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Toward Fintech Adoption Framework for Developing Countries -A Literature Review based on the Stakeholder Perspective

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Abstract

Due to the low usage level of traditional financial services in many developing countries, Fintech services that often substitute for such traditional services with greater convenience have great potential in these markets. However, there have thus far been relatively few attempts to examine Fintech adoption in developing countries. As financial services are a highly sensitive industry in terms of government regulation and consumer trust, it is critical for policymakers to understand how to foster a healthy Fintech marketplace in developing country environments. In this paper, we review the scholarly literature on Fintech adoption with respect to three stakeholder groups: customers, service providers, and policymakers. Adding with practitioner-oriented documentation relating to Fintech adoption in Vietnam, we derive propositions for Fintech adoption research in Vietnam and similar developing countries. We collect these propositions as a framework that suggests avenues for future research.

Keywords : Fintech, Banking and Finance, Technology Adoption, Vietnam, Emerging Markets

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1. Introduction

1.1 Fintech Definition and Development

Fintech refers to the use of Internet-based digital technologies in the financial services industry, which results in new business models, applications, processes, or products in financial markets [Kim et al., 2015; Liu et al., 2020; Milian et al., 2019]. Examples of Fintech services are digital investments, digital currency, digital invoicing and payments, crowdfunding, digital lending, digital insurance, digital investments, digital leasing, cash management, digital factoring and digital financial advices [Gomber et al., 2017]. While many different kinds of services are labeled as Fintech, electronic payments, electronic money transfer, and new lending services are considered to be the core areas of Fintech, and boast the highest adoption rates among consumers [Gulamhuseinwala et al., 2015].

Although Fintech originated in the major financial markets such as New York, London, Hong Kong and Singapore [Buckley and Webster, 2016], these services have seen high adoption growth rates around the world in recent years. In 2015, only around 15~16 per cent of consumers in surveyed countries had adopted Fintech [Gulamhuseinwala et al., 2015; EY, 2019]. However, adoption in these countries had risen to 64% in 2019 [EY, 2019], showing the remarkable potential of these services.

While broadly speaking, Fintech can refer to both banking and insurance -related services (i.e. financial services), in this paper, we limit our scope of investigation to banking services.

1.2 Development of Fintech Services in Vietnam

In Vietnam, Fintech organizations are defined according to the Law on Enterprise [2014] as being organizations *other than banks* that directly provide banking services based on Fintech solutions and/or provide such solutions that support the activities of credit institutions. Fintech-in particular payments services-has great potential for growth in Vietnam, because the number of non-cash transactions is only 4.9 per capita, comparing with 59.7 in Thailand, 89 in Malaysia, and 26.1 in China [Demirguc-Kunt et al., 2018]. There are currently 150 companies operating in this sector, with about half operating back-office support services for banks, while 34 provide payment services, and 40 provide P2P lending services [Nguyen, 2020].

Two of the most visible and iconic functions in Fintech are digital payment and digital financing. Digital payment accounts for 89% of the Vietnam Fintech market, with the majority of Fintech companies providing these services. The most important mobile payment services in 2017 were MoMo, Payoo, Vimo, Moca, VNPAY, and OnOnPay [BBVA Research, 2017]. For example, MoMo, which consists of a digital wallet and a mobile payment application, was selected among the 100 leading global Fintech innovators [KPMG and H2 Ventures, 2019]. Foreign companies are also present in this market; Shinhan Bank, being a South Korean bank operating in Vietnam, invested heavily in digital banking for customers to withdraw cash by using a mobile application called Samsung Pay [VNA, 2018; An, 2018].

Digital financing services, the other major Fintech function in Vietnam, accounted for 11% of the total market volume in 2017. The two major service types in this category are peer-to-peer (P2P) lending and automated financial advisor agents. A Vietnamese example of a P2P lending service is MoneyBank, which is available throughout the country. Automated financial advisor agents aim to complement personal investment advice with automated advice in order to make this information more accessible for less wealthy clients and cheaper to produce for financial institutions as well. An example of this kind of service in Vietnam is Finhay, which accepts an initial investment of no more than $2. In the coming years, digital financing services are expected to grow faster than digital payment solutions and are predicted to account for 30% of the total Fintech market volume by 2025 [Solidiance, 2018].

It is to be expected that the Fintech sector as a whole will experience rapid growth in the near future. Ernst & Young in their ASEAN Fintech Census 2018 report [EY, 2018] predict that the market will grow by 77% from 2017 to 2020, valuing at $7.8 billion.

1.3 Research Questions, Scope and Objectives

Vietnam is a developing country which is characterized by certain facets to be explored in this paper that make Fintech adoption particularly attractive. Vietnamese Fintech attracted 36% of the Southeast Asian regional Fintech investment in 2019, which is a remarkable increase from only 0.4% in the previous year, 2018. Indeed, the government has recognized Fintech as a key factor in financial sector reform, and set goals for increasing the penetration of banking services among citizens, bank digitalization, provision of digital banking services, and shifting to cashless payments in Decision No.986/QD-TTg which was issued in 2018 [Das, 2018].

