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MARKET RESEARCH ON DIGITAL PAYMENT METHODS IN
VIETNAM – THE OPPORTUNITIES AND CHALLENGES OF
VIETNAM GOING CASHLESS

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Title
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Abstract

The thesis aims to provide an overall picture of digital payment in Vietnam, clarify the opportunities and challenges of the country while moving towards a non-cash society.

The study mostly uses quantitative research methodology with secondary data collected. Due to confidential issues with banking-related information, the research faces the limitation of acquiring primary data.

The research discusses the basic concepts of digital payments and simply explains electronic payment systems that involve different parties in the marketplace. The Vietnamese Government and financial organizations are putting forth efforts to promote a cashless society in order to reach goals set to be achieved in 2020. Through this study, it can be seen that the progress is insignificant, as cash transactions remain prominent, especially with low-valued transactions. Nevertheless, there are opportunities and new trends of electronic payments that promise to have positive impacts on implementing a non-cash society.

The conclusion summarises the study and illustrates trends of electronic payments in the researched market. Recommendations for further research is also included in the last chapter.

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1 INTRODUCTION

The payment industry plays a significant role in boosting the development of commerce. The industry is under the impacts of the mobile – and technology 4.0 – revolution, including trends towards machine learning, the internet of things (IoT) or artificial intelligence. In keeping pace with the world's payment innovations, the payment industry in the Vietnamese market is booming with more payment methods appearing, despite the dominance of cash. The thesis goes deeper into the payment methods mainly used in this country, consisting of cash, bank cards, bank transfers, e-wallets, QR code scanning, and contactless payment.

The new winds of payment methods blow changes into Vietnamese consumer's paying habits and the government's regulations in terms of development schemes. Approved by the Prime Minister, the plan on cashless payments in the 2016-2020 period is to reduce the ratio of cash to total payment instruments to below 10% by the end of 2020 (Vietnam Law & Legal Forum Magazine 2017). With respect to the objective, in July 2019, the ratio of cash transactions was about 11 % (State Bank of Vietnam 2019).

Nowadays, rather than cash as the only option, modern payment methods are accepted in brick-and-mortar stores and leading to a burgeoning of online shopping. The benefits of a cashless society are undeniable and stated in the conference named "Cashless Society: Policy and Practical situations in Vietnam" organized by the Payment Department of the State Bank of Vietnam (SVB) and the Tuoi Tre Newspaper (Youth Newspaper). In the conference, electronic payments were recognized as an inevitable trend towards the Industry 4.0 era. In spite of concerns about cyber security, users' rights, confidentiality, etc., cashless payments are inclined to improve the economy's transparency and lead to better banking & fintech services (The State Bank of Vietnam 2019).

The thesis will introduce concepts of electronic payment and situation of e-payment methods in the researched market. The explanation of basic concepts about electronic payments are necessary for understanding further findings. In

addition, the purpose of the thesis is also to provide a holistic picture of the digital payment industry in Vietnam. This would be material for organizations and persons working in financial & banking services, the government sector or potential investors looking opportunities to penetrate a market. Furthermore, the thesis studies the current situations, users' preferences and pros and cons, and trends of each type of payment in Vietnam.

In terms of thesis structure, beside the first chapter providing a background of the thesis topic, the main body consists of three parts and one last conclusion chapter. The second chapter discusses the basic concept of digital payment, a payment system in general and some common terms that are often used in the electronic payment industry.

The third chapter analyses aspects of the researched market comprising a macroeconomic context and highlighted with a SWOT analysis of digital payments in Vietnam. The fourth chapter sheds lights on payment methods, their situations as well as trends in the market. This part is supposed to support readers to have an overview of market preferences and strengths & weaknesses of each means of payment, thereby making choices appropriately.

In addition to a summary of the entire study, the last chapter discusses conclusions on the market trends, opportunities and challenges based on collated information.

2 KNOWLEDGE BASE OF THE THESIS

2.1 Concept of Digital Payment

The development of electronic commerce or e-commerce has led to new forms of payment that enables indirect trading of goods and services. According to Philip Kotler, "E-commerce can be defined as a general term for buying and selling process that is supported by electronic means" (Mourya & Shalu 2015, 22). This apparently pointed to the fact that traditional payment forms such as cash cannot fulfil the nature of e-commerce trading since these forms solely

function in face-to-face transactions. However, new payment forms enable e-commerce trading without the need of direct interactions between payer and payee to carry out payment transactions (Jesús & Sherali 2017, 2). Mourya and Shalu brought a clear concept of digital or electronic payment systems in which “monetary values are transferred electronically between a payer and a receiver” (Mourya & Shalu 2015, 150).

2.2 Common terms

There are a number of specialized terms used when describing digital payment or electronic payments. The study is going to explain some of the most common terms that may appear throughout chapters before moving further.

- Consumer-present (CP) vs. Consumer-not-present (CNP): These two can also be known as Card-Present (CP) and Card-Not-Present (CNP) differentiating by the appearance of physical cards. In terms of CP, consumers check out by using physical cards (Credit, Debit, etc.). On the other hand, CNP allows merchants and consumers to proceed the transactions of buying goods and services without using physical cards (David 2010, 5-6).
- Point of Sale (POS) terminal: Device installed in merchants facilitates either card or contactless payment transactions with payment option indicators or symbols shown on POS terminals.
- Card Schemes: Card Brands or Card Networks enable the payment process of authorization and settlement. Examples of card schemes are Visa, MasterCard, China UnionPay (CUP), etc.
- Payment Gateway: A merchant service authorising credit card for e-business and brick-and-mortar stores (Big Commerce 2020).
- Bank/unbanked adults: Adult people who own/do not own bank accounts.

2.3 Process of Digital Payment System

In digital payment, as its concept introduced in part 2.1, payers and receivers exchange monetary values electronically. That seems there are merely payer and receiver participating in a digital or electronic payments; however, in fact, the process takes place with more parties. A process of electronic payments is illustrated by Mourya and Shalu in Figure 1 below.

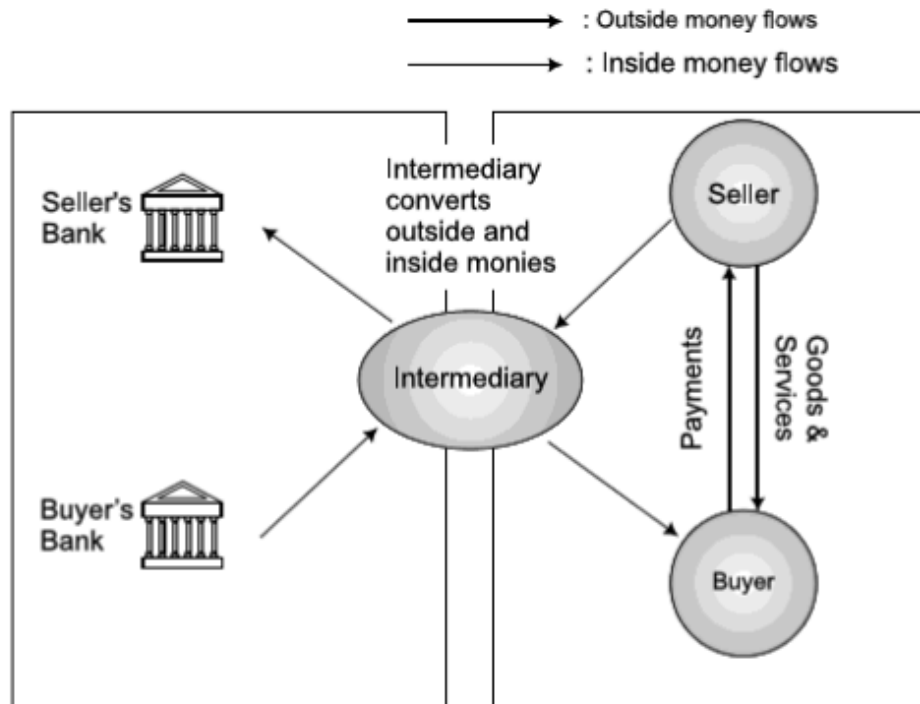


Figure 1. Electronic Payment System flow between banks (Source: Mourya & Shalu 2015,155).

The first party is Buyer or Consumer or Cardholders who purchase goods and services by making electronic payments. The consumer can make payment transactions through different channels such as face-to-face, online or remotely. The second party is Seller or Merchants who sell goods and services by receiving payments from consumers electronically.

The third party is Seller's Bank or also known as Acquiring Bank or Acquirer. These banks or financial institutions offer merchants payment services that process payment transactions. The fourth party is Buyer's Bank or commonly named Issuing Bank or Issuer. An issuing bank or issuer are banks or financial institutions issuing card-branded payment cards such as credit or debit cards to consumers.

An intermediary is a party whose role is to convert outside money into inside money, for example, an electronic bank that supports the circulation of online markets (Mourya & Shalu 2015,155).

Figure 1 describes a general picture of the digital payment process. Nevertheless, the complexity of the payment process may vary depending on the different types of digital payments.

Next, for better understanding, the study is going to show examples of two different payment methods that follow quite similar models but are capable of elaborating on interactions among parties such as merchants, customers, issuers, acquirers, etc.

When it comes to mobile payment, Jesús and Sherali demonstrated a mobile payment transaction system (Figure 2).

