The traditional structures, legacy systems and banks' mindsets are making it difficult for the bank to compete with fintechs for the millennial segment. This segment is particularly important for the MENA region, which is experiencing the youth bulge (more than 30% of the population are aged 15-29). Hence, there is a perception that digital technologies need to become the core of every future banking business model: "… Banks need to …adapt to the needs of the young generation in the region who are mobile and social media savvy and are heavy users of different channels" (CEO, investment bank). While branches are still considered the banks' most valuable assets, this is completely irrelevant for millennials, as most of them have never had a relationship with a bank.

SMEs in the region is another segment facing gaps in commercial expertise and funding from risk-averse banks, which is where fintechs, with their innovative products (e.g., crowdfunding), can step in (Hally, 2016). "Better financial support is required to aid small businesses, and here Fintechs can play a role" (fintech Entrepreneur); "Entrepreneurs have certain business models but do not have the working capital solutions… Fintechs can fill the gap" (fintech CEO). Banks in the MENA region exited small business lending because it was not as scalable as consumer lending or corporate lending, enabling fintechs such as Liwwa (a P2P lending platform) to start offering low-cost solutions.

Moreover, the opportunity to promote financial inclusion for **the under- or unbanked population** in the region has been repeatedly mentioned by our respondents as an area where MENA's fintech entrepreneurs could make a significant social impact, aided by high penetration rates of mobile and low penetration rates of traditional banking and credit cards. For example, Bolero, an American fintech operating in the MENA region, offers financial transactions to the unbanked population using mobile technologies. Fintechs could revolutionize the delivery of financial products, particularly if they support their digital money management capabilities (in remittances and payments) with a clear strategy to educate the population, while in the process moving the customers from the informal economy to a formal one. Based on these results, fintechs targeting deserted millennials can be regarded as disrupters, and those serving banks' existing customers can be seen as sustaining innovators. Innovations targeting deserted SMEs and the under- or unbanked that are deemed too difficult to service by incumbents are genuinely disruptive.

Challenges in ecosystem development

Ecosystems are "intentional communities of economic actors whose individual business activities share in some large measure the fate of the whole community" (Moore, 2006, p. 33). The ability of fintech to create value vitally depends on the availability, progress and development of critical parts of the ecosystem (Adner & Kapoor, 2016), such as regulations, services, consumers, and technology suppliers.

According to our interviewees, multiple obstacles are standing in the way of the regional fintech ecosystem development, with the cash-based economy and a lack of trust in the financial system remaining key barriers. Lack of access to finance for fintech entrepreneurs is delaying fintech scaling up, as venture capital-backed entrepreneurship is relatively new and a paucity of exit options within the region is making VC investors wary of investing in such technologies.

A further issue is availability of talented and skilled IT teams, because outsourced talent may not be up to the challenges of tomorrow's technical environment, where partnering with customers is deemed essential. "Talents are scarce in the region and are distributed in an unbalanced manner", as a senior IT manager in a large technology company suggested. Financial institutions do not appear to have the internal knowledge and expertise they will need to implement a "what do our customers want?" approach. Another interviewee (a senior IT manager) also pointed to a lack of skills: "It is clear that many IT executives and non-IT personnel in the region do not have the skills needed to build and operate an effective digital offering". This lack of skills is particularly glaring is the area of blockchain technologies (e.g., Ruby or Python developers), according to one of our informants. Our findings are consistent with other research, such as Accenture's study (2015), who find that, when it comes to culture and talent, most banks' CEOs feel inadequately equipped for the digital age.

By far the most important ecosystem actor constraining fintech expansion appears to be regulators, who were mentioned multiple times by bankers and entrepreneurs alike. The KYC (know your customer) requirement remains very traditional, and the digital signature has not been adopted at scale: according to one respondent, "the digital signature is struggling to become mainstream, banking apps only offer very basic services, and very few banks are adopting the fintech ways". Most of our respondents believe that current laws for the financial sector are hindering fintech innovation, and that regulation is falling behind innovation. As our respondents pointed out, "innovation happens first and regulations happen next…there is a need for a new regulatory framework in order to invite innovation"; "regulators should definitely become more progressive and understand...people call it...the Facebook era so they have to adapt their regulations to allow for innovation and solutions that are aligned with the living and spending habits of their consumers". Additionally, "The laws are hindering innovation, there are a lot of laws preventing us from going digital. For example, there is a law that a customer passport must be [scanned] and identification must be made before giving him a loan or setting a new bank account" (senior executive at a commercial bank). From the fintech entrepreneur viewpoint, the largest regulatory obstacles are proof of funds when executing large transactions, documentation and background checks. On a positive side, our respondents indicated that current laws are opening up slowly, and it is done in a culturally sensitive manner to facilitate technological investments: "the government and the central bank are facilitating digitization strategies…they are asking for a lot of compliance with policies and processes from banks and we are working together" (fintech entrepreneur). Although the UAE, and particularly Dubai, is at the forefront of encouraging fintech companies, it remains preferable to work with existing banks: "The UAE government is working on facilitating the process for start-ups, yet it is easier to collaborate with already established financial institutions until start-ups get legalized" (fintech CEO).