One reason for this growth potential is the existing low level of utilization of traditional financial services. Based on the report of Demirguc-Kunt et al. [2018], the adoption of online banking is relatively low in Vietnam. For example, in 2018, the most popular form of payment when purchasing on the Internet was cash on delivery; only 6.39% of Vietnamese pay online [Demirguc-Kunt et al., 2018]. Cash on delivery is a problematic form of payment for e-commerce companies because they are unable to monitor payment transactions and automatize data on these transactions. To address this, one of the objectives of the government was to reduce cash transactions to below 10% by 2020; however, the number as of 31. December 2019 was still very high at 88.7%. Accordingly, most of the Fintech funding (98%) is directed to the payment sector [United Overseas Bank et al., 2019].

Because of the potential of Fintech for developing countries as a means to democratize finance for poor people in remote areas with lack of access to banks, and as a lever for consumers to buy online while still allowing e-retailers to automate payment transactions, there is a need to promote Fintech adoption in developing countries; hence, we need to understand better what are the factors influencing Fintech adoption by different stakeholders in such environments. The literature thus far includes few studies conducted in developing countries about Fintech adoption [Shim and Shin, 2016; Kemunto and Kagiri, 2018]. And to our knowledge, there have been no studies on Fintech adoption from Vietnam.

These above facts lead to the primary research question of "what are the Fintech adoption factors for different stakeholders in Vietnam?" One secondary research question that follows this is "who are the main stakeholders for Fintech adoption in Vietnam?"

The paper is structured as follows: after presenting the methodology (section 2), we outline the results of the literature review (section 3) under three subheadings corresponding to Fintech stakeholders (Fintech service providers, the regulator, and Fintech customers). We also explain what we mean by the concept of adoption for each of these three stakeholders. Then (section 4), we draw propositions for Fintech adoption research in Vietnam (and similar developing countries) under these same stakeholder subheadings. Finally (section 5), we collect these propositions together as a suggested framework for Fintech adoption research in developing countries, and end with conclusions, future research, and limitations (section 6).

2. Methodology

This paper presents an extensive literature review of Fintech adoption from the perspective of consumers, service providers and policymakers, and focusing on both scholarly and practitioner-oriented publications. In terms of consumers, we limited our examination on individual consumers, excluding corporate consumers such as retail companies (however, including corporate service providers, which are included in the service provider perspective). According to Liu et al. [2020], the main sources of Fintech studies are the Web of Science (WOS) and Ebscohost (EBS); therefore, we considered it reasonable to limit our search of scholarly papers to these two databases. We used "Fintech" and "adoption" as search terms for English publications and included only papers for which there is full access in the database. As a result, 95 papers were found (63 papers from WOS and 32 papers from EBS, respectively).

Next, the abstracts of these papers were read and scrutinized regarding their relevance to Fintech adoption. After screening the abstracts, only 13 papers from EBS and 16 papers from WOS were retained. Then, the full text of these remaining 29 papers was screened. This resulted in eliminating 15 papers that were about other topics than Fintech adoption, such as risk assessment techniques, cyber security, the insurance industry, technical and design aspects of Fintech, retail enterprises (3 papers), and evolution of Fintech research (2 papers). Finally, we were left with a total of 14 papers we considered relevant for Fintech adoption.

We complemented the above review method with the snowball sampling method. When papers identified in the above process were read, relevant citations inside these papers were followed up using Google Scholar and added to the literature reviewed. This helped to find six other relevant scholarly papers which increased the total number of papers to 20. Together, the 20 papers were categorized into three groups: those related to Fintech service provider adoption, those related to regulators and policymakers, and those related to individual customer adoption as indicated in 〈Table 3〉~〈Table 6〉 and 〈Table 5〉 in the results section below. In two cases [Gozman and Wilcocks, 2019 and Ryu, 2018], papers were included in more than one of these three categories. As a result, the total number of studies was 22 as shown in 〈Table 1〉 below.

〈Table 1〉 Number of studies

In Providers	In Regulation	In Customers	Total
11	4	7	22

As noted above, we also included practitioner literature to this review. Both English-language and Vietnamese-language documents were searched using google search. The documents we found were one of two types: professional (reports, white papers, statistics, etc.)

and newspaper articles, mainly from business news. A research assistant helped to search and translate the Vietnamese documentation for analysis. The results of this search were organized into three groups as in the general literature review.

3. Results

3.1 Fintech Stakeholders and Adoption Perspectives

Fintech stakeholders may be identified by usage of the ecosystem concept. Operating under market mechanisms, an ecosystem consists of a number of actors categorized under suppliers of Fintech, consumers of Fintech, and the regulators of the ecosystem (which is typically the national government-Shim and Shin, 2016). According to Diemers et al. [2015], suppliers can be either Fintech start-up companies or traditional financial institutions, where traditional financial institutions include banks, insurance companies, stock brokerage companies and venture capitalists. The start-ups, on the other hand, are often technology companies (e.g. big data analytics, cloud computing, cryptocurrency and social media developers). For service providers, adoption can mean the use of resources that leads to the formation of Fintech services directed to the consumers of this company. Naturally, service providers are also interested in potential consumer adoption as part of their consideration whether to adopt services that are to be provided to those consumers.

