

UNIVERSITY OF TAMPERE

Faculty of Management

IMPROVING LEGAL FRAMEWORK FOR ELECTRONIC MONEY IN VIETNAM.

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I would like to declare that this thesis is done by myself under the supervision of Dr. Kirsi Hasanen and the whole content of this research was written in English by myself.

Your sincerely

Ho Canh Liem

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Abstract

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In Vietnam, the concept of e-money has emerged and become popular in the socio-economic life; however, the lack of a clear definition of electronic money in legal documents leads to inconsistent understanding and misleading of e-money which is often misled as virtual currency. On the other hand, e-money (in the prepaid card/e-wallet form) in Vietnam has been mentioned inconsistently in some legal documents that does not meet practical requirements as well as international practices. Meanwhile, in most of other countries, there is a relatively complete system of legal documents on e-money. Many countries have issued Legal or subordinate documents (e.g. Decree-level Directives, Guides: Directive on e-money of the European Union; Law on payment systems of Russia, Turkey; Law on e-money payment services of Cyprus; guiding principles for e-money providers of Ghana, Kenya; regulations on e-money of Tanzania, etc.).

Considering the current status of the legal framework for e-money in Vietnam and learning the international experience in e-money management, there is some gap in the legal framework for e-money in Vietnam. Learning from the international experience, the completed legal framework for e-money is a prerequisite for effectively promoting and managing electronic payment in the form of e-money of any country, and Vietnam is no exception. To improve the legal framework for e-

money in Vietnam, this Essay attempts to clarify the nature of e-money, and management experience of other countries in the world in order to improve the legal framework for e-money in Vietnam.

The author has spent many years on studying the policies for electronic payment as the secretary of the Scientific Research “E-money- Practices and requirements for completing the legal framework in Vietnam “(Research No. DTNC-CS.01/06) which can be considered as the first systematic research on e-money in Vietnam. E-money, however, is a new and modern matter which is based on the information technology developments. Therefore, in this Essay, there are inevitable mistakes and theoretical gaps. I hope that the readers will understand that and give comments to help me improve the research on this topic.

Chapter 1: Introduction

1.1 The necessity of this research topic

The development of information technology in the last decades of the previous century has had a dramatic impact on all aspects of life, society, and financial sector as well. The term “e-money” first emerged during the 1990s and there have been many successes and failures in the application and development of e-money models in a number of countries around the world.

In many cases in East Asian countries, e-money models were originally developed by public transport companies (or Group of companies) as a means of developing payment instruments for public transport users. Most of e-money products were developed in form of a prepaid e-money card that supports offline application and has a “contactless” nature. As a result, it was possible to maximize its benefits of speed and convenience of use. One of the best examples was Octopus card developed in Hong Kong that was applied to both public transport and retail transactions.

In some African countries, due to the lack of infrastructure such as telephone lines and limited access to banking facilities, the development of mobile money systems was encouraged. Value of money was stored in an account that could be accessed by a mobile headset, a relatively low cost communication tool. M-PESA e-money model was a product launched in 2007 by the largest carrier in Kenya - Safaricom. Now, this service has built up a base of nearly 20 million active users and it is considered the most successful mobile-based remittance model in the world.

In Europe, real e-money began to be used in practice with the introduction of European Union (EU) Directive on e-Money in 2000, which provided the legal basis for the supply and distribution of e-money in Europe.

In Vietnam, the first bank cards appeared in 1996; prepaid cards were first launched in 2007 after the issuance of the Decision No. 20/2007/QĐ-NHNN dated May 15, 2007 of the State Bank promulgating the regulation on issuance, payment, use and provision of bank card operation support services. On the other hand, in recent years, e-wallet has been introduced and governed

by the Circular No. 39/2014/TT-NHNN dated December 11, 2014 of the State Bank guiding the intermediary payment services.

However, in the context of the development of information technology and current practice in Vietnam where exists a variety of types of value cards without being governed by any legal basis, the legal framework for e-money hasn't been directly and consistently specified. Therefore, it is very necessary to conduct a research on e-money and legal regulations on e-money to improve the legal framework for e-money in Vietnam to provide the re-requisite foundation for development and application of e-money in payment transactions in order to contribute to promoting non-cash payment in Vietnam. For that reason, I have decided to select this Topic: ***Improving legal framework for electronic money in Vietnam.***

1.2 Objectives of the research

Since its first appearance, e-money has become increasingly important in social life. Therefore, the objectives of this research are to understand the nature of e-money and the legal framework for e-money, to seek measures to apply e-money in actual situation of Vietnam and to develop the legal framework for e-money in Vietnam.