Regulatory challenges, it should be noted, are not unique to the banking and fintech sector in the MENA region. In developed markets, increased regulation of the financial services sector in response to the GFC has, on average, had the beneficial effect of lowering systemic risk, but left some of the other issues, such as complexity and opaqueness, unresolved (Philippon, 2016). Finally, despite the emergence of online alternatives, many customers, particularly the older segments of the population, still prefer to go to a physical branch to carry out transactions, have a face-to-face interaction and build relationships.

In summary, cash as a preferred payment method, lack of trust in the financial system, a conservative mindset among the older customers and difficulty for fintech entrepreneurs to get funding, as well as lack of talent within banks and regulatory barriers remain the key obstacles to fintech ecosystem development. It is interesting to note that none of our respondents mentioned lack of customer awareness as one of the barriers. EY who developed the Fintech Adoption Index based on a survey of 10,000 customers in six countries, argue that lack of awareness is the main impediment to adoption, with the majority of non-fintech users claiming they do not know such products exist.

Due to these ecosystem challenges, fintech start-ups are unlikely to transform the financial sector in the foreseeable future; until the entire ecosystem is ready, the fintech expansion will be delayed, despite its potential (e.g., cost-saving, convenience).

Complementarity of assets and capabilities

Collaborative relationships among ecosystem partners and complementary, difficult-to-acquire assets and capabilities are usually recognized as a source of competitive advantage (Teece, 1986). While a radical technological change may render an incumbent's technological capabilities obsolete, established firms can still excel in exploiting the change if their existing capabilities are intact and such capabilities are important and difficult to imitate from new entrants. Our results point to rather distinctive sets of capabilities of the banking sector and fintechs. Large, well-established financial institutions have the advantage of scale and trust, strong compliance systems in place to manage regulations and the client base and resources to prosper in tough economic conditions. Moreover, banks remain well protected by regulations, particularly with regard to deposit holding. Our interviewees indicate additional advantages of banks over fintech start-ups, such as a broad range of products/services, authentication/licensing requirements, and experience in regulatory compliance, strong branding and reputation, security and safety.

By contrast, the appeal of fintechs lies in their ability to offer a highly focused solution, deliver an enhanced, personalized customer experience and tap into the power of digital technologies to provide value. When interviewees were asked about the advantages of fintechs over banks, they readily mentioned accessibility, convenience, innovation in providing solutions, creativity, speed, agility, flexibility, cost-effectiveness and technological capabilities. As one entrepreneur stated, fintechs offer "extra customizability, bigger online presence, faster loan approval, and lower interest rates". Fintechs' business model is centered on leveraging the latest technology to provide great customer service; however, they lack the resources to ensure business sustainability in the longer term and face trust and cybersecurity challenges. For fintech innovations to be adopted on a large scale, there is a need for a migration of trust from today's effective but expensive established institutions to more convenient, less costly platforms and technologies. Success will not materialize if the trust issue is not addressed effectively. Some of the difficulties that lie ahead include understanding whether or not financial transactions can be hacked, addressing fintech reputation, and navigating potential regulatory challenges. Fintechs should recognize the importance of reputation and trust from the perspectives of both consumers and regulators.

Given these rather different sets of capabilities, how is the financial sector prepared to meet the fintech challenge?

Strategies to face disruption

Based on our results, we have identified five strategic responses that the banking sector has adopted or plans to adopt: (1) maintaining status quo; (2) deepening