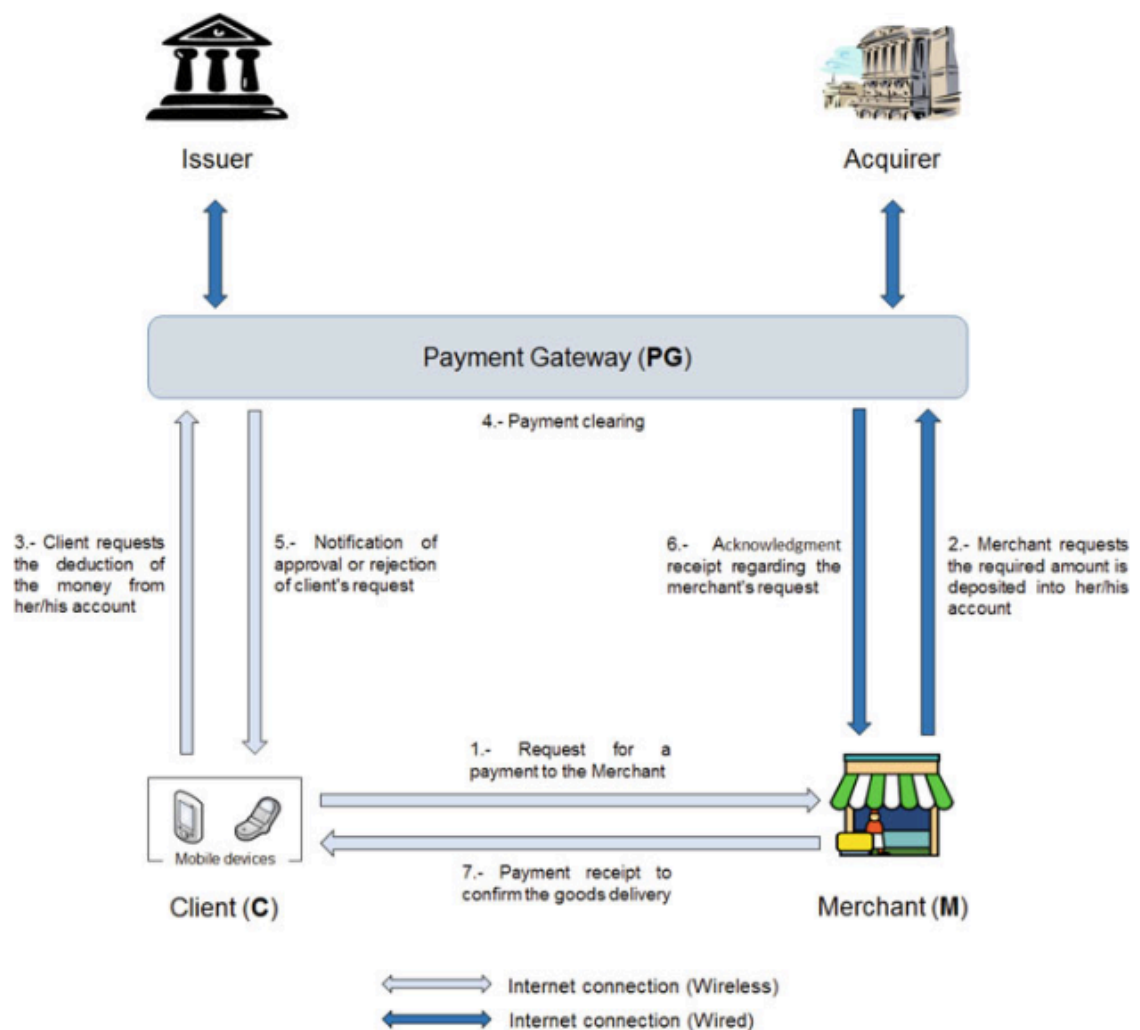


Figure 2. Mobile Payment Transaction (Source: Jesús & Sherali 2017, 17-18).

As seen in Figure 2, mobile payment transactions are well illustrated, including seven interactions. In this case, the customer is equipped with an internet-connected mobile device to make a purchase or request for a payment from a merchant (interaction 1).

After that, the merchant sends their bank, also known as acquirer, a request of depositing into their account the required amount (interaction 2). At the same time, an issuing bank receives a request of deducting that amount to buy goods or service from the client (interaction 3).

Now, the other party showing up is the Payment Gateway, considered to be the intermediary converting outside into inside money described in Figure 1. And its duty is to make a payment clearance decision required by the issuing and acquiring bank (interaction 4).

The payment clearance is necessary so that the further notification of approval or rejection of a customer's request (interaction 5) and acknowledgement receipt responding to merchant's request (interaction 6) are sent by the issuer to the client and by acquiring a bank to merchant respectively. Finally, the transaction ends with the merchant sending a payment receipt that confirms the client's order of goods or services (interaction 7).

Regarding card payment systems, Visa Inc (one of the biggest companies in the industry of payment technology) elucidates the process in detail (Figure 3). Undoubtedly, there are some other theoretical sources that explain the card payment system. However, all sources found are dated back to a long time ago (in the 1990s) and are apparently not yet updated with more information about payment technology.

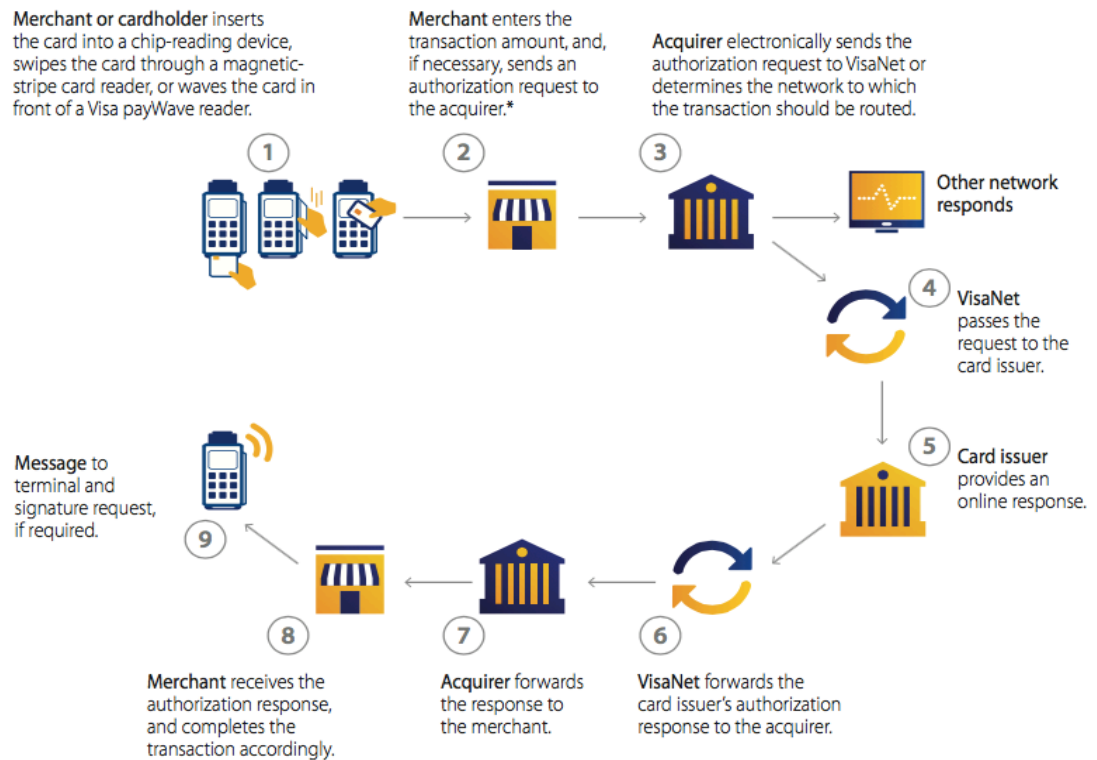


Figure 3. Card payment system (Source: Visa 2017).

In this case, VisaNet or another network responds by playing the role of an intermediary that stands in between and passes the required transaction information among acquirer and issuer (Visa 2017).

In a nutshell, all electronic payment systems seem to fall into a basic model composed by Mourya and Shalu comprised of four unchanged parties of customer, merchant, acquiring, issuing bank and an intermediary whose job is to convert outside into inside money. The difference depends on the payment instrument that determines the identification of an intermediary, as well as interactions among parties.

2.4 Requirements of Digital Payment Systems

Due to its nature of working based on the availability of information technology & communication networks and the pervasion of digitalization, digital or electronic payments are supposed to exhibit several critical requirements. Mourya and Shalu (2015, 151-153) defined the basic but crucial requirements of electronic payment systems, including security, acceptability, convertibility, flexibility, reliability, efficiency, usability and scalability.

First and foremost, an electronic payment system must ensure security. To some extent dependable on the payment technology development of each country and the trust assumption of each payment method, frauds sometimes are actual concerns. Examples of frauds are double spending, tampering or even severer like identity theft, etc. News of hackers breaking into someone's bank account are sometimes broadcasted on TV news or easily found in newspapers, Google or any other search tools. Unsurprisingly, security is ranked among the top five barriers to adopting electronic payments by Visa Inc. (Visa 2017). Thereby, protecting the entire transactions from intruders is the prioritized requirement of digital payment systems.

In terms of acceptability, payment infrastructure is expected to be acceptable to a customers and merchants. For instance, a POS terminal should be available with different card entry methods such as magnetic stripe reader (MSR), pin-pad or contactless. Concerning convertibility, Mourya and Shalu expressed that this aims at the interoperability and exchangeability of electronic currency with other electronic monetary values such as electronic cash, paper currencies, deposits, etc. Similarly, flexibility is to stress making payment systems better at being flexible and adaptive with different forms of currency.

With regards to reliability, this is typically connected with an assumption about the security of a digital payment. Unexpected breakdowns of networks, the degradation of payment infrastructure, and likewise are among rationales users may find electronic payments less reliable. Besides, digital payment is supposed to be cost-efficient when it comes to the cost of payment per transaction (Mourya & Shalu 2015, 152).

Usability is another requirement that an electronic payment system should embrace. This certainly means the capability of being user-friendly and allowing users to proceed payments without too many complicated procedures. Last but not least, a digital payment system is required to be scalable to be able to be handled smoothly regardless of growing or any changes in the volume of transactions owing to the growth of businesses.

3 DIGITAL PAYMENT IN VIETNAM

3.1 Financial System in Vietnam

The payment market in Vietnam is under the influence of a certain number of laws and regulations of authorities such as the State Bank of Vietnam, Credit Institutions, and Anti-Money Laundering. Players in the market are obliged to comply with amendments and strategic decisions made by these organizations.

The State Bank of Vietnam was first named as the Vietnam National Bank and was founded by president Ho Chi Minh in 1951. On October 1961, Vietnam National Bank was renamed as the present name – the State Bank of Vietnam (SBV). May 1990 witnessed a remarkable change in the operation mechanism of the banking system of Vietnam from one-tier to two-tier. The tier one is SBV, whose roles are to implement the state management of currency trading and banking, and to function as a central bank. Meanwhile, tier two consists of commercial banks and credit institutions, which are responsible for conducting currency trading, credit, payment, foreign exchange, and banking services (the State Bank of Vietnam 2019).

Credit Institutions are categorized into banks, non-bank credit institutions, micro-finance institutions, foreign bank branches and representative offices that comprise smaller units and organizations (Appendix 1). Credit institutions are in charge of providing international SWIFT and WESTERN UNION remittance services in cooperation with international payment service providers such as Visa, Mastercard, etc. (State Bank of Vietnam 2019). As of 30 June 2018, statistics reveal the number of State-owned banks, Joint Stock banks, Foreign bank branches, Finance companies, Leasing companies, and Wholly foreign-owned banks active in Vietnam are 4, 31, 48, 16, 11, and 9 banks/companies, respectively (PwC 2019).