Fintech consumers are individuals or organizations including business firms. Individuals may be those who are already using the services of traditional financial providers, or they may be consumers who have never used financial services. The predominant understanding of adoption for consumers has been encapsulated in theories such as the Technology Acceptance Model (TAM) and Theory of Innovation Diffusion. Adoption is generally the purchase and use of technology and services that are offered by providers [Davis, 1989; Rogers, 2003; Straub, 2009; Wu and Wang, 2015]. Needless to say, consumers are unable to purchase and use services that are not provided by companies. In this paper, we limit our investigation of Fintech customers to individual end-users due to the paucity of research on institutional customers (notable exceptions are, for example, Jonker, 2019; Lee et al., 2019 and Mullan et al., 2017).

The government, as a regulator, is a significant factor in the creation of a Fintech ecosystem [Anagnostopoulos, 2018]. The regulatory system for Fintech can vary greatly among countries, and each regulatory framework poses a unique set of circumstances to market participants; that is, suppliers and consumers of Fintech. For policymakers, adoption is the provision of Fintech services by providers which is followed by consumer purchase and use of those services. Hence, adoption for policymakers is the combination of the two adoption concepts presented above. Only when both are realized can adoption effects accrue to the society. To that end, policymakers attempt to foster an ecosystem where both consumers and service providers are able to obtain benefits from Fintech services.

3.2 Fintech Adoption Research Review

Prior literature on Fintech adoption has focused largely on the service provider perspective, addressing Fintech adoption by traditional financial companies, as well as on individual consumer perspective by using classic adoption theories such as TAM [Arias-Oliva, 2019; Belanche et al., 2019; Hu et al., 2019; Kim et al., 2015] There are also a number of papers addressing the policymaker perspective. However, few papers were using more than a single adoption perspective together in their analysis, which is problematic because the creation of an ecosystem depends on adoption by all stakeholders. In addition, our literature review confirms that most of the Fintech adoption studies were conducted in developed countries (see <Table 2>). In two cases [Gozman and Wilcocks, 2019; Ryu, 2018], their papers were included in more than one of these three categories. Moreover, in two cases [Gozman and Wilcocks, 2019; Lee and Shin, 2018], the studies were conducted as the collaboration of researchers from Australia and UK, and USA and Korea. Therefore, all countries were counted. Korea provided the highest number of studies, particularly regarding the adoption of Fintech individual customers. Moreover, no scientific articles about Fintech adoption in Vietnam were found.

3.3 Fintech Services Providers

Our literature review found that the prior literature on Fintech service providers focuses on traditional financial institutions. These incumbents are interested in Fintech because it presents new ways of marketing and selling their services to customers [Herzberg, 2003; Scornavacca and Barnes, 2004]. However, the use of Fintech may be alternatively seen as replacing traditional financial services offered by these companies; hence not all traditional financial institutions are eager to embrace Fintech. In this literature, Fintech service development is viewed as being initiated either by the incumbents [e.g. Muthukannan and Gozman, 2019], or by startup technology companies [e.g. Cortet et al., 2016].

There are two main topics in this literature: (1) competitiveness and other dependent and independent variables in Fintech adoption and (2) the business strategies taken by traditional financial institutions. In the former topic (see <Table 3>, below), it is recognized that many Fintech services replace traditional financial services provided by incum-

<Table 2> Countries where Fintech Adoption Studies were Conducted

Countries	Number of studies			
	In Providers	In Regulation	In Customers	Total
Australia	2	1		3
China			1	1
Korea	2	1	4	7
Kenya	1			1
Norway	1			1
Spain			2	2
South Africa	1			1
The Netherlands	1			1
UAE	1			1
UK	3	2		5
USA	1	1		2
Total	13	5	7	25

bent companies. Consumers are attracted to use Fintech mainly because of different facets of competitiveness of those services, such as lower costs, ease-of-use and accessibility of these services, and higher benefits, such as lower interest rates for lending services [Buckley and Webster, 2016; Kemunto and Kagiri, 2018; Mullan et al., 2017; Navaretti et al., 2017]. On the whole, such characteristics enhance the competitiveness of Fintech services against traditional services [Phan et al., 2019; Bofondi and Gobbi, 2017, Milian et al., 2019]. This research also uncovers other determinants of Fintech adoption by traditional financial institutions, particularly those that are risk-related, including risk aversion [Coatzee, 2019), privacy risks [Gozman and Wilcocks, 2019], and risk/security concerns [Mullan et al., 2017].