Table 1. Banks' Strategies and Illustrative Quotes

Strategies	Examples of Illustrative quotes
Maintaining status quo/ Pursuing sustaining innovations	"We have to upgrade ourselves. We have to understand more customers, specifically millennial to provide them what they like" (Head of digital channels at a commercial bank). "We are planning to keep working on our human talent. Technology is made by humans, so it is secondary. But, we also focus on issues such as security, fraud and hacking" (Branch manager at a commercial bank).
Deepening own digitalization capabilities (sustaining / efficiency innovations)	"Three strategies are our focus for the next years: innovation, digitization and understanding the client's problem" (Head of global transaction services, products & trade at a retail bank). "Mobile banking is the way forward; online can add a lot of value" (investment advisor at an investment bank). "Physical branches will not disappear, physical and digital branches will co-exist" (branch manager at a commercial bank). "[The bank] made full transition to digital banking platform (in the past years); need full functionality with mobile" (branch manager at a retail bank). "We are trying to outsource a lot of stuff, by getting companies that have technical and digital areas that are better than our IT section and which will implement it faster and in a more efficient way" (project manager at a commercial bank).
Setting up own fintech (a stand-alone organization) to pursue disruptive opportunities (straddling)	"… the banks will be the FinTechs. I mean if Samba can have 460 developers… HSBC has 10,000 developers in India for software developed for HSBC all over the world. You think it's not easy for them to investigate FinTech technology?" (CEO of a blockchain fintech)
Investing in fintech (e.g., acquisition) – acquiring capabilities	"[We are] investing in Fintech companies to avoid losing market to fintech. Other banks have a risk of [losing] market share" (CEO of an investment bank). "Given the high penetration rate of mobile and low penetration [rate] of banking and credit cards in the MENA, we are investing in Fintechs to ease the transactions for the population" (Senior executive at a commercial bank).
Partnering / collaboration with fintech	"We need to collaborate with financial institutions…Banks will not disappear because of heavy regulations. The only solution is to work with them to maintain compliance with the regulatory environment" (CEO of a fintech). "Banks should collaborate with fintech start-ups" (Senior delivery manager in a tech company). "Fintechs will collaborate with us and we will work together to set solutions. It seems to be the case in most of the companies now" (Investment advisor in a retail bank). "Fintechs will support banks and partner with them rather than replacing them" (Senior analyst at a corporate bank). "Since banks need to benefit from fintech, and try to incorporate their technologies to regular banking, increased collaboration would be the solution" (Senior manager for technology services at a commercial bank).

own digitization capabilities; (3) setting up own fintech / straddling; (4) investing in fintech (acquisitions) and (5) partnering / collaboration. These strategies and illustrative quotes are presented in Table 1.

Three key findings emerged from our analysis of strategies. First, straddling, or having footholds in the traditional banking and fintech segments simultaneously (Strategy 3), appears to be the most underutilized strategy in the region. This result, however, is not surprising in the light of the findings on the bank-fintech collaboration, as discussed below.

Second, our respondents overwhelmingly suggested that bank-fintech collaboration (Strategy 5) will be the future of competition. Such partnership will be based on complementarity of capabilities: financial institutions can gain from fintech's agility, innovation culture, human talent and expertise in technology, and, therefore accelerated innovation; while fintechs can get access to banks' customer base, financial resources and regulatory compliance experience. Our informants believed that the bank-fintech partnership will result in simplified business processes, agility, digitization and openness, better fulfilling customer needs and closing the gap between the services offered by traditional banks and actual customer demands. These findings are fully consistent with research in other national contexts. For example, Dey (2016, p. 12) goes as far as to suggest that "collaboration between banks and fintech is not only desirable, but inevitable" and is likely to come in the form of investments in innovative start-ups, incubators, accelerators, hackathons and corporate venturing.

Two key informants, both from outside the banking industry, offered radically different perspectives on banks' future strategies. According to a senior executive at a large technology multinational:

> *I am skeptical about this cosy fintech-banks symbiosis. Show me a regulated industry in which this worked. Did Tesla collaborate with the automotive industry? Is the taxi industry keen to collaborate with Uber?*

The other informant (CEO of a blockchain fintech) was also having reservations about collaborative arrangements, citing banks' opportunistic behavior with regard to fintech's IP as a potential cause for concern. This view is supported by academic literature (Benkler, 2002), which strongly suggests that ecosystem-style collaboration is inefficient in the presence of clear property rights. In addition, this informant suggested that it is large banks that will displace Fintechs:

> *I cannot create a wallet and give money to you. Etisalat has to create that wallet...Or one of the banks has to. What's happening is they're saying fintech is going to disrupt and take over the bank and what's happening is the bank is storming fintechs. There won't be any more fintech.*

The third finding, related to how the respondents perceive their potential competition and the response strategy, was rather unexpected. While our interviewees readily identified fintechs as a competitor group, only a small percentage of them mentioned large technology companies (e.g., Facebook, Apple, Google, Amazon) and other NBFIs as a threat, either immediate or future. One interpretation of these results is that some respondents have cognitive blind spots (Pronin, Lin, & Ross, 2002), as their attention is focused on their existing profitable customers and, consequently, sustaining innovations, which is fully consistent with the disruption theory (Christensen et al., 2015). Alternatively, they may feel protected by regulation, as a significant barrier to fintech adoption, which was repeatedly mentioned by our respondents. As one branch manager pointed out, "fintech may not be a big thing in this region for a while, as there is domination of Arab banks…in order to ensure maximum domestic control".