3.2 Macroeconomic Context

Vietnam used to be ranked as one of the poorest nations, but staggeringly transformed into a lower-middle income country after Political and Economic reforms, termed *Đổi Mới* (Economic Rejuvenation), in 1986. From a centrally planned economy, the country underwent the transition into a Socialist-oriented market economy that encouraged the participation of the private sector and spurred economic openness, etc. Positive impacts of the renewal were evident with the economic growth rate reaching an annual of 7%, and poverty reduced by nearly two times by the late 1990s (Facts And Details 2014).

The average GDP growth rate of Vietnam from 1985 (before *Đổi Mới*) to 2018 recorded by The World Bank and General Statistics Office of Vietnam was 6.45% with the highest of 9.54% in 1995 and the lowest of 2.79% in 1986 (The Global Economy 2019). The indicator of GDP ratio is gradually rising, for example, nine first months of 2019 saw a slight increase of 6.98% in the GDP growth compared to 6.82% in the same period of 2018 (The World Bank 2019). Moreover, GDP growth of 2018 reached a peak of 7.08% in a period of ten years since 2008 and surpassed the initial target by 0.38% (General Statistics Office of Vietnam 2018).

GDP per capita PPP as an indicator of Purchasing Power has soared over time from 1990 to 2018, generating an average value of \$3496.82 while dropping to the bottom of \$1457.59 in 1990 and hitting the zenith of \$6608.62 in 2018. According to the Global Economy, GDP per capita generally is over \$35,000 on a yearly basis in well-developed countries and lower than \$1000 per year in poor countries (The Global Economy 2019). Regarding inflation rate, the General Statistics Office of Vietnam reports that the inflation is under control, something proved by the performances of Consumer Price Index (CPI) and core inflation. According to General Statistics Office of Vietnam, the year 2018 witnessed an average CPI and core inflation growth of 3.54% and 1.48% respectively in comparison to that of 2017. Table 1 presents historical data of these indicators from 2010 to 2018.

Table 1. Annual average consumer price index and core inflation (Previous year = 100) (Source: General Statistics Office 2018).

	2010	2015	2016	2017	2018
					%

CONSUMER PRICE INDEX (CPI)	109.19	100.63	102.66	103.53	103.54
CORE INFLATION	7.78	2.05	1.83	1.41	1.48

The General Statistics Office of Vietnam's projection of GDP over nine months of 2019 illustrates a rise of 6.98% in which each economic sector accounts for different portions.

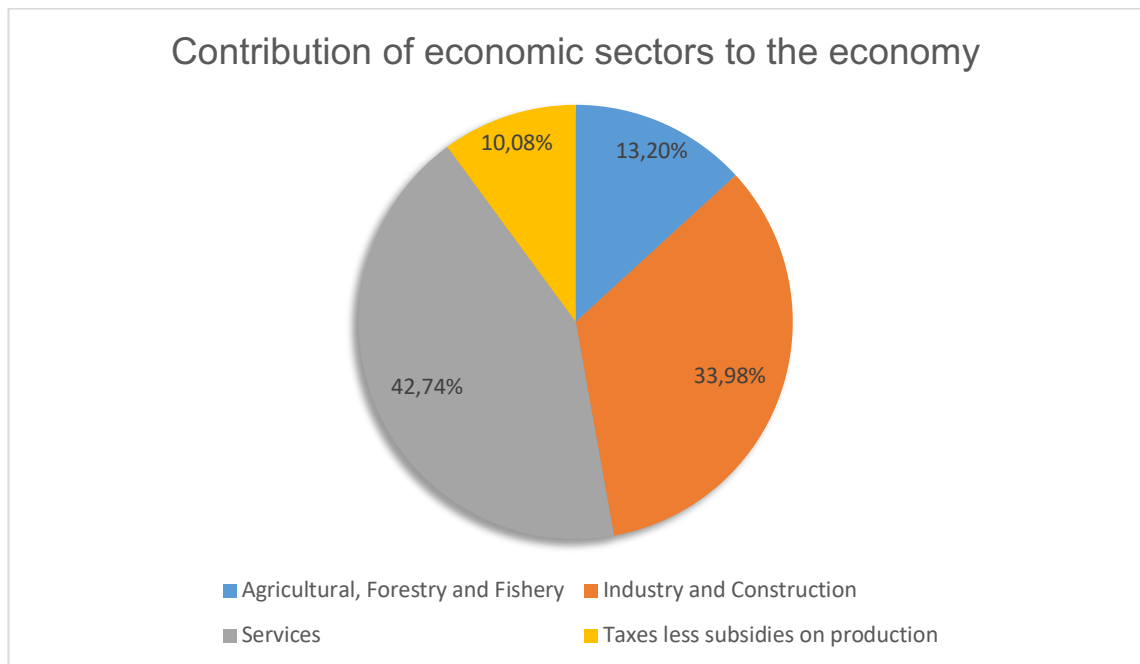


Figure 5. Contribution of economic sectors to the economy in nine months of 2019 (Source: General Statistics Office of Vietnam 2019).

The financial sector is grouped in the service sector with other fields comprising wholesale and retail trade, transportation and storage that all together contributed 42.74% to the country's economic growth over nine months in 2019 as demonstrated in Figure 5.

Vietnam stood 77th among 140 economies in the Economic Forum's rankings on macroeconomic stability and health. Based on the 2018 Global Competitiveness report, macroeconomic factors of the competitiveness of the Vietnamese economy in the Industrial Revolution 4.0, such as innovation capacity, labour market, institutions, technological readiness, labour skills, infrastructure, financial system, are deemed to be relatively weak (World Economic Forum 2018).

Nonetheless, dropping from the 68th position in 2018, Vietnam was ranked 69th in 2019 in the Business Environment Index, which is carried out by the World Bank and measures the ease of doing business. The ranking is basically based on evaluations of establishment of businesses, construction permits, access to electricity, asset registration, credit loans, investor protection, tax payment, international trade, contract enforcement and bankruptcy handling. The Information and Communication Technology (ICT) Development Index evaluates the ICT growth rates and digital gaps between countries. Vietnam stood at the 108th position in 2017. The index utilizes three main criteria comprising the popularity of ICT (fixed telephone, mobile, internet bandwidth, etc.), the level of using ICT (internet penetration, mobile broadband subscribers, etc.) and ICT skills (adult literacy ratio, and high school universalization). Vietnam should pay greater attention to these elements, as information technology is an integral aspect for boosting electronic payments (Vietnam E-Commerce Association 2019).

Last but not least, shadow economy size is of utmost importance to have a more comprehensive view of the macroeconomy where cash is prevailing. According to the International Monetary Fund (IMF), the shadow economy can be found in different names such as hidden economy, grey economy, black economy, informal economy or cash economy. The IMF defined the shadow economy as “all economic activities which are hidden from official authorities for monetary, regulatory, and institutional reasons” (Leandro & Friedrich 2018, 4). As to Leandro and Friedrich, the amount of cash usage reflects the shadow economy size since more cash is used when the informal economy grows larger. According to the report of “IMF Working Paper”, the average value of the shadow economy in Vietnam during 1991-2015 was 18.69% of the national GDP, with the highest point of 22.24% in 1991 and the lowest point of 14.78% in 2015. The report also indicated a downward trend in this economy’s growth, meaning the use of cash is under better control due to the introduction of new alternative payment methods (Leandro & Friedrich 2018, 54 - 76).

3.3 SWOT Analysis on Digital Payment in Vietnam

Electronic payment or non-cash payment is trendy and no longer considered as an untapped market. According to Statista, the value of digital transactions in Vietnam is forecasted to rise persistently from 2017 to 2023 (Figure 6).

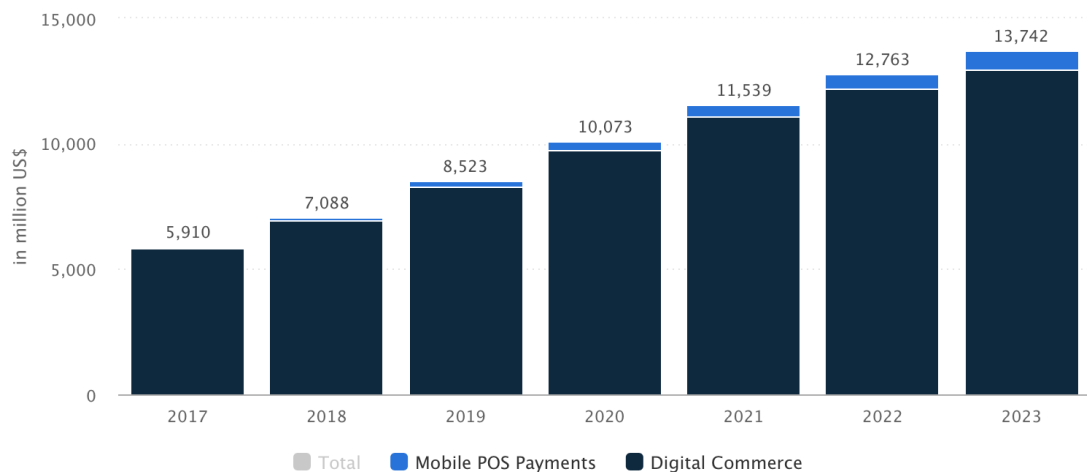


Figure 6. Digital transaction value of Vietnam (Source: Statista 2019).

As of January 2019, Vietnam had a population of more than 96 million and proved to be keeping pace with ASEAN countries in the race of digitalization with smartphone and internet penetration accounting for 72 and 66%, respectively (Datareportal 2019). This is a booster facilitating Vietnam to leapfrog to mobile payments despite a low rate of 15+-year-old adults owning a bank account (around 30.8% percent in 2017) (The World Bank 2018). According to the Global Consumer Insights Survey 2019 of PwC, in comparison to other ASEAN and Middle East countries, Vietnam is moving fastest with regards to year-over-year growth of mobile payments, presenting a soar of nearly two times from 37% in 2018 to 61% in 2019 (PwC 2019). Nevertheless, the country is confronted with obstacles, such as the prominence of cash, payment fraud, etc. For further understanding of electronic payment situation, the author here conveys a summary table for a SWOT analysis. Table 2 sheds lights on elements of SWOT, including strengths, weaknesses, opportunities and threats.

Table 2. SWOT Analysis of Electronic Payment.