The second topic in Fintech literature concerning service providers (see ⟨Table 4⟩, below) focuses on the strategies that traditional financial institutions should take in Fintech services [Cortet et al., 2016; Doderlein,

⟨Table 3⟩ Dependent and Independent Variables in Fintech Adoption

Authors	Fintech services	Findings	Country
Coetzee, 2019	All	Risk-aversion of South African banks has created opportunities in adopting Fintech	South Africa
Gozman and Wilcocks, 2019	Cloud services	Risks in cloud Fintech services adoption	Australia and U.K
Phan et al., 2019	All	Fintech negatively influences bank performance (banks offering only traditional financial services)	Australia
Kemunto and Kagiri, 2018	e-Banking	e-Banking leads to increase in bank competitiveness in Kenya	Kenya
Mullan et al., 2017	Mobile banking	Key antecedents of mobile banking adoption by banks were mobile phone penetration, ROI, competitive advantage, customer convenience, strategic importance, customer demand, low perceived risk/security concerns and stakeholder partnerships	U.K

⟨Table 4⟩ Fintech Business Strategies by Traditional Financial Institutions

Authors	Fintech services	Findings	Country
Docherty, 2017	All	Risk management strategy to cope with regulation changes and competition from Fintech firms	U.K
Zalan and Toufaily, 2017	All	Bank and Fintech collaboration	UAE
Doderlein, 2018	Payment services	Partnering with Fintech allow banks to cope with regulation revision and operate more efficiently	Norway
Cortet et al., 2016	Mobile payment	Four strategies for banks to cope with payment regulation revision	The Netherlands
Jocevski et al., 2020	Mobile payment	How mobile payment providers innovated their business models	Sweden
Lee and Shin, 2018	All	Fintech business models and investment types	USA and Korea
Lee et al., 2015	Mobile banking	Competition and collaboration among Fintech providers for mobile banking	Korea

2018; Docherty, 2017; Zalan and Toufaily, 2017]. As noted above, many Fintech services compete directly with traditional financial services. This would suggest that Fintech providers will naturally become rivals to traditional financial firms. The literature finds, rather, that traditional financial institutions are collaborating with Fintech providers [Lee and Shin, 2018; Doderlein, 2018; Zalan and Toufaily, 2017] to diminish the effect of regulation change and competition as well as increase their productivity. Some, however, argue that such collaboration may not necessarily be long-lasting [Lee et al., 2015].

3.4 Fintech Customers

Some studies on Fintech adoption from the consumer perspective focus on demographic adoption factors. Jonsdottir et al. [2017] argued that the availability of finance and education on Fintech are important. In Gulamhuseinwala et al. [2015], young, high-income users living in urban areas were found to be likeliest early adopters, which seems to underline the adopter categories in Rogers' diffusion of innovations. They explain the reason for urban users' interest in Fintech to derive from the fact that more young and wealthy people in the urban areas participated in the survey in comparison with rural areas, together with the intensity of marketing that drives adoption of these services.

However, many of the previous studies applied the theory of diffusion of innovations and the theory of technology acceptance (including its extensions), as well as associated theories such as the theory of planned behavior. Alongside the classic determinants of adoption in these models (including perceived usefulness, ease of use and attitude to adoption) [Arias-Oliva, 2019; Belanche et al., 2019; Hu et al., 2019; Joo, 2016; Kim et al., 2015] research has found new variables for Fintech, namely legal risk and convenience [Ryu, 2018], external sources of information and subjective norms [Belanche et al., 2019], trust and perceived risk [Hu et al., 2019], risk and performance [Arias-Oliva, 2019], and network externality [Lee et al., 2019]. Convenience was the determinant that was found to be perhaps the most important; not only is convenience conceptually close to ease-of-use from the TAM model, making it an inseparable, core part of technology acceptance in general, but it is also a particularly attractive adoption facet for Fintech services. Ryu [2018] noted convenience stemming from the fact that Fintech services enable mobility and flexible access, because they can typically be accessed on smartphones.

〈Table 5〉 The Fintech Adoption Factors of Consumers

Authors	Fintech services	Findings	Country
Hu et al., 2019	All	TAM factors, trust, government support, brand image, and user innovativeness	China
Belanche et al., 2019	Robo-advisors	TAM factors and subjective norms	Spain
Arias-Oliva, 2019	Crypto-currency	TAM factors and performance expectancy	Spain
Ryu, 2018	All	Convenience and legal risk	Korea
Lee et al., 2019	Mobile payment	TAM factors and network externality	Korea
Joo, 2016	All	TAM factors, TPA factors, subjective norms and perceived behavioral control	Korea
Kim et al., 2015	Mobile payment	TAM factors and Elaboration Likelihood Model factors	Korea

3.5 The Government and Regulation

Regulation has an effect on both Fintech providers and customers. Generally speaking, looser regulation facilitates service innovation and investment in Fintech. However, it detracts from the level of trust enjoyed by service providers. Fraudulent services may cause reputational risks to the industry. Consumers are less likely to keep using services when they perceive a lack of legal status and protection for those services [Ryu, 2018]. While back-office Fintech services merely increase firm efficiency and are less controversial, services that appeal to individual end-users must manage to instill consumer trust in new behaviors related to one of the most sensitive areas to consumers-their financial information. Strong regulation and central bank support make consumers more likely to trust mobile payment services [Kuo-Chuen and Teo, 2015].