Discussion and contribution

In this study we set out to investigate two related questions: the perceptions of participants in the financial industry of the effects of digital disruption in the sector and the strategies they have adopted in the face of fintech challengers. With respect to the first question, there does not appear to be a sense of urgency among the financial services providers, with some banks being in denial about the potential threat from NBFIs. We believe the main reason is that the sector in the region, and particularly in the UAE, is relatively profitable, in part as a result of regulation that creates high barriers to entry. On the other hand, many of our respondents are aware of the global industry developments; in the words of one investment banker, "fintech is a trend that is riskier not to monitor". We believe that the banking sector will be well advised to view its business through a disruptor's lens, challenge its own assumptions and identify the segments vulnerable to disruption. Theory and practice (Christensen et al., 2015; Lewis, 2016) suggest that financial institutions should make a strategic choice between taking a sustaining and/or efficiency path (e.g., improving remittances, offering better quality payment solutions at less cost), and taking a disruptive path (e.g., P2P lending, robot advisory, crowdfunding). At the same time, Christensen et al. (2015) caution incumbents against overreacting to disruption that will affect their most profitable businesses, suggesting that established companies reinforce relationships with core customers while also focusing on creating new opportunities from the disruption.

The second key finding, also addressing the first research question, is that fintech innovations in emerging markets such as the MENA region are likely to be disruptive in some customer segments (SMEs, millennials and the unbanked) and in selected financial services/products (crowdfunding, P2P lending, wealth management and advisory). Our interviewees from both sectors, with few exceptions, see the future through a collaborative lens: "Fintechs could not succeed without the banks and banks also need fintech start-ups" (fintech CEO). "…We can and should integrate their banking solutions into our banking world" (senior manager for technology and service at a commercial bank). The future, in other words, is not as disruptive.

The third main finding, related to the second research question, is the role of regulatory authorities: according to one of our respondents, an entrepreneur, "more flexibility from the government side is needed". Regulators around the world, such as the Monetary Authority in Singapore, who are viewing the growth of fintech as an innovation enabler of the banking industry, recommend that the two sides collaborate and are formulating policies to encourage the use of APIs that will benefit alternative financial services providers (Chhahira, 2016). Clearly, for the MENA region to become a world-class financial services provider, the regulatory regime needs upgrading.

Moreover, our respondents appear to under-estimate the threat coming from large technology firms, even though some participants signaled a need to collaborate with social media companies, who are "visionaries and innovative," according to one senior credit analyst. Based on what is known about these firms' aggressive strategic behavior (Eisenmann, Parker, & van Alstyne, 2011; Noe & Parker, 2005; van Alstyne, Parker, & Choudary, 2016), we do not expect them to collaborate with the banks. These firms are winners-take-all in their respective industries, often on a global scale; are profitable, well-resourced and so in a position to make long-term bets; and, in general, have successfully navigated the regulatory landscape. For example, Ant Financial ($60B valuation) is leveraging AliBaba AliPay's scale to offer a full range of financial solutions in China (i.e., savings, SME lending, consumer loans, online insurance and P2P lending) (Meeker, 2016). GAFA (Google/Alphabet, Apple, Facebook and Amazon), combining big data, social networking and financial services, represent a very real threat to the financial services industry in the region, as financial solutions are an integral part of their corporate strategies. Amazon, which is expected to reach $1 trillion in market capitalization soon (cf. $300 billion for JP Morgan, the largest bank) will directly benefit from payment systems, as it has become one of the largest e-commerce platforms globally. The technology companies' recent initiative *Financial Innovation Now* (2016) leaves little doubt regarding these firms' key strategic priorities in financial services – payments, financial inclusion (i.e., targeting the under-banked) and financial applications (Packin & Lev-Aretz, 2016; Trieu, 2015). These represent a mix of efficiency and disruptive innovations. As argued by Chhahira (2016, p. 7), "GAFA are on a bigger agenda that will eventually impact the traditional banking business". Their threat is more subversive, in that if customers start to use technology platforms for banking on a large scale, banks could be relegated to the role of utility providers. This trend has already started in digital media, and there is no reason to believe that the financial services industry will be immune to these shifts in consumer behavior.