Strengths	Weaknesses
<p>Growth of e-commerce paving the way for the burgeoning of digital payments</p> <p>Specific targets of cashless payment development set by the government and the State Bank of Vietnam</p> <p>Promotion of digital payment in public sectors touching a massive part of the population</p>	<p>King position of cash</p> <p>Lack or low quality of infrastructure for promoting non-cash payments</p> <p>Shortage of information and skills to deploy cashless payment regardless of fulfilment of infrastructure</p> <p>Reluctance of SMEs to equip the businesses with electronic payment options due to extra charges</p> <p>Limited accessibility to electronic payments in rural and remote areas</p>
Opportunities	Threats
<p>Predominance of Digital native – Trend leaders in the golden population structure</p> <p>Emerging middle class of more than half of the population by 2035</p> <p>The growth of Fintech society and information and communication technology sector</p> <p>Implementations of non-cash payment scheme by payment technology companies</p>	<p>Trust issues of Vietnamese people towards electronic payment</p> <p>Visibility of payment frauds such as unregulated information security</p>

Strengths and Opportunities

One of the most pivotal factors thriving electronic payment is e-commerce. From a low of about USD 4 billion, the growth rate of Vietnam E-commerce outreached 30 percent with the total market value reaching approximately USD 7.8 billion. By virtue of this notable growth, Vietnam was ranked sixth in the global list of largest e-commerce revenue markets in 2018 (Deloitte 2019). Announced in the E-commerce Development Master Plan for 2016-2020 period, the E-commerce market is targeted to increase to USD 10 billion by 2020, which is lower than 13-billion-dollar scale in the scenario that the growth sustains at the same speed of 2018 (30%) during 2019 and 2020. According to the 2018 e-Conomy SEA Report of Google and Temasek, the scale of Vietnam e-commerce was predicted to reach an average growth rate (Compound Average Growth Rate – CAGR) of 25% in the period from 2015 to 2018 and value at USD 33 billion by 2025 positioning 3rd in Southeast Asia (Vietnam E-Commerce Association 2019). If the E-commerce market is able to fulfil its potential as expected, it is bound to be a booster for the development of digital payment in Vietnam.

According to The World Bank, Vietnam is predicted to witness an emerging middle class of more than half of the population who have the ability to consume \$15 or more per day in purchasing power parity terms by 2035 (The World Bank 2016). The rising middle class is an indicator of the country's increasing affluence, resulting in greater demand for more convenient and technology-advanced banking products. Besides, in Vietnam's golden population structure, the rate of digital native or trend leaders aging from 20 to 45 years old mounts to about 50% while 10 percent of the population are IT trained people (Figure 7) (MBS 2018). This promises opportunities for digital payments to get explored with lesser obstacles triggered by the lack of IT knowledge.

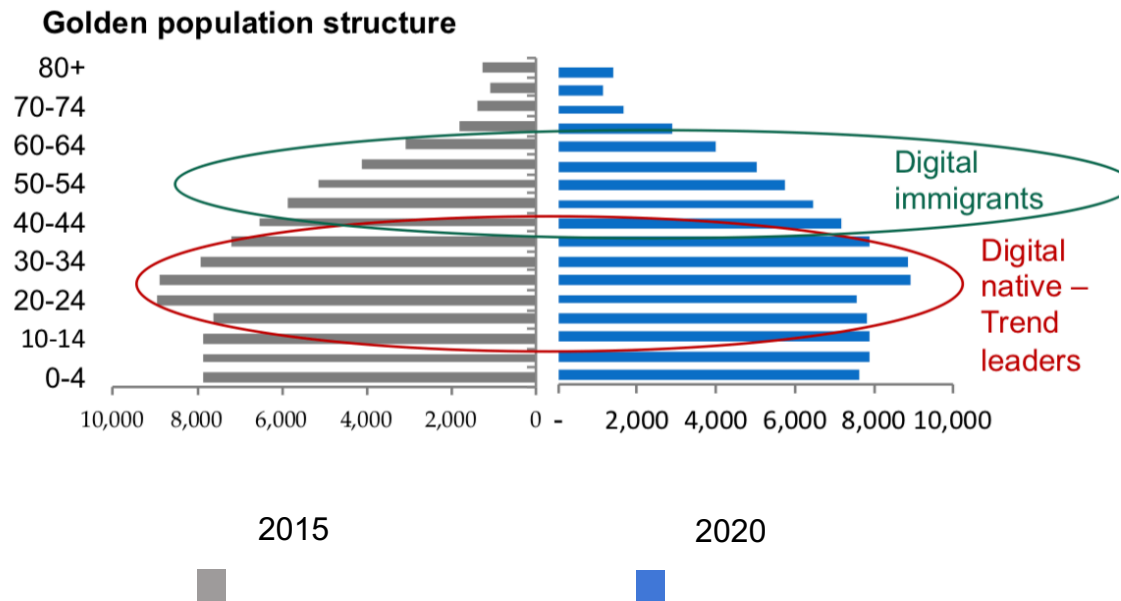


Figure 7. Vietnam population structure (Source: MBS 2018).

Another key determinant having a macro-degree influence on the market is governmental decisions related to non-cash payment schemes. Regulatory initiatives issued by the government and the State Bank of Vietnam are backbones cultivating digital payment and changing payment habits from cash to non-cash. Some examples follow below.

- Decision No. 2545 /QD-TTg promotes non-cash payment in Vietnam during 2016-2020 with the aim to reduce cash circulation, change habits of using cash to e-payments, etc. One of the objectives is to lower the cash ratio to under 10 percent by the end of 2020 (Vietnam Law & Legal Forum Magazine 2017).
- Decision No. 241/QD-TTg issued on 23rd February 2019 and Decision No. 2918/NHNN-TT dated 29th March 2019 of the Prime Minister were implemented with the object of strengthening cashless payments for public sectors such as schools, hospitals, taxes, water use, etc. Accordingly, disseminating information of the Governor of the State Bank of Vietnam (SBV), the SBV municipal and provincial branches require public service providers to enhance IT systems and adapt to non-cash payments, thereby advising electronic means of payments to service users. Public services are commonly utilized and correspondingly able to reshape payment habits of a tremendous number of people (State Bank of Vietnam 2019). The decision is likely a game changer. In the Global Findex Report

2017, the World Bank expressed that a potential part of unbanked adults may get familiar with formal financial systems when governments in East Asia and the Pacific can replace cash by digital payments in government transfers or companies switching from cash to electronic means of payments in order to pay wages. Also mentioned in the report, in 2017, about 4 million Vietnamese unbanked adults received government transfers in cash while 72 percent of them possessed a mobile phone, implying that with the basic fulfilment of technology requirements as such, the transformation from cash into digital solutions should not be unworkable (The World Bank 2017).

- Resolution No. 02/NQ-CP dated 1 January 2019 was executed by the Prime Minister with a purpose of improving the business environment and the national competitiveness in 2019 and orientation towards 2021. The resolution covers pinpointed targets that, in general, are to revitalize and lift the business environment in the context of the industry 4.0 competitiveness (Online Newspaper of The Government 2019).

Adhering to the directions of the government and the State Bank of Vietnam, financial technology (fintech) organizations cooperatively plan strategies.

- The National Payment Corporation of Vietnam - NAPAS is a stark example. It is licensed by the State Bank of Vietnam, NAPAS, whose 49% of the charter capital belonging to SBV is permitted to provide financial switching services and electronic clearing services in Vietnam. The corporation is in charge of operating a switching system of more than 18,600 ATMs, 261,000 POS machines, and 300 electronic payment companies. It serves about 100 million cardholders of 48 domestic and international commercial banks in Vietnam (Napas 2019). With such a large payment network, besides Visa, MasterCard, and JCB, NAPAS is seen to be a top provider of payment services for banks and non-bank organizations in Vietnam. Going along with the non-cash payment development scheme, NAPAS implemented the service fee reduction policy for fund transfer and ATM transactions. For instance, it reduced respectively 13% and 70% of service fees for the 24/7 quick interbank funds transfer and ATM withdrawals. It also made free of charge

international transfer and non-financial transactions, etc. (State Bank of Vietnam 2019).

- A memorandum of understanding (MOU) signed between Visa Inc. and the Ho Chi Minh City Department of Transportation (HCM DOT) presents an opportunity of transitioning towards digital payments. Visa Inc. is a well-known global payment technology company that provides top-notch payment services and other financial services to banks and fintech companies. Cash is the most preferable and familiar payment method in transportation service. It is a fact that, in Vietnam, there are bus driver assistants who come, collect cash and give tickets in return whenever new customers step onto a bus. Therefore, the government prioritises implementing electronic payments in transportation services. The collaboration of Visa and HCM DOT is a milestone in the efforts of featuring smart mobility in Ho Chi Minh City thanks to the adoption of digital payments (Vietnam Economic Times 2019).

Fintech companies like NAPAS and Visa make the promotion of electronic payment more realistic and feasible thanks to great impacts on different parties such as financial institutions and service users.

Moreover, the rapid increase in the number of fintech companies has enabled the growth of digital payments. This development in Vietnamese fintech society can be seen through its diverse developments in different fields of payments, P2P lending, wealth management, POS, etc. (Appendix 2). Investment in Vietnam fintech is experiencing a mushrooming phase valuing at USD4.4 billion in 2018 and forecasted to nearly double to \$7.8 billion in 2020. The fintech community in Vietnam is diverse and booming and has seen a robust build-up in volume, from approximately 40 in 2016 to over 154 in 2019 with around 37 companies running business in payment services (Vietnam News 2019). Besides tripling the amount received last year, funding into local start-ups accounted for USD 889 million in 2018. The lion's share was operating in technology and digital fields such as fintech and e-commerce (PwC 2019). As for PwC, cooperation agreement between banks and fintech companies are quite favourable in Vietnam. Most commonly, one party plays the role of an intermediary equipping the other with payment services (PwC 2019). The ecosystem as such is believed to create

advantageous conditions to reinforce and raise the approachability of digital payment solutions.

Weaknesses and Threats

The most challenging issue for boosting digital payment in Vietnam is the “king” position of cash. Cash is the dominant payment method in Vietnam, taking up 99% of transactions valued below VND100,000 (about US\$4.30) (Vietnam News 2019). Statistics of State Bank of Vietnam also point out the deep-rooted involvement of cash in total liquidity over the past one year as presented in Figure 8 below.