On the other hand, very restrictive regulation can make Fintech services uncompetitive against traditional financial services. Houstoun et al. [2015] note that excessive regulation can discourage companies from creating innovations in the first place because of the high cost of compliance. For example, the aggressive enforcement of existing regulation, such as anti-money-laundering laws and money transmission laws, can create barriers to the formation of Fintech services. Similarly, Gozman and Wilcocks [2019] argue that executives balance the benefits of innovation with compliance risk. Hence, from the perspective of service adoption, regulation is a double-edged sword.

With the introduction of new financial services in the realm of Fintech, governments have sometimes "stretched" existing rule sets to accommodate new services, sometimes created entirely new regulations for those services [Fernandez-Vazquez et al., 2019], and at other times done nothing. China, for example, has opted for a new regime [Arner and Barberis, 2015; Shim and Shin, 2016] in which Fintech companies can operate within their niche business until they reach a certain threshold in terms of their total value of assets or payments processed. After passing this threshold, they must partner with traditional financial institutions [Arner and Barberis, 2015].

As a result, the government should support Fintech by developing an appropriate level of regulation in order to foster a healthy financial services industry [Allen, 2019; Anagnostopoulos, 2018; Treleaven, 2015]. One way to do this is through so-called regulatory sandboxes, which are special, experimental regulatory mechanisms to allow companies to legally launch and operate new, limited-scope products and services while generating experiences for both the government and these companies on the operation of these new products and services [Allen, 2019; Treleaven, 2015]. Such experiences could then be used to plan for more permanent regulatory models. Some authors go further, suggesting that Fintech should be enabled and prioritized through regulation to accelerate its development [Buckley and Malady, 2015]. Such an approach might include selective interventions to support Fintech companies when they attain sufficient size to foster the export competitiveness of these companies, for example through lower taxes imposed on these services. Such steps are, of course, similar to those proposed for the promotion of innovation in general [Martin et al., 2019]; the creation of an encouraging and supportive business environment, including strong rule of law, high quality of regulations, low corruption, and high ease of entry for foreign

〈Table 6〉 Fintech Regulations

Authors	Fintech services	Findings	Country
Allen, 2019	All	Benefits and drawbacks of regulatory sandboxes	USA
Ryu, 2018	All	Legal risk effect on Fintech continuance intention	Korea
Gozman and Wilcocks, 2019	Cloud services	Regulations and compliance in Fintech cloud services adoption	Australia and U.K
Anagnostopoulos, 2018	All	Regulatory changes for Fintech innovation	U.K

companies are included in the government toolbox [Rau, 2020; Claessens et al., 2018]. Governments can also choose to educate consumers, improve their financial literacy and promote the development of open and interconnected systems [Buckley and Malady, 2015]. Diemers et al. [2015] underlined this, arguing that the government must facilitate the formation of an ecosystem around Fintech.

4. Propositions for Fintech Adoption Factors in Vietnam

4.1 Related to Fintech Service Providers

4.1.1 Improvement of Competitiveness (for Traditional Finance Industry Companies)

Although Vietnam is not among the countries where customers are most enthusiastic at shopping on the Web, there were nevertheless 35.4 million e-commerce users in 2017 and this number is predicted to grow 42 million users by 2021 [Solidiance, 2018]. This implies significant potential for e-commerce growth in the future. As e-commerce grows, shoppers will spend increasing amounts, causing them to reconsider their cash payment habits. This creates pressures for traditional financial institutions to introduce Fintech services.

Fintech services often offer highly competitive benefits to customers, such as easier service accessibility and lower costs. Hence, consumers who already use financial services are apt to switch from traditional financial services to Fintech services, creating a strong incentive for incumbents to offer these services. For example, the number of online customers had increased sevenfold over three years by 2017 for the Bank for Investment and Development of Vietnam (BIDV), which is the largest listed bank in the country [An, 2017]. Similarly, another Vietnamese bank named Viet A Bank, applied artificial intelligence in newly-launched services, named Smart Branch and Chat Bot, to shorten serving time.

In addition, since tourism is important for Vietnam and there are increasing numbers of tourists visiting the country, these tourists may choose to use Fintech providers familiar to them in their home countries while on their vacation in Vietnam, causing Vietnamese providers to lose potential business. This may lead to overseas competition for domestic service providers, as implied by Thang [2017]. In such an environment, Vietnamese financial institutions are pressured to ensure that there are competitive and trustworthy Fintech services available for foreign tourists to avoid facing the market entry of strong overseas competitors.

→ Proposition 1: Fintech adoption research in developing countries should investigate how service competitiveness encourages Fintech adoption by both Fintech startups and traditional financial companies

4.2.1 Business Strategy: Win-Win Collaboration

Corporate brand image influences which financial service provider is viewed as a trustworthy partner for customers. In this respect, established companies with an existing customer base typically have an advantage in comparison with new entrants. If Fintech companies are small startups, they will not only struggle to make themselves known among the target consumers but also face hurdles to convince customers that they provide legitimate and trustworthy service.

Secondly, most Fintech service providers in Vietnam are not yet profitable [Thang, 2017]. Indeed, small start-up companies which are challenged to create technically functional services may often lack sufficient capital to market their service to consumers. Venture funding and the stock market are less prominent avenues of capital in developing countries, exacerbating this problem for startups.