Our theoretical contribution is that in the course of our exploratory research we have identified a novel response to disruption that extends existing theory. As discussed earlier, the strategic response of MENA's banks to potential disruption from fintech is overwhelmingly consistent: bank-fintech partnering. This applies even to the segments that are believed to be genuinely disruptive to the banks' mainstream business, such as crowdfunding (a new, low-end market) and the unbanked (non-consumption). This finding is at odds with the idea that, faced with the threat of substitution, incumbents will deal with substitution dynamics by using competitive (vs. collaborative), and often quite aggressive, strategies – acquiescing, defending, straddling, switching and innovating (Ghemawat, 2006). From a competitive strategy perspective, because substitution is a threat to the value created by a firm (i.e., a traditional bank), and, therefore, its profitability, it rules out partnering that will diminish the value that a firm can capture. The collaborative response is also inconsistent with the strategies usually recommended for incumbents in disruptive innovation theory (Christensen & Raynor, 2003; Christensen et al., 2015) – defending existing customers or setting up an autonomous unit to focus on disruptive opportunities. Yet collaboration is the preferred response not only for the MENA financial services industry participants, but the one that seems to be prevalent globally.

What can explain such a result? Substitution and disruption in fintech, and other industries more generally, should be viewed not at the level of individual technologies, but through the ecosystem lens. Because individual innovations frequently reside within broader systems (Adner & Kapoor, 2010) and technology in itself progresses in ecosystems (Evans, 2016), both established and disruptive technologies rely on complementary technologies, services, standards and regulations (Adner & Kapoor, 2016). Financial institutions, globally and in the MENA region, are facing the technical challenge of frictionless integration of financial services into the digital life of their customers. We hypothesize that our participants' preference for partnering can be explained in the light of the three distinctive characteristics of the economy, of which modern banks and fintech are an integral part – digitization, disintermediation and decentralization. Specifically, these include high fixed (sunk) costs of production and marginal costs of reproduction of information goods (e.g., OS, apps, software), near zero communication and distribution costs, high human capital costs and network effects, among others. These factors, together with a need for providing frictionless experience for the tech-savvy consumer of a broad range of financial services, often underpinned by AI and big data analytics, may necessitate an ecosystem-like bank-fintech collaboration (Benkler, 2002; Moore, 2006).

Consequently, based on the empirical results of our study, a sensible strategic response to disruption is a hybrid platform embedded in a broader ecosystem (see Fig. 1) – one that involves offering financial services to customers through a single platform irrespective of the provider. Such a new banking platform that seamlessly bridges traditional (e.g. accounts, loans, deposits) and new disruptive financial services (e.g., P2P, crowdfunding, robo-advisors), enables fintech companies to develop their own financial offerings and banks to perform the function of a core banking system running on top of their existing legacy systems (Schwab & Guibaud, 2016; Soulé, 2016). Banks could position themselves as fintech enablers through an open API architecture instead of constraining a customer to do business with one bank's offering with no alternative to it. For example, Fidor, a one-stop marketplace in Germany, has positioned itself as an aggregator of these financial services, re-bundling the "unbundled financial services" (Schwab & Guibaud, 2016). There is also hope that a hybrid platform will allow financial institutions not only to provide a better customer-centric experience to existing customers, but also to target new customer segments traditionally underserved by banks (i.e., start-ups, unbanked, digital natives) (Schwab & Guibaud, 2016). Fintechs, on the other hand, will benefit from the banks' complementary assets and capabilities, such as trust, scalability, access to customers and regulatory compliance.

All ecosystem partners must find ways to align their strategic priorities, so that innovation investments and operating processes are mutually supportive and reinforcing (Moore, 2006). Both fintechs and banks should come to an understanding that genuine collaboration involves sharing economic value created, which in turn necessitates a mindset and cultural shift toward more openness (e.g., opening APIs). Such collaboration will create new value for ecosystem partners and speed up innovation. Universities, investors and incubators have a role to play in developing and nurturing human talent and assisting fintech start-ups in reaching viable scale. Regulators, another important ecosystem partner, need to be proactive in supporting its contributions to innovative outcomes that further social welfare (see Moore, 2006) in this critically im-