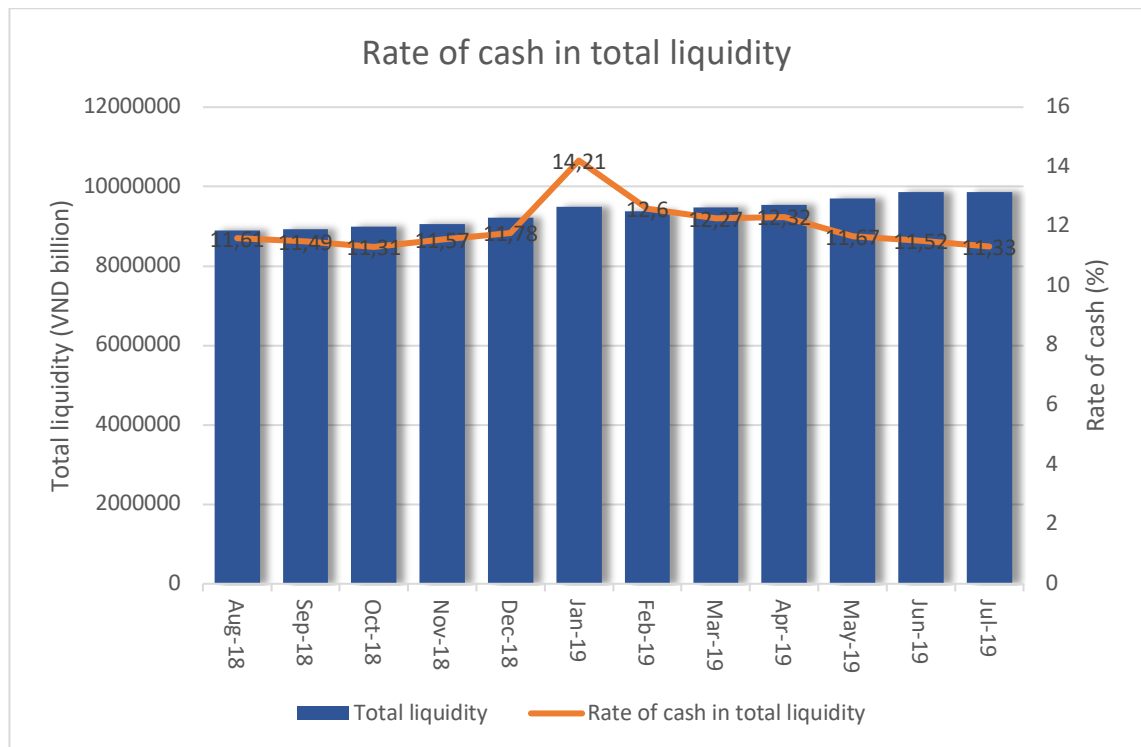


Figure 8. Rate of cash in total liquidity (Source: State Bank of Vietnam 2019).

Figure 8 provides a view on how much cash is circulated in the economy among other means of liquidity. Over the one-year period starting from August 2018, the rate of cash was seen to be at the highest point in January 2019 with 14.21%. The reason for this peak was probably the Lunar New Year happening at the time. In Vietnam, it is the culture that people give and take lucky money; therefore, the demand of using cash naturally rises. Similarly, historical statistics show a high of 13.3% in February 2018 in the ratio of cash in total liquidity when Vietnamese people welcome the Lunar new year (State Bank of Vietnam 2019). This proves the profound meaning of cash to Vietnamese people that is not simply a means

of payment but presents part of traditional customs of this country. Therefore, it undoubtedly will take a while to change the payment habit of people towards a cashless society. Figure 8 also shows the ratio of cash to the liquidity over the period is always above 11%. Nevertheless, regarding the strategy for developing the Vietnam Banking sector to 2025 with Orientations to 2030, the Government of Vietnam set a target of optimizing the ATM and POS networks so as to control this rate to not be higher than 10% by the end of 2020 and ideally to be scaled down to 8% by the end of 2025 (State Bank of Vietnam 2019).

In addition, according to Standard Chartered, in 2017, the ratio of Vietnamese bank account holders aged 15+ remained low at about 30.8% comparing to that of other ASEAN countries. Besides, the involvement of cash in e-commerce with cash on delivery (COD) payment methods is noteworthy in the country (Figure 9).

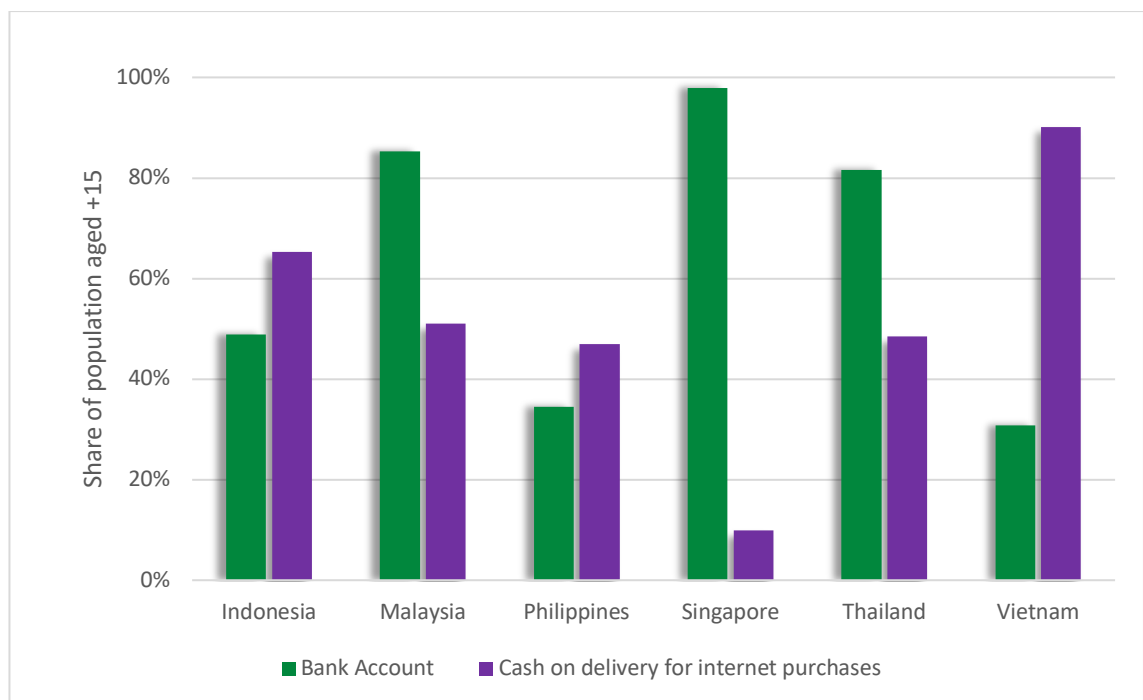


Figure 9. Percentage of bank account holders and cash on delivery for internet purchases in ASEAN countries in 2017 (Source: Standard Chartered 2018).

As seen in Figure 9, Vietnam ranked lowest in the percentage of adults owning bank accounts, and, in a comparison to other ASEAN neighbours, witnessed the highest interest in using cash on delivery for internet purchases. Relentless efforts must be made to achieve the target of the government to increase the percentage of bank account holders aged 15+ to at least 70% by the end of 2020. This is more than two times higher than 2017's figure (Vietnam Law and Legal Forum Magazine 2017). More sadly, in spite of being lower than Philippines in

the ratio of bank account users, Vietnam's cash on delivery percentage nearly doubles that of Philippines, with the former constituting 90.17% and the latter making up 47%. To change the payment habits of using cash has so far been the most headache causing hindrance for policy makers and financial organizations in Vietnam.

Secondly, the technical infrastructure and provision of digital payment services are raising concerns of inability to meet increasing demands due to insufficiency and uneven allocation. Statistics show that there were 18,939 ATMs and 275,660 POS as of the third quarter of 2019. These are primarily placed in supermarkets, restaurants, hotels, convenience stores, etc. in big cities (State Bank of Vietnam 2019). The number of ATMs as such hardly suffices the needs of this populous country, since, according to statistics of the World Bank, only every 100,000 adults aged 15+ shares 25.28 ATMs in 2018 in Vietnam. This is the lowest number in the region, for example, compared to Thailand with 115.12 ATMs per 100,000 adults (The World Bank 2018). ATMs are often getting overloaded and obstructed in the Tet holiday – the Lunar New Year, when the demand for cash withdrawals surges. Furthermore, the provision of payment services to rural areas is still inefficient. As stated by the State Bank of Vietnam, about 60% of the population residing in remote areas is hardly or incapable of approaching advanced financial services in time, owing to the uneven allocation of infrastructure and shortage of knowledge-sharing programs specialized for local financial branches (State Bank of Vietnam 2019).

The dearth of information and knowledge to deploy new digital practices is another culprit for abstaining from the spread of e-payments. In Vietnam, despite the slender presence of contactless, some big merchants, retailers, restaurants, supermarkets, convenience stores, etc. like Starbucks, Saigon Co-op, Lotte Mart, Citimart, Aeon, and KFC are getting used to this means of payment because of its convenience and time-saving characteristics. However, to embrace the instrument and to utilize it effectively are different stories. In a Starbucks store the author visited in August 2019, the merchant accepted the tap-to-pay payment method, but sellers were still quite confused about how to use it or even had no idea of its presence. Moreover, in the Vietnam E-Business Index 2019 report, the Vietnam E-commerce Association (VECOM) revealed that 28% of enterprises have nerve-racking concerns over staff's skills of exploiting online payment

when it comes to the recruitment process (Vietnam E-commerce Association 2019).

Finally, one of the issues that triggers mistrust of Vietnamese people in digital payments is payment frauds. Unregulated information security and limited banking technology put digital payment users into jeopardy on account of hidden possibilities of bank account takeover with cardholders' bank information leaked or clean fraud with merchants facing fraudulent purchases, etc. At the end of the third quarter in 2018, Vietnam witnessed 8,319 network attacks and 560,000 computers became infected with malware, causing leakages of bank account information (Vietnam News 2019). In the context of increasing payment security risks, the Vietnamese Government made a big move in terms of payment technology with a roadmap of converting domestic cards to the standard EMV chip cards. According to the roadmap, commercial banks will take on the responsibility of transforming at least 30% of the number of domestic cards, 35% of ATMs and 50% of POS machines to contact and contactless chip technology (The State Bank of Vietnam 2019). The EMV chip card is prone to ensure higher security and avoid more risks of payment fraudulence.

3.4 Regulatory Initiatives

The Vietnamese Government and the State Bank of Vietnam (SVB) have contributed significantly to the development of digital payments and the establishment of a cashless society. Plenty of policies and regulation schemes have been implemented, aiming to support the development of e-payment. The Military Commercial Joint Stock Bank (MB) collected lists of policies and regulation schemes (Appendix 5), providing a relatively full overview of such regulatory initiatives.

4 PAYMENT METHODS IN VIETNAM

By virtue of the Vietnam Government's policies encouraging electronic payments and reducing the reliance on cash, new cash-alternative means of payments have come into being. This brings more advanced options for Vietnamese people, especially those who are tech-savvy and in favour of a modern lifestyle. Chapter 4 provides introductions and brief market researches about the six types of payment methods that are the most popular in Vietnam including cash, bank card, bank transfer, e-wallet, QR code scanning and contactless payment.