To mitigate the issues of trust and funding, new Fintech providers may find that the best option is to partner with an established financial company. In Vietnam, although some start-up companies will manage to successfully compete against incumbent financial institutions, it is only a minority; the majority, 72%, of newly established Fintech companies choose to collaborate with them [Phan, 2018]. Such an approach is similar to what is mandated in China by the regulatory system-when Fintech companies grow to a certain size, they must seek a bank partner.

As established in the previous subsection, the onus in initiating partnerships does not lie singly on Fintech startups. Indeed, Vietnamese banks have been eager to create these relationships as there is an incentive for banks to collaborate with Vietnamese technology companies as opposed to foreign ones.

→ Proposition 2: Fintech adoption research in developing countries should recognize that service provision may often be a collaboration among Fintech companies and traditional financial companies.

4.2.2 Related to Customers Demographics

Vietnam's population is characterized by relative youth, with 70% of citizens being under the age of 35 [World Bank, 2019]. Young people are typically less averse than older people to using new technologies, giving Fintech better prospects in Vietnam [Rogers, 2003]. Young people often use internet and mobile devices, which is a requirement for the development of Fintech. According to the Demirguc-Kunt et al. [2018], the high level of Internet (52 per cent) and smartphone penetration (72 per cent) make Vietnam one of the fastest adopters of smartphones and Internet (at low cost) in Southeast Asia, and provide the necessary infrastructure for Fintech services, even in remote rural areas.

The macroeconomic fundamentals of Vietnam have been sound, with GDP per capita having almost tripled between 2002~2018 and resulted in 45 million citizens being lifted out of poverty [World Bank, 2019]. In 2018, Vietnam recorded a 7% growth in its economy, leading to national income per capita of 2,700 USD. While incomes such as that are still low by developed country standards, an increasing amount of disposable income will grow the technology base and improve the prospects of e-commerce, both of which are drivers of Fintech services. Additionally, as in other developing countries, Vietnamese people living abroad are likely to send money to kin living in Vietnam. Such overseas remittances have been rising in value [VNA, 2019], not only giving a further boost in domestic incomes but also fueling the adoption of Fintech, because Fintech can offer services that are addressing the need for overseas remittances [Ilinitchi, 2020].

Two other demographic trends are affecting Fintech adoption in Vietnam: education and urbanization. Vietnamese people have a high regard for education, and the national literacy rate is high -98.46 percent [Hays, 2014; UNESCO, 2019]. According to Rogers' theory of Diffusion of Innovations, people who adopt new technologies early are characterized by high education levels. Secondly, despite the presence of large urban agglomerations such as Hanoi and Ho Chi Minh City, Vietnam is still a relatively agrarian; only 35.92 percent of the population live in cities [Statista, 2020]. This is a very low figure in comparison with developed countries, where the majority of people live in cities. However, as elsewhere, the urban population is projected to increase rapidly, and surpass the rural population by the midpoint of the century [Urbanet, 2019]. Urban residents have been found to adopt Fintech more often than rural residents [Gulamhuseinwala et al., 2015].

Taken together, the above factors of youth, affinity to the Internet and mobile technologies, higher incomes and overseas remittances, high education levels, and increasing urbanization, contribute to the growth in consumer adoption of Fintech in Vietnam and similar developing countries.

→ Proposition 3: Fintech adoption research in developing countries should focus on investigating the influence of demographics

4.2.3 Accessibility to Unmet Demand

While the majority of Vietnamese possess bank accounts, still as many as 40% of the population do not have bank accounts. Additionally, the most popular form of payment when purchasing on the Internet appears to be cash on delivery; only 6.39% of Vietnamese pay online [Demirguc-Kunt, et al., 2018]. Fintech -in particular electronic money- is an alternative for consumers who shy away from bank transfers when making e-commerce payments. There is also evidence from prior literature that consumers without convenient access to banking services are more likely to adopt Fintech [Frost, 2020].

Second, because of a large proportion of the population not being connected to banks, it is difficult for financial institutions to assess credit risk for new bank customers. Loan managers will need to make decisions on very limited or non-existent data. This can create a market opportunity for Fintech services. For example, in the Philippines, the Lenddo service draws information on alternative sources, such as loan applicants' social media activity, browsing history, geolocation, and other smartphone data, and generates a credit score from this data. Although perhaps questionable from a privacy standpoint, such services may be attractive for financial institutions looking to reduce their risk profiles when assessing loan applications.

Furthermore, P2P lending is a promising service for developing countries such as Vietnam, because it gives credit access for individuals who have difficulties in accessing banks' services; for example those located in remote areas. In Vietnam, the number of Fintech companies, which provided P2P leading has increased significantly from one in 2016, and three in 2017, to more than 10 in 2018 [Ha, 2019]. Because of the possibility to borrow from individuals rather than banking institutions with certain legal responsibilities, P2P lending allows more flexibility for both customers and lenders. P2P lending can also be attractive for SME's which may have difficulties to obtain financing from other sources. Most Fintech Credit activities implement a P2P lending model under a mechanism with components including the investors or lenders, the platform, and the borrowers.