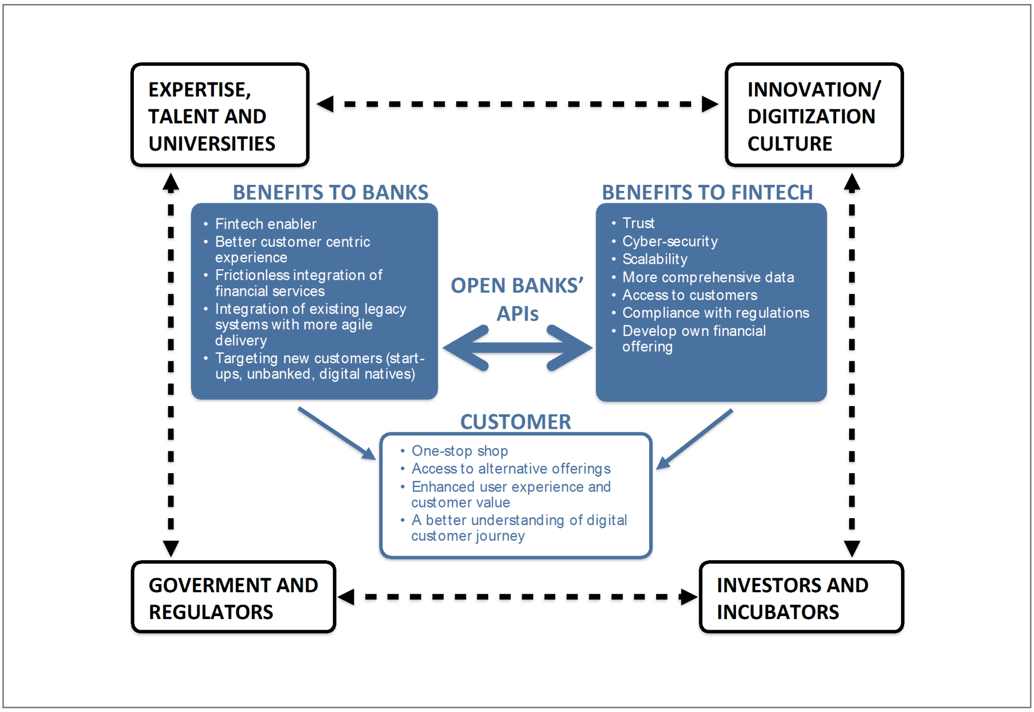

Figure 1. A hybrid platform

portant sector of the economy. Given that the economies in most parts of the MENA region are state-led, governments are well placed to take on a coordinating and possibly even a leadership role in developing a vibrant fintech ecosystem. The main outcome of this ecosystem response is the significantly enhanced value for the digital customer.

Conclusions and implications

We suggest several avenues for further research. Given that large technology firms (GAFA) do not neatly fall into the category of small, poorly resourced, young and nimble new entrants traditionally associated with disruptive innovators, we believe that further research into these firms' strategic behavior in the fintech industry will considerably enhance disruptive innovation theory. These NBFIs are now a key component of the financial services system (Packin & Lev-Aretz, 2016). Further, researchers may test our proposition to discover whether the digital economy and digital banking more specifically require flexible specialization as a third form of organizing business activity. Our research suggests that they may. Traditional economic theory, according to Moore (2006), does not sufficiently focus on business ecosystems as a distinct form of organization; hence, further research in this direction in the fintech context would be particularly useful. Finally, recent research into the economics and strategy of digital platform businesses with network effects (e.g., van Alstyne et al., 2016) suggests that platforms outperform traditional value chain businesses. Banking industry observers (Schwab & Guibaud, 2016; Soulé, 2016) advocate a transformational shift from traditional (vertically integrated value chain) banking to a platform (hybrid) strategy. The process and outcomes of such transformation would be a particularly promising area for future research.

This exploratory study has a number of limitations traditionally associated with qualitative research, including difficulty generalizing beyond the immediate context and a relatively small sample size. Where possible, however, we generalized to the existing literature. More specifically, we would have benefited from a wider range of input from the financial services industry, especially fintech entrepreneurs, venture capitalists and other investors. This was not feasible at this stage of research; as mentioned previously, the fintech ecosystem in the region is not well-developed, and new entrants are small and constrained in terms of managerial resources, making researchers' access to these firms particularly problematic. Even so, we believe that this study produced several useful insights, which would be of interest to academics, practitioners and policy-makers.

References

Adner, R., & Kapoor, R. (2010). Value creation in innovation ecosystems: How the structure of technological interdependence affects firm performance in new technology generations. *Strategic Management Journal, 31*(3), 306-333.

Adner, R., & Kapoor, R. (2016). Right tech, wrong time: How to make sure your ecosystem is ready for the newest technology. *Harvard Business Review*, 60-67.

Allison, T. H., Davis, B. C., Short, J. C., & Webb, J. W. (2015). Crowdfunding in a prosocial microlending environment: Examining the role of intrinsic versus extrinsic cues. *Entrepreneurship Theory and Practice, 39*(1), 53-73.