4.1 Cash

Cash transactions in Vietnam can be made either with banknotes or coins solely issued by the State Bank of the Socialist Republic of Vietnam. There are 12 denominations of banknotes (Appendix 3) and 5 denominations of coins (Appendix 4) available in Vietnam that are accepted in cash payment (The State Bank of Vietnam 2019). However, coins are now no longer popularly used, and banknotes that present too small monetary value such as VND 500, VND 200 and VND 100 (approx. €0.02, €0.008 and €0.004 respectively) are barely accepted by merchants.

As seen in Figure 9, up to 90.17% of adults aged 15+ get used to cash on delivery (COD) for purchasing online items in 2017. Also, among other payment methods, COD amounts to a remarkable portion of 82% of respondents consider it the most favourable means of payment for online shopping in 2018 (figure 10) (Statista 2020).

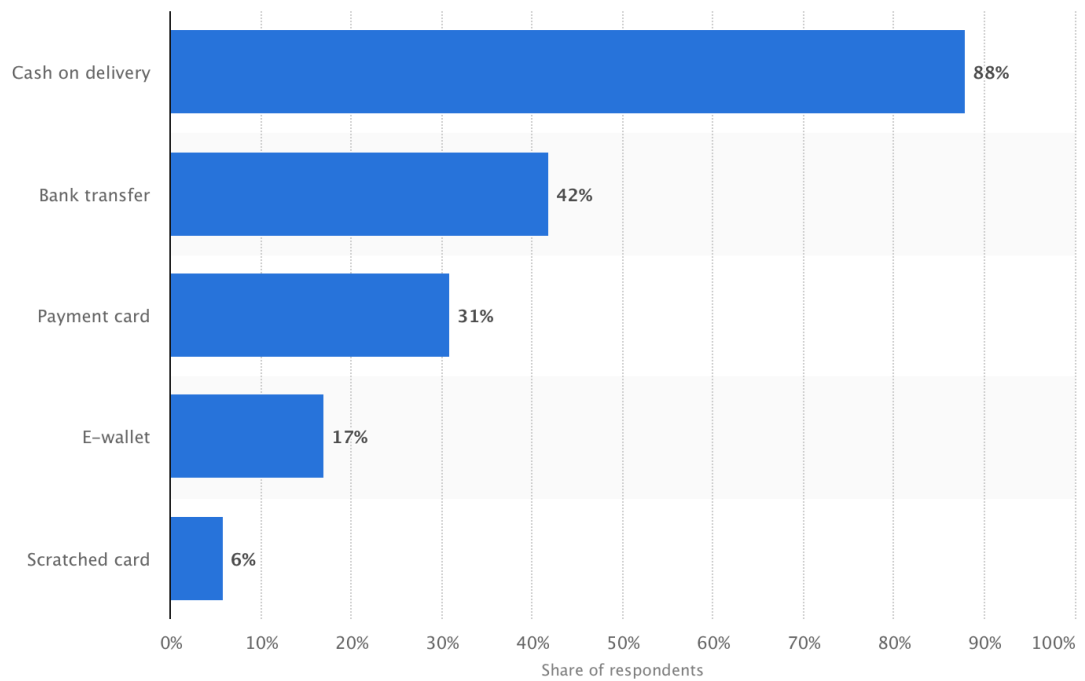


Figure 10. The Most popular payment methods for online shopping according to online shoppers in 2018 (Source: Statista 2020).

Cash maintains its popularity for many reasons that are, indeed, deemed to be advantageous to Vietnamese people, merchants and other organizations. First of all, cash is evidently the sole payment methods that facilitates the operations of organizations participating in the informal economy. By utilizing cash, the Vietnamese shadow economy makes up approximately 25-30% of the GDP and yields about 57% of labour forces (Tuoi Tre News 2018).

Furthermore, in opinions of many Vietnamese, cash is presumed to be irreplaceable with any other means of payment due to its embedment with some Vietnamese cultural roots such as Lunar New Year or going to “traditional markets”. In Lunar New Year or “Tet holiday”, it is the custom that cash is put in envelopes and seen as “lucky money” that brings good fortunes to receivers. Hence, needless to say, the demand for cash withdrawals is normally escalating, which may cause overloaded ATMs at these times (Viet Nam News 2019).

In addition to the Tet holiday, Vietnamese people are in the habit of using cash since only by cash can transactions proceed in “traditional markets”. Vietnamese tradition markets are places where local retailers gather in order not only to cater to locals’ shopping needs but also socialize. Sellers and buyers frequently know each other well for being in a long-time purchasing relationship or, sometimes,

close neighbours. As being local retailers, their products normally represent small economic values that makes cash to be the best payment option chosen either by sellers or buyers. As a result, it does not make sense when these retailers have to pay extra fees for POS installation so as to proceed low-value transactions and other merchant's fees charged by acquiring banks. Meanwhile, cash can be collected immediately. However, these traditional markets are anticipated to be on a decline to pave the way for more modern, classy and environmental-friendly retail spaces such as convenience stores, shopping malls, etc., where electronic payments are welcome. There are projections that the growth rate of the Vietnamese convenience store market ranks first in Asia with 37.4% by 2021. About 50% of Vietnam retail sales will be occupied by these modern trade models by 2035 (Visa 2019).

4.2 Bank Cards

According to The State Bank of Vietnam, in Vietnam, bank cards are issued by about 44 card issuing organizations, including Vietnam commercial banks, branches of foreign banks located in Vietnam and other financial organizations. Up to date, there are, as of the third quarter of 2019, 171.3 million of bank cards issued in Vietnam (State Bank of Vietnam 2019) and, as of the end of 2018, around over 10,000 places accepting card payments. These are largely centralized in big cities such as Hanoi, Ho Chi Minh City, etc. (Vietnam News 2018).

The classification of bank cards in Vietnam could be based on either card usage territory or financial sources ensuring card usage. When it comes to card usage territory, domestic and international cards are options depending on the purposes of proceeding transactions of cash withdrawals and products/services purchasing.

- Domestic cards allow users to make transactions as such solely within the country
- International cards facilitate transactions either domestically or internationally and hold brands of international card organizations such as Visa, MasterCard, JCB, American Express and UP.

On the other hand, contingent on financial sources verifying transaction-making possibilities, there are three basic types of cards: debit cards, credit cards and prepaid cards.

- Debit cards enable cardholders to conduct transactions within the amount available on their deposit accounts
- Credit cards allow card users to make transactions within credit limits in agreement with card issuing organizations
- Prepaid cards are usable within the amount loaded cardholders paid card issuing organizations beforehand

Among issuing banks, Vietcombank, BIDV, Vietinbank, Sacombank, and Techcombank can be named as top issuers for bank cards in Vietnam sharing the greatest market shares (Viet Nam News 2018). For example, Vietcombank was ranked as the leader in card payment market in 2018 with its market shares in the number of credit cards, debit cards and volume of credit card payments being 30%, 14% and 44%, respectively (Vietcombank 2018). Beside commercial banks, pieces of the “card payment” cake are in the hands of foreign banks and other financial organizations such as Lotte Finance Vietnam Co. Ltd. The company originates from South Korea and is licensed by the State Bank of Vietnam to provide financial services involving consumer lending and credit card issuance (State Bank of Vietnam 2019). The distinctive characteristic of issuing banks and financial organizations is the availability of debit issuance. Only at banks is this service offered, as that debit cards are linked to deposit bank accounts.

With the aim to promote a cashless society, card payment is a principal alternative with almost all Vietnamese people being ascertainably conscious of it as a non-cash payment. The market is flourishing, making fees and rates more competitive. Fees charged on card usage are diverse depending on card issuers, which basically include card issuance fees, maintenance fees, and others. Different interest rates applied to credit cards are also one of the decision-making elements regarding the choice of card issuing provider. Therefore, a lot of promotions and privileges from card issuers and card brands such as Visa or Mastercard are offered and combined in cards in order to draw interest. This is ostensibly advantageous for consumers, but, having said that, market players

must take it into serious considerations for the sake of keeping their cards competitive. Lengthening time limit for free interest rates from 45 days to 55 days can be a stark instance of some issuers' endeavours to differentiate their products from the mass (Vietnam News 2018).

This means of payment facilitates data inputs regarding spending trends and other information retrievable from cards. This sort of information can be achieved through card transactions of cardholders, thereby allowing card issuers like banks or card brands such as Visa or Mastercard to easily collate relevant and essential data for the purposes of market research. However, at least, it is unarguably beneficial for card organizations and the government to identify market opportunities and control activities of the shadow economy, which is impossible with cash.

Additionally, in comparison to cash, card transactions are faster when there are no needs for merchants to make change, but to wait for consumers' input of card security codes and ask for signatures instead. Nevertheless, in fact, in order to adopt card payments, merchants are charged electronic transaction fees (applied to all transactions paid with electronic payments) by the requiring banks, which is about 1.5 to 5% of the total transaction value. In many cases, merchants top up the fee to the final price of the products or services and mislead it by explaining the collection on behalf of banks issuing customers' cards. Although cardholders can get offered promotions, discounts and privileges from banks encouraging cashless payments, they are perhaps reluctant to pay by cards or other electronic payments due to this extra fee (Tuoi Tre News 2019). In addition to electronic transaction fees, merchants, especially small ones, also have hesitation over accepting card payments because of POS terminals' installation fees.

4.3 Bank Transfer

Bank transfer, also known as wire transfer or credit transfer, is the process of transferring money from one bank account to another. This means of payment is fast and convenient without the need for senders and vendors to be in the same area, as bank transfer transactions can be proceeded anywhere in the world (Matthew 2017, 2). The most notable drawback is its relatively expensive fee,

which is set upon banks' fee policies and differ between domestic or overseas wire transfer services.

As seen in Figure 10, bank transfer is the second most favourable means of payments, and according to the State Bank of Vietnam, ranked highest in terms of non-cash payment instruments for domestic transactions. The payment method was recorded with 343,215,891 transactions valuing a total of 26,720,337.51 VND billion as of quarter three of 2019 (State Bank of Vietnam 2019). Besides, when it comes to public services, from the beginning of April 2019, all import-export taxes and fees to customs authorities must be paid via bank transfer to the customs authorities' account at the State Treasury (CustomsNews 2019). As a result, via bank transfer, customs services now collect up to 95% of their total revenue. Meanwhile, 99% of businesses have their registrations of paying taxes online (State Bank of Vietnam 2019).

Similar to bank cards and other non-cash payments, the most outstanding benefit of credit transfer is to abstain from the activities of shadow economy. The Global Economy showed statistics about the corruption perceptions/transparency index indicating perceptions of public sector corruption with Vietnam ranked 117th globally and 26th in Asia with 33 points in 2018 (100 points = no corruption) (The Global Economy 2019). By virtue of the fact that transactions are recorded in detail, the adoption of bank transfers in the public sector may help authorities and the government better control corruption rates and the circumstances involving overcharges.