→ Proposition 4: Fintech adoption research in developing countries should focus on investigating services (such as peer-to-peer lending) for consumers without bank access or who choose not to deal with banks for their transaction needs

4.2.4 Convenience and Reasonable Fee

Fintech services are often designed to be more convenient than traditional financial services. With respect to payment services, customers can use online banking on their terminal devices and do not need to go to physical bank offices or even ATM's to pay bills. They can use these payment services whenever and wherever they wish, as long as there is an Internet connection. Many traditional financial institutions in Vietnam, such as Tien Phong Bank, have offered online banking for years, although the proportion of customers using these services is not as high as developed countries. With respect to lending services, Fintech can eliminate the trouble of having to meet a loan manager for a consultation. In the case of P2P lending, it is not even necessary to have a contact to a bank. MoneyBank (www.moneybank.vn) is an example of a Fintech company providing P2P lending services throughout Vietnam. And with respect to investment advisory services, customers can access their mobile phones to read the advice instead of making an appointment with a wealth manager at the bank. For example, Finhay (www.finhay.com.vn) offers AI-generated advice for even low investment sums (starting from 2 USD), bringing investment advice within reach of customers who do not have large fortunes.

Fintech is convenient as customers can use financial services through a tap on their mobile phones. Fintech can make payments easy, quick, secure, safe, and hassle free. Such convenience can create significant cost savings for customers who do not have to travel to use the services and can use the saved time to improve their work output and efficiency [Kuo-Chuen and Teo, 2015]. Using these services is also often cheaper than traditional banking services. A payment example from Vietnam is shown on 〈Table 7〉. Whether paying to an account in the same bank or other banks, the online alternative is commonly priced cheaper (or may be even free). Hence, as in developed countries, banks try to entice customers to move online by giving them lower cost transfer fees.

〈Table 7〉 Comparison between Offline and Online Payment Fees (in VND)

	Same Banks	Different Banks
Offline	From 11.000 up to 1.100.000 VND	From 0.01% to 0.05% of transaction, the minimum is 11.000 VND
Online	Free (such as VietinBank, Techcombank) or From 1.100 to 9.900 VND (very few banks)	Free (Techcombank) or From 0.01% to 0.05% of payment, minimum from 7.700 VND

Source: Author adapted from Ngoc et al, 2019.

→ Proposition 5: Fintech adoption research in developing countries should focus on investigating the convenience and cost-saving features of Fintech services as adoption factors for consumers.

4.3 Related to Regulators/Policy-Makers

Although the Vietnamese government has taken steps to regulate Fintech, many gaps still remain. Fintech as a term is not mentioned in any legal document. With the exception of intermediary payments, such as those governing electronic money (mobile money), the other main category of Fintech services (credit services), is still largely unregulated. As there currently are P2P lending services operational in the market, they are essentially in legal limbo [Dang, 2020]. The lack of regulation poses many problems to all related stakeholders. First, it discourages companies from pursuing Fintech for the fear of having no legal protection for these activities. Second, it makes consumers suspicious about the legality of Fintech services and fearful of losing their money to fraud. Third, it promotes such fraudulent and illegal activities because both Fintech providers and consumers cannot tell whether services are legitimate or not. And fourthly, it creates an uncomfortable situation for officials who need to decide whether to approve companies' Fintech-related activities. When there is no formal guideline, legitimate services may be unnecessarily rejected because they look suspicious, fraudulent activities may be mistakenly approved, or approval procedures will take an unnecessarily long time to be completed.

To respond to the above challenges, the government has established a Committee on Financial Technology in 2017 within the State Bank of Vietnam tasked with developing regulation to enable the Fintech ecosystem in Vietnam. One of the regulatory areas being discussed is electronic customer identification, known as electronic Know Your Customer (e-KYC), which refers to the reliance on electronic channels when initially establishing customer relationships. Traditionally, regulations have required that customers personally visit bank branches to create bank accounts, but this is cumbersome in Fintech services. Before e-KYC is available, however, it requires accessing government databases on citizens to verify identities, and such a verification service does not yet exist in Vietnam.

Due to the lack of appropriate infrastructure, developing countries must prepare for a steep learning curve in regulating Fintech. In Vietnam, the Committee on Financial Technology has adopted a proactive and experimental approach to Fintech regulation. While maintaining direct dialogue with Fintech firms, the Committee set research targets in five areas: e-payment, e-KYC, P2P lending, Open APIs (Open Application Programming Interfaces), and block chain applications [Vietnam news, 2018]. The initiative has led to the announcement of a so-called regulatory sandbox for these five areas where businesses can test services in a looser regulatory mechanism, in which the government can learn how companies react to the regulation [Treleaven, 2015]. In June, 2020, it was announced that this regulatory sandbox will be issued for these technologies in 2025. Indeed, many researchers and experts [e.g. Anagnostopoulos, 2018; Arner et al., 2017] started discussing about new regulatory model for Fintech developments and pointed out that there is a need of new regulatory framework that is based on evidence from the marketplace.

→ Proposition 6: Fintech adoption research in developing countries should recognize that some companies may be allowed to operate their services in a temporary, experimental regulatory framework.