Arner, D. W., Barberis J. N., & Buckley R. P. (2015). The evolution of Fintech: A new post-crisis paradigm? (Research Paper No. 47). University of Hong Kong. Faculty of Law.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99-120.

Benkler, Y. (2002). Coase's Penguin, or Linux and the nature of the firm. *Yale Law Journal, 112*, 369-395.

Bruton, G., Khavul, S., Siegel, D., & Wright, M. (2015). New financial alternatives in seeding entrepreneurship: Microfinance, crowdfunding, and peer-to-peer innovations. *Entrepreneurship Theory and Practice, 39*(1), 9-26.

Catalini, C., Halaburda H., King M., & Vergne J.P. (2017). Call for papers: The First Annual Toronto FinTech Conference. Available from https://www.ivey.uwo.ca/scotiabank-digital-banking-lab/research/the-toronto-fintech-conference/

Charmaz, K. (2000). Constructivist and objectivist grounded theory. *Handbook of Qualitative Research, 2*, 509-535.

Chhahira, P. (2016). Fintech face off: How banks can deal with latest rivals. *Finacle Connect Magazine, The Fintech Revolution, 8*(33), 10-14.

Chiu, I. H. Y. (2016). The disruptive implications of fintech-policy themes for financial regulators. *Journal of Technology Law & Policy, 21*(1), http://dx.doi.org/10.2139/ssrn.2812667

Christensen, C., & Raynor, M. (2003). *The innovator's solution*. Boston: Harvard Business School Press.

Christensen, C. M., Raynor, M. E., & McDonald, R. (2015). Disruptive innovation. *Harvard Business Review, 93*(12), 44-53.

Chuen, K., Lee, D., & Teo, E. (2015). Emergence of FinTech and the LASIC principles. *Journal of Financial Perspectives, 3*(3), 24-36.

Dey, A. (2016). Live and let live: Fintech and banks chant the collaboration mantra. *Finacle Connect Magazine, The Fintech Revolution, 8*(33), 10-14.

Diemers, D., Lamaa, A., Salamat, J., Steffens, T. (2015). Developing a Fintech Ecosystem in the GCC. Retrieved from http://www.strategyand.pwc.com/media/file/Developing-a-FinTech-ecosystem-in-the-GCC.pdf

Dietz, M., Khanna S., Olanrewaju T., & Rajgopal K. (2016, February). Cutting through the noise around financial technology. *McKinsey & Company Finacial Services.* Available from https://www.mckinsey.com/industries/financial-services/our-insights/cutting-through-the-noise-around-financial-technology

Eisenmann, T., Parker, G., & van Alstyne, (2011). Platform envelopment. *Strategic Management Journal, 32*, 1270–1285.

Evans, B. (2016, December). Mobile is eating the world. Andreessen Horowitz presentation [Video file]. Retrieved from https://vimeo.com/195062332

Financial Innovation Now (2016, January). Recoding the Future of Commerce. Available from https://financialinnovationnow.org

Flick, U. (2014). *An introduction to qualitative research*. Thousand Oaks: Sage Publications.

Ghemawat, P. (2006). *Strategy and the business landscape*. Upper Saddle River: Pearson Prentice Hall.

Gurdgiev, C. (2016). Is the rise of financial digital disruptors knocking traditional banks off the track? *International Banker.* Available from https://ssrn.com/abstract=2795113

Hally, L. (2016). Fintech solutions for small businesses. In S. Chishti & J. Barberis (Eds.), *The fintech book: The financial technology handbook for investors, entrepreneurs and visionaries* (pp.123-124).West Sussex, UK: Wiley & Sons Ltd.

Iansiti, M., & Lakhani, K. R. (2017, January). The truth about Blockchain. *Harvard Business Review*, 5-12.

Khalil, I. (2016). The rapid growth of fintech: A revolution in the payments industry. *Entrepreneur*. Available from https://www.entrepreneur.com/article/280402

Lemieux, V. L. (2016). Trusting records: Is Blockchain technology the answer? *Records Management Journal, 26*(2), 110-139.

Lewis, A. (2016, March 3). Why most innovation in fintech is not disruptive enough. Available at https://www.techinasia.com/talk/innovation-fintech-disruptive

Lindman, J., Rossi, M., & Tuunainen, V. K. (2017, January). Opportunities and risks of Blockchain technologies in payments, a research agenda. Paper presented at the 50th Hawaii International Conference on System Sciences, Waikoloa, HI.