4.4 E-wallets

Macro-environmental support for e-wallet development

According to Appota (Vietnam Entertainment Technology Company) in 2018, 72% of the Vietnamese population own a smartphone; 68% use smartphones to access the internet, 25% use the mobile Internet on a daily basis. Many Vietnamese own two mobile devices simultaneously to connect to a network, with an average of 1.7 devices/ person. On the other hand, PwC's global consumption survey in 2019 for 27 countries shows that Vietnam is expected to be the fastest growing market in mobile payment in 2019. The percentage of consumers paying

with mobile devices in Vietnam increased from 37% in 2018 to 61% in 2019, the highest increase among 6 Southeast Asia countries in the survey. In particular, Thailand increased from 19% to 67%, Malaysia from 17% to 40% and the Philippines from 14% to 47%. In 2018, Vietnam's payment through the internet had a growth rate of 33.6% in number of items purchased and 19.5% in total value compared to 2017. Furthermore, payment on mobile devices also achieved a more impressive growth, with 41.4% of the items and 169.5% of the amount compared to 2017.

It can be concluded that Vietnam is one of the fastest growing, highest potential mobile payment application markets in the world and has a strong impact, promoting the growth of electronic payment in general and electronic wallets in particular.

Growth of e-wallet applications

By November 2019, the State Bank of Vietnam has licensed 32 non-bank payment intermediaries, including more than 20 e-wallet products introduced to the market (State Bank of Vietnam 2019). The top five companies, based on the number and value of transactions via e-wallet services by the end of the first quarter of 2019, respectively are Payoo, Momo, Vietnam e-sports, Moca, and FPT Wallet.

A typical example of the impressive development of the market share of e-wallets is Momo. Just in early 2019, Momo announced that it had reached 10 million users with a three-fold increase in transaction volume in 2017. Meanwhile, according to the State Bank, the number of e-wallet accounts released to the market Domestic market in 2016 was more than 3 million accounts. Thus, the number of Momo users in 2018 alone was more than 3 times higher than the total number of e-wallet users of the whole country in 2016. There are also many strong names, with the involvement of the Foreign investment such as: Airpay, Moca, Payoo ... In 2018, the total value made through the payment connection system of Vietnam National Payment Joint Stock Company (NAPAS) reached 1.75 million billion VND, up 164% compared to 2017. The rapid development and attractiveness of e-wallets have attracted banks as well as large technology companies and other companies to gradually enter this emerging market. For

example, Lien Viet Post Joint Stock Commercial Bank with Vi Viet, VPBank with Timo, Maritime Bank with MEED, Sacombank with Sacombank Pay. Furthermore, big companies and technology groups entered the market with products such as Zalo Pay from VNG, WePay from VC Corp, ViettelPay from Viettel, etc. (Figures & Events Review of The GSO 2019).

Advantages of using e-wallet

The rapid growth of e-wallets in the past few years is due to the fact that e-wallet products in Vietnam have captured the general mindsets of consumers. One feature that makes e-wallets attractive now is that all payment transactions and transfers through e-wallet application are free of extra fees and on top of that, accumulate points for regular non-cash payment customers. Moreover, when shopping on e-commerce sites, users can keep their card and bank account information confidential without having to provide websites via e-wallets, helping to limit leaked information.

In addition, in the race to win the market, e-wallet applications often launch many attractive incentives and promotions to stimulate the payment volume through programs such as gift giving, voucher or online deduction. E-wallets also show outstanding advantages in conveniently paying small-value products without having to wait for the seller to return the excess money during the transaction, saving time. This is also one of the advantages favoured by today's young people in choosing electronic wallets as a regular payment method.

However, the utility of electronic wallets is the most important thing that makes people change their payment behaviour. Electronic wallets are like "super applications". When owning an electronic wallet, users can easily pay for services such as car ride, food, movies ... to pay for essential family services such as electricity, water, tuition ... but not travel effort. Especially with the coverage of WIFI networks, 3G / 4G and upcoming 5G networks, the Internet is always available, convenient for electronic payment, especially in urban areas and big cities.

Challenges and obstacles to e-wallet development in Vietnam

Out of more than 20 e-wallet service providers licensed by the state bank, only about 4-6 e-wallets are of interest and regular use by consumers (Figures & Events Review of The GSO 2019). The reason is that the investment in intermediary payment services currently requires a huge amount of capital, but the likelihood of going out of date is very high because the technology trends change day by day.

Besides, habits, fear of fraud, and obstacles when not having a bank account linked to a wallet are the three main factors preventing most Vietnamese consumers from using e-wallet applications.

On the other hand, what consumers are expecting now is not how many e-wallets have been linked to, but how many chains of retail and service retail chains the market has to link to. Customers can pay for many small items in everyday life. The existence of many types of e-wallets with separate segments makes users have to install too many different e-wallet applications. This will take time to operate and recharge from bank accounts to wallet accounts. Even users who install e-wallets full of phones still do not meet the essential payment needs. What users expect is the prospect of a comprehensive merger of payment, lending and investment services into a single mobile application. Another barrier is that currently, the recharge of an e-wallet account must be through a bank account, that is, the user must have at least one bank account linked to the e-wallet. This is another major obstacle due to the fact that many Vietnamese people do not have bank accounts with internet banking features.

In addition, Vietnam has not yet built a full and formal legal base for e-wallet payments. In other words, there are no sanctions or laws that regulate the legitimacy of e-wallets, and the risks as well as ensuring the safety of users' assets whenever there is a dispute. Therefore, online consumer protection laws need to be more stringent and enforced, in order to encourage consumers to pay more via e-wallets.

4.5 QR Code Scanning

Quick Response (QR) codes are black-and-white images carrying approximately 300 times more data than a regular barcode. QR codes have been extensively used for a lot of applications, and making payments is among one of their more popular usages (Visa 2017).

The awareness of QR code-based payment services in South East Asia can be seen in Figure 11.

Awareness of QR-based payment services in Southeast Asia

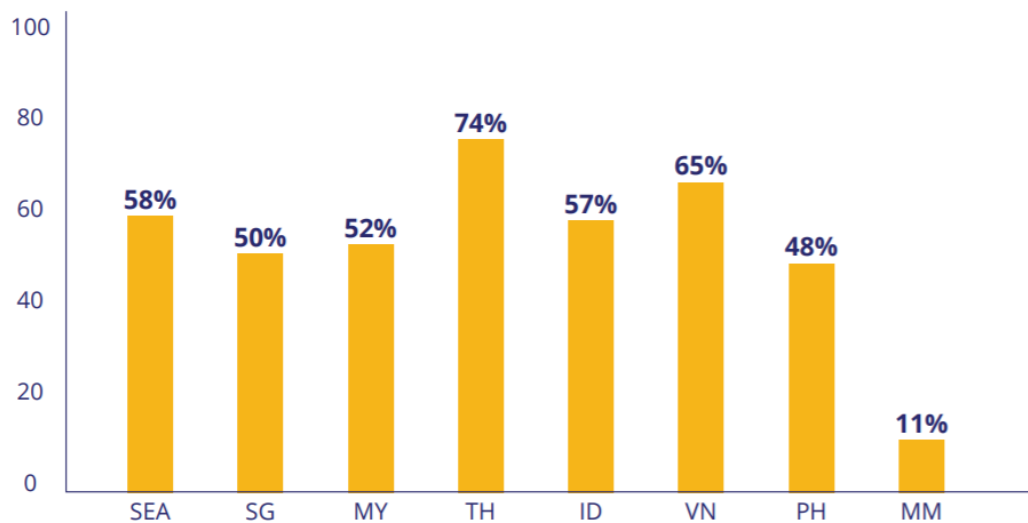


Figure 11. Awareness of QR – based payment services in Southeast Asia (Source: Visa 2017).

According to Visa’s 2017 Consumer Payment Attitudes Survey among 4000 consumers in Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam in July 2017, 58% of respondents in these areas are aware of QR payment services and 28% are using QR-codes in some form of payments. Nonetheless, Vietnam is only behind Thailand in Southeast Asia area in terms of usage rates (Thailand – 42%, Vietnam – 35% and Indonesia – 31%). Flexible and low-cost, QR-based payments have helped drive the adoption for this solution in the region. For consumers in Southeast Asia, the top three benefits in using QR-based payments are:

- Allow transactions to be proceeded faster– 53%
- Be convenient and time-saving – 53 per cent
- Do not require customers to fill in personal details – 44 per cent.

According to the State Bank of Vietnam (SBV), there are currently 20 non-bank institutions offering e-wallets that facilitate electronic payment for water, Internet, electricity; purchases of movie tickets, airfares, hotel booking, etc.; money transfer and remittance via QR code. More extensive analysis for e-wallets can be found in the e-wallet session.

Not only fintech companies developing electronic wallets such as MoMo, Payoo, ZaloPay are interested in QR Code, banks are also developing their own applications using this payment method. In May 2019, QR code payments were offered by 16 banks and introduced at a total of 30,000 stores and shops across the country and 8 million users (Vietnam Finance 2019).

On the other hand, according to Vietnam Finance (March 2019), one thing that is stopping them from transitioning to using QR code is the risk of exposing data to third parties. For companies, in order to deploy QR Codes, it is easiest for them to create an account on the platform of the supplier, for example, create a ZaloPay wallet account. Every time users pay; money will go into the wallet account of the business. However, for businesses that require a unified accounting system from multiple sources, the revenue from ZaloPay will have to be synchronized with the company's technology system. The synchronization of the two-party system risks exposing business secrets, business data, etc., thus hesitating businesses from transitioning to using QR-code based applications for payments.

In addition, Mr. Ngo Trung Linh, Director at VietUnion (owner of Payoo, one of the biggest e-wallet platforms in Vietnam) stated that the implementation of QR payment is still difficult when the majority of customers are still in the habit of using cash or not ready to experience mobile payments. Despite certain difficulties, ZaloPay said QR Code is a low-cost deployment channel, without having to worry about the maintenance and operation of payment acceptance devices like other traditional channels (ATM, POS). Therefore, the company will research, improve the necessary technologies to deploy payment acceptance units; in addition to increasing the number of service deployment partners to expand the usage of QR Code.

However, it is a fact that QR Code is now only limited to the payment of products of low value and mainly used by young people. The transactions of greater value have not been used extensively when paying by QR Code, because people rather would use POS machines.

4.6 Contactless Payment

Contactless payment allows consumers to make payments via credit or debit cards simply by waving their cards or smartphones over a reader at the point of sale. This is enabled by radio frequency identification (RFID) technology or near-field communication (NFC). At the moment the report was written, contactless payment was still in the early stages of development.