1.3 Scope of the research

In today's world, the term "digital currencies" has been mentioned more and more frequently and existed in various forms, but, fundamentally, the knowledge of digital currencies is relatively consistent. Such currencies are divided into two types, electronic money or e-money and virtual currency.

Within the scope of this thesis, however, the author decided to focus on electronic money or e-money and set out to investigate the legal framework for e-money management in the world and current situation of e-money in order to improve the legal framework for e-money in Vietnam.

1.4 Research questions

The thesis is designed to answer the following questions:

1)What is electronic money or e-money? How is the legal framework for e-money management in the world?

2)How is the current situation of e-money and the legal framework for e-money in Vietnam and how to improve the legal framework for e-money in Vietnam?

1.5 Structure of the thesis

The thesis is composed of five chapters: Chapter 1 presents an introduction to the topic of the thesis. This chapter discusses the necessity of the research topic, objectives of the research, scope of the research, and research questions.

Chapter 2 deals with theories of e-money and introduces the concepts and nature of e-money. This chapter also outlines the legal regulations that govern e-money in the world. In this thesis, we focus on researching and referencing to the theories of e-money and the legal basis for e-money as developed by a number of international organizations and central banks of some countries that have similar conditions and level of economic development like Vietnam. Therefore, they will become good lessons for Vietnam in order to improve the legal framework for electronic money.

Chapter 3 presents the research methodologies of the thesis. The topic of this thesis is a new one that is related to many various fields. Especially, it is closely associated with the impact of the development of information technology. Therefore, the research methodologies of this thesis are based on the collection of research materials by foreign financial institutions, such as the Bank for International Settlements (BIS), European Central Bank (ECB) as well as materials from many other central banks and international financial institutions. Since this is a completely new topic in Vietnam, there are few theories or research topics that directly address this topic in existing literature. Therefore, the research is conducted on basis of secondary data collected from reports and statistics of the State Bank of Vietnam and other banks and organizations that provide payment intermediary services. Also, in order to comprehensive and multi-facet information, the author attended several seminars on this topic and consulted opinions of many domestic and foreign specialists, managers and officers that are directly involved in developing a policy framework for e-money to support in completing this research.

Chapter 4 focuses on analytical findings on e-money and the legal framework for e-money. In fact, according to the analysis of the nature of e-money presented in Chapter 2, e-money has appeared in Vietnam in the form of prepaid card and e-wallet; in addition, the legal framework for e-money has also been laid down in legal documents already. However, based from the research methodologies discussed in Chapter 3 and the current situation of e-money and the legal framework for e-money in Vietnam, the author presents a number of recommendations in order to improve the legal framework for e-money in Vietnam as stated in Chapter 5.

Chapter 5 is also the final chapter of the thesis. In this chapter, main contents of the research topic are summarized, including the limitations of research results, and recommendations to improve the legal framework for electronic money in Vietnam are presented.

Chapter 2: Literary Review

2.1 *Electronic money*

Money is anything that is generally accepted in payment in exchange for goods or debt repayment. In this definition, there are criteria for determining whether an object is money. However, it does not explain why such object was chosen as money. To explain this, we must understand the nature of the money.

2.1.1 *Nature of money*

In nature, money refers to an *intermediary* in exchanges of goods and services, *a means for easy exchange*. This is shown in 2 properties of money: *the use value of money* (the ability to satisfy exchange demands of the society, demands to use it as an intermediary in exchange) and the *value of money* (as shown in the concept of “purchasing power of money”, that is the ability to exchange for more or less goods).

2.1.2 *Functions of money*

In the opinion of modern economists, money has three basic functions: (i) a means of exchange; (ii) a means of measurement and calculation of value; and (iii) a cumulative means, as follows:
A means of exchange: for this function, *money acts only as an intermediary in exchange of goods* in which the goods will first be exchanged for money, and then the money is exchanged for other goods. Thus, money is considered *a means of goods exchange in the economy*. *There is also a means of measurement and calculation of value* in which money is a commonly used metric in social relationships. Thanks to this function, monetization is increasingly popular in measuring the social development, standard of living, etc. It has created a monetary economy. *Additionally, there is a cumulative means*: meaning that accumulation is the basis for reproduction and production expansion, so it is also the basis of economic development. Money has this function because it is a means of exchange and the most liquid asset.