McKinsey & Company (2016). A brave new world for global banking. McKinsey global banking annual review. Retrieved from https://www.mckinsey.com/industries/financial-services/our-insights/a-brave-new-world-for-global-banking

Meeker, M. (2016). Internet Trends 2016 – Code Conference [PowerPoint slides]. Retrieved from http://www.kpcb.com/blog/2016-internet-trends-report

Mesropyan E. (2016, November). Mobile payments programs are on the rise among major market participants. Available from https://letstalkpayments.com/mobile-payments-programs-are-on-the-rise-among-major-market-participants/

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Thousand Oaks, California: Sage Publications.

Mills, K., & McCarthy, B. (2017). How banks can compete against an army of fintech start-ups. *Harvard Business Review*, 13-20.

Mollenkopf, D. A., Frankel, R., & Russo, I. (2011). Creating value through returns management: Exploring the marketing–operations interface. *Journal of Operations Management, 29*(5), 391-403.

Moore, J. (2006). Business ecosystems and the view from the firm. *Antitrust Bulletin, 51*(1), 31-74.

Neagu, B. (2016, May). How disruptive is fintech really? Available from http://banknxt.com/56717/disruptive-fintech/

Noe, T., & Parker, G. (2005), Winner take all: Competition, strategy, and the structure of returns in the Internet economy. *Journal of Economics & Management Strategy, 14*(1), 141–164.

Packin, N. G., & Lev-Aretz, Y. (2016). Big data and social netbanks: Are you ready to replace your bank? *Houston Law Review, 53*(5), 1213-1287.

Philippon, T. (2016, July). The FinTech Opportunity (Working Paper No. 22476). Department of Finance; National Bureau of Economic Research. Retrieved from http://www.bis.org/events/conf160624/philippon_paper.pdf

Pronin, E., Lin, D. Y., & Ross, L. (2002). The bias blind spot: Perceptions of bias in self versus others. *Personality and Social Psychology Bulletin, 28*(3), 381.

PwC, (2016). Financial services technology 2020 and beyond: Embracing disruption. Retrieved from https://www.pwc.com/gx/en/financial-services/assets/pdf/technology2020-and-beyond.pdf

Roulston, K. (2014). Analyzing interview data. In: U. Flick (Ed.), *Handbook of qualitative data analysis* (297-312). London, UK: Sage Publications.

Saldaña, J. (2015). *The coding manual for qualitative researchers*. Thousand Oaks: Sage Publications.

Schwab, F., & Guibaud, S. (2016). The rise of BankTech: The beauty of a hybrid model for banks. In S. Chishti & J. Barberis (Eds.), *The Fintech book: The financial technology handbook for investors, entrepreneurs and visionaries* (pp. 245-247). West Sussex, UK: Wiley & Sons Ltd.

Sorrentino, F. (2015). Millennials & FinTech are top of mind for traditional banks. Forbes, 20 November. http://www.forbes.com/sites/franksorrentino/2015/11/20/heard-at-the-2015-aba-national-convention/#55011df61c0d accessed January 2017.

Soulé, M. (2016). Is Fintech eating the world of financial services, one API after another? *Digiworld Economic Journal, 103*(3), 177- 184.

Teece, D. (1986). Profiting from technological innovation: Implications for integration, collaborations, licensing and public policy. *Research Policy, 15*, 285-306.

Trieu, H. N. (2015, December). Will Google and Amazon enter financial services? Available from https://medium.com/@Huynguyentrieu/will-google-and-amazon-enter-financial-services-183a368bd703#.ttja0nc9p

van Alstyne, M., Parker, G., & Choudary, S. P. (2016, April). Pipelines, platforms, and the new rules of strategy. *Harvard Business Review*, 5-11.

World Bank Group, (2015, June). Improving the quality of financial intermediation in the Gulf co-operation council (GCC) countries. Retrieved from http://documents.worldbank.org/curated/en/665641467998781808/pdf/97222-WP-PUBLIC-Box391472B-GCC-Engagament-Note-Final.pdf

Zetzsche, D., Buckley, R., Arner, D., & Barberis, J. (2017). From FinTech to TechFin: The regulatory challenges of data-driven finance. *New York University Journal of Law and Business*. Manuscript in preparation.

Endnotes

1 *Blockchain is a type of an open, distributed ledger technology capable of recording anonymous peer-to-peer transactions of value (e.g., money and other assets) in a verifiable, immutable way. The ledger can be programmed to trigger transactions automatically (which is known as 'smart contracts') (see Iansiti & Lakhani, 2017).*

2 *The GCC, The Gulf Cooperation Council, is a political and economic alliance of six Middle Eastern countries – Saudi Arabia, Kuwait, the UAE, Qatar, Bahrain and Oman.*

Acknowledgments

The authors are grateful to the School of Business Administration at the AUD for a research grant.