Eximbank is said to have integrated contactless payment into contactless MasterCard PayPass card; however, this card has not really attracted customers for a long time.

However, contactless technology was noticed by customers only recently when a series of banks launched this card line such as SCBbeYU of SCB, ABBank YOUcard of ABBank; Vietcombank deployed for all card brands such as Visa, MasterCard, American Express, JCB, UnionPay; Sacombank deployed on the lines of Visa, MasterCard, and JCB; Techcombank deployed with the lines of Visa Credit and Visa Debit, etc. (Giao duc Newspaper 2019)

By January 2020, there were 11 banks that offered contactless payment in their cards including Vietcombank, Vietinbank, BIDV, Agribank, Sacombank, TPBank, ABBank, Eximbank, VPbank, Techcombank, HSBC. Currently, most of POSs have followed the EMV Standard, so deploying contactless payment cards will not be too complicated.

According to Dang Tuyet Dung, Country Manager for Visa Vietnam and Laos, in the global market, contactless are most used for purchases with high transaction volumes and low average ticket sizes such as food and groceries, quick-service restaurants, pharmacies, and transit points. In mature markets, the increasingly predominant payment mechanism for most transactions is contactless in recent years. For example, according to data from Visa (USA), in the US, on average,

there are 78 points of contactless payment per 100 points of payment. In Canada, up to 70% of domestic transactions with a value of less than USD 50 are made by contactless payment. In Southeast Asia, Singapore has up to 80% of transactions made by contactless form, Malaysia has 4 million payments per month in 2018. Particularly in Vietnam, the growth of non-contact payment transactions is about 44% per month (Vietnam Investment Review 2020)

Converting domestic payment cards from magnetic cards to chip cards is one of the key solutions of the banking industry approved by the Prime Minister in the Project to develop non-cash payment for the period 2016-2020. According to the roadmap, the deadline for converting a bank card to a card that complies with the baseline standard for domestic chip cards is until December 31, 2020 and for card issuers is December 31, 2020.

5 CONCLUSIONS

The purpose of the thesis is to demonstrate digital payment industry in Vietnam and to define opportunities & obstacles in terms of changing habits from cash to non-cash payments. Furthermore, the thesis includes coherent analysis of preferable e-payment methods.

In the knowledge base, the concept of digital payment is introduced with great relevance to the development of e-commerce and the incapability of traditional payments to enable trading in e-businesses. Besides, it is necessary for further understanding of payment systems, as well as common terms commonly used when discussing about the thesis topic.

The implementation of the thesis encompasses research answering questions of the digital payment industry. It is believed that, despite the insignificant progress towards a cashless society by the Vietnamese Government, the positive outcome is promising. In terms of the target of reducing the ratio of cash to total payment instruments to below 10%, it was 11.33% in July 2019 (State Bank of Vietnam 2018), which is only more than 1.3% lower so as to reach the target. However, this ratio has been stable in a range of above 11% for years. Much more efforts

should be made in order to archive other targets of promoting cashless payments. For instance, increasing the percentage of 15+-year-old banked adults to at least 70% by the end of 2020 is another target of the government, and according to the statistics, this rate was approximately 30.8% as of 2017(Standard Chartered 2018).

Despite cash's king position, especially when it comes to low-valued transactions, electronic payments are driving the trend and said to gradually take cash's place. More traditional markets, where almost all transactions are made with cash, are paving the way for convenience stores and supermarkets. The remarkable percentage of mobile and internet penetration play key roles in promoting mobile payment and other digital payments like e-wallets and QR code. In addition, apparently, aspects such as "digital natives" & "digital immigrants" occupying the majority in the golden population structure, and technological advancements of converting magnetic to chip cards, etc. are seen as appreciable opportunities for cashless payments. Nevertheless, the uneven allocation of infrastructure and the lack of acknowledgement about e-payments in remoted areas, etc. are head-aching issues for executing the development scheme.

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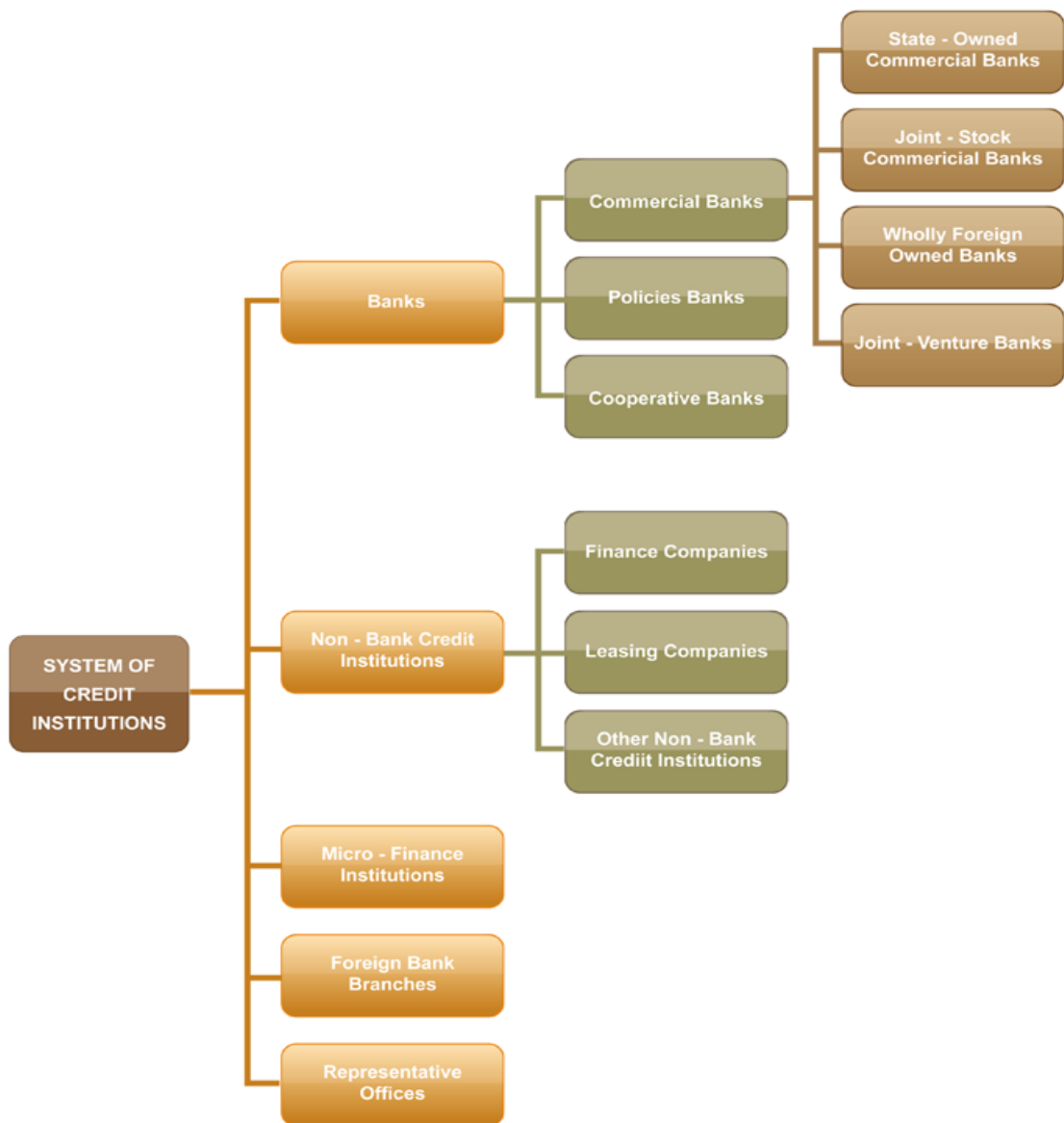


Figure 12: System of Credit Institutions in Vietnam (Source: State Bank of Vietnam 2019)

Fintech Vietnam Startup Map 2019



Picture 1. Fintech Vietnam Start-up Map 2019 (Source: Fintech Singapore 2019)

Denominations of banknotes in Vietnam, currency rate: VND 25,600 = €1



VND 500,000 ≈ €19.5



VND 200,000 ≈ €7.8



VND 100,000 ≈ €3.9



VND 50,000 ≈ €1.9



VND 20,000 ≈ €0.8



VND 10,000 ≈ €0.4



VND 5,000 ≈ €0.2



VND 2,000 ≈ €0.08



VND 1,000 ≈ €0.04



VND 500 ≈ €0.02



VND 200 ≈ €0.008



VND 100 ≈ €0.004

**Denominations of coins in Vietnam, front and back side, currency rate:
VND 26,500 = €1**



Coin VND 5,000 ≈ €0.2



Coin VND 2,000 ≈ €0.08

Coin VND 1,000 ≈ €0.04



Coin VND 500 ≈ €0.02



Coin VND 200 ≈ €0.008

Table 3. List of policies (Source: MBS 2019).

Policies	Purpose
National E-commercial development strategy 2014 - 2020	Develop infrastructure; products and solutions; human resource in e-commerce
National Innovative Start-up Ecosystem to 2025	Support procedures, finance; build infrastructure; create a start-up network including investors, partners and start-up companies.
The scheme on increase of accessibility to banking services for the economy	Establish and improve legal framework and policy, create a favourable environment, support market participants.
The Scheme on development of non- cash payment in Vietnam during 2016- 2020	Improve the legal and policy framework; upgrade and expand the inter-bank electronic payment system; develop retail payment systems and services;
Establish Steering Committee on Financial Technology	Make an annual plan to develop Fintech; connect Government and Fintech companies; propose policies to support Fintech companies.
The scheme on completing the legal framework for managing virtual property, electronic currencies and virtual currencies	Propose the amendment, supplementation and promulgation of legal documents on electronic money and measures to prevent, combat and handle violations related to virtual property and virtual money.

Table 4. List of regulation schemes on e-payments (Source: MBS 2019).

Regulation scheme	Purpose
Law no.51/2005/QH11	Law on e-transactions
Decision no.35/2006/QD-NHNN	Promulgating the regulation on risk management principles for e-banking activities

Decree no.35/2007/ND-CP	Decree on banking e-transactions
Decree no.101/2012/ND-CP Decree no.80/2016/ND-CP	Decree on Non-cash payment
Circular no.39/2014/TT-NHNN Circular no.20/2016/TT-NHNN	Guiding the Intermediary payment services
Decree no.96/2014/ND-CP	Penalties for administrative violations against currency and banking legal regulations
Decree no.25/2014/ND-CP	Prescribing the prevention and combatting of crimes and other law violations involving high technology
Circular no.19/2016/TT-NHNN	Circular on bank card operations
Circular no.35/2016/TT-NHNN	Circular on safety and confidentiality over provision of banking services on the internet.