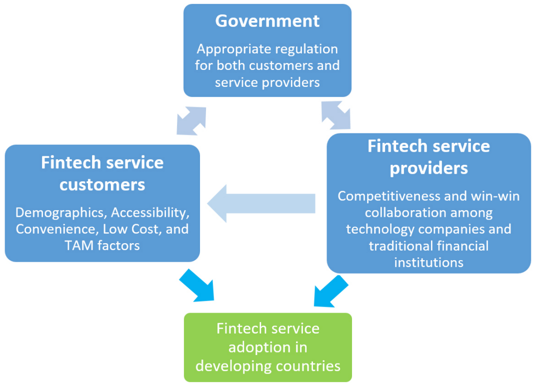
5. Fintech Adoption Framework for Developing Countries

Developing countries that aim at quick launch of Fintech services may need to consider the needs of more than one stakeholder at the same time, thereby addressing pent-up, unsatisfied demand if a balanced regulatory framework is crafted. The case of Vietnam sheds light on which antecedents may be key in such an environment for each of the three stakeholder groups.

The framework below (see 〈Figure 1〉) summarizes what was found in this paper through our literature review. It presents the three stakeholder groups relevant for Fintech adoption, and for each stakeholder group, includes the determinants that -in light of scholarly and practical literature- are seen to hold particular promise for future research in developing countries such as Vietnam. Hence, these determinants were included in the propositions in the previous section. The Figure also includes arrows linking the stakeholder groups. These arrows show that adoption is a consequence of the decisions of two stakeholder groups: the customers and the service providers, and that the latter is influencing the adoption behavior of the former. They also show that the government influences the adoption behavior of both the service providers and the customers. Additionally, the arrows linking government to these two stakeholders are bidirectional, indicating the learning that government may derive from the market using regulatory sandbox approaches with Fintech services.

6. Conclusion, Future Research, and Limitations

Fintech is a category of new IT-based services that often replace traditional financial



〈Figure 1〉 Framework of Fintech Adoption Determinants in Developing Countries from the Perspective of three Stakeholders and Linkages among these Stakeholders

services, such as the use of cash payments, bank transfers, bank loans, and face-to-face investment advice. Although the impact of Fintech has so far been mainly considered in developed country environments, where traditional financial services permeate the economy, and where Fintech is disrupting existing services, a revolution is also expected for developing countries. Because of demographic factors and market conditions, Fintech adoption in developing countries is likely to emphasize factors that are, to some extent, different to developed countries. For example, a sizable proportion of the population may not use even traditional financial services in such countries; the population may be very young; or cash use rather than bank transfers or credit cards may be widespread as a payment method. Such conditions modify how Fintech adoption factors should be understood in the developing country context.

In this paper, we conducted a literature review of Fintech adoption from the perspective of three stakeholders: end consumers, service providers, and policymakers. Through this review we confirmed the lack of research on Fintech in developing countries, and found moreover that most Fintech studies address a single perspective into "adoption"; there is a dearth of research into multiple and interlocking perspectives (including consumers, service providers and regulators). This is a problem because the perspectives are very much interlinked. Echoing Doss [2016], the Fintech ecosystem cannot be addressed as a whole without the consideration of regulatory issues. There is also a clear emphasis on Fintech adoption research that addresses specifically payments services. Furthermore, we contrasted the generic Fintech adoption factors found in the literature with information about Fintech in developing countries and created propositions for Fintech adoption research in developing country contexts.

Our paper presents one of the first scholarly papers written about Fintech in Vietnam. However, we would like the propositions in this paper to be considered more broadly, for developing countries that have similar financial market features to Vietnam. We present these propositions as a suggested adoption framework that includes all three stakeholder groups, because the creation of an effective Fintech ecosystem must include factors from all these perspectives together.

Future research is recommended to verify the importance of our propositions and the validity of our adoption framework. In terms of the three adoption perspectives, future research in the consumer perspective should examine other types of Fintech services than just payments services. While payments services are exceedingly important also in developing country contexts, other services such as P2P lending services also warrant much more emphasis, particularly in developing countries. Future research in the service provider perspective should address Fintech services addressing internal efficiency. According to extant research, most Vietnamese Fintech companies adopt services such as payments and lending that aim at new business opportunities; however, it remains a question to what extent such data captures the internal Fintech services adopted by these companies which aim at cost control and process efficiency, rather than being harnessed for profit purposes. Finally, with regard to the policymaker perspective, we suggest further research work in the area of regulatory framework required for more robust Fintech-based banking solutions. In addition, it is important to note that, among these three perspectives, only the consumer perspective provides a comprehensive model to evaluate Fintech adoption. Research efforts should be directed to the service provider and policymaker perspectives to fill this gap.

Our work contains certain limitations. Firstly, we exclude insurance companies from our review. Secondly, we exclude corporate customers, such as retailers, from our investigation related to the Fintech customer perspective. It is to be noted, however, that corporate adoption is included in the Fintech service provider perspective for organizations such as banks. Finally, as we limited the literature search on only Web of Science and Ebscohost, we might have missed some publications; but we attempted to mitigate this potential problem by also using the snowball-search approach.

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