2.1.3 *Developments of money*

The birth of money was associated with the development of production and circulation of goods: Direct exchange of goods for goods, marking the transition from a self-sufficient economy to an

exchange economy. The birth of “intermediary” in exchange led to the birth of money, marking the transition from the exchange economy to the monetary economy.

During the development of the commodity economies, money existed in various forms in order to meet the development demand for goods exchange. Money was developed through the following forms of existence:*Non-metal money*: the earliest form of money, which is very popular in ancient societies, such as Silk in China, Butter in Norway, and seashell chains in North American Indian tribes. *Metal money*: Chosen metals included: iron, bronze, gold, silver, etc. *And paper money*: today, used by all countries. Paper money issued by the central bank is legal currency, which is circulated at a compulsory value and the state does not convert paper money into gold. Paper money is used as a means of exchange more and more popularly because of conveniences such as easy-to-carry, easy-to-keep properties. *There is also money through the bank (Representative money)*. Due to strong developments of banks; today’s payments are mostly through the banks through via bank transfers or clearing on deposit account. Book money along with payment documents such as checks, bank statements, receipts, etc. have diversified means of payment besides cash, while also facilitating the reduction of expenses for paper money circulation such as printing, storage, check and counting, transportation. *Additionally, there is e-money*. With the strong development of information technology, the term “e-money” has emerged and affected the financial and monetary markets of some countries in the region and in the world.

2.1.4 History of e-money

In the late 1980s, the first e-money products appeared in Japan. In Europe, the introduction of e-money products began in the 1990s. During this period, there have been many successful cases and failures in adopting e-money models. E-money models were created to meet the demand of retail payments, replace low-value cash payments, such as paying for public transport, community service without banking services or supporting online payment.

In many cases in East Asia, the e-money model was originated by public transport companies as a method to develop efficient means of efficient, convenient and cost-effective payment for public transportation users. Most prepaid e-money card products support these applications because they

are offline and have contact-less characteristics, giving them the advantage of speed and convenience. Over time, the use of e-money products has expanded into retail transactions, but only in a number of cases have successfully implemented it. One typical example is the Octopus card in Hong Kong, which applies to both public transport and retail transactions; it is estimated that about 40% of the current total transaction value of this card is not related to the transport sector.

In some African countries, the lack of infrastructure such as telephone lines and limited access to banking services has led to the development of mobile money systems – in which the money value is stored in an account and accessed using a mobile headset, a communication tool at a relatively low cost. The e-money model M-PESA¹ is a great success of Kenya which was introduced in African and Asian countries. Transferring the balance to users using the short message service (SMS) technology is still the most common form of M-PESA. In Europe, the concept of e-money began to be put into practice with the European Union (EU) Electronic Money Directive in 2000, creating a legal basis for supply and release of e-money in Europe.

So, the introduction and development of e-money has brought positive impacts to the financial - banking market of countries around the world, creating value for users and society. The emergence of e-money products with potential features has also brought a new payment method to consumers which are increasingly applied. In the future, the development of e-money promises to bring breakthroughs to the banking sector, helping the payment systems in the economy operate smoothly, efficiently and safely.

2.1.5 The concept of e-money

Electronic money is the money balance recorded electronically on a “stored-value” card (Ely,. 1996). These cards, “smart cards,” have a microprocessor embedded which can be loaded with a pecuniary value. Another form of electronic money is network money, "software that allows the transfer of value on computer networks, particularly the Internet and mobile phone. Like a traveler's checks, a digital money balance is a floating claim on a private bank or other financial institution that is not linked to any particular account" (Berentsen, 1997). This type of money is issued by public and private organizations around the world and is raising concerns about future

¹ M-PESA: a product of the largest operator in Kenya - Safaricom. Launched in 2007, this service has nearly 20 million users so far and is considered as the most successful mobile money transfer model in the world.

capabilities of the central banks in setting money supply target. Currently, it is widely used in such places as Germany, the Netherlands, Belgium, Singapore, and Hong Kong (Tak, 2002).

Electronic money based on Near Field Communication (NFC) allows buyers and sellers to make secure and instantaneous monetary transactions with a slight touch of the device/card on a terminal (Hiroshi Fujiki, Migiwa Tanaka, 2014). Following Ruth Halpin², Roksana³ “Electronically, including magnetically, stored monetary value as represented by claim on the issuer which is issued on receipt of funds for the purpose of making payment transactions (...) and which is accepted by a natural or legal person other than the electronic money issuer”.

In the theories of economic growth and technological change, Abernathy, Clark, and Kantraw (1983) argued for the process of industrial de-maturity as driving force of the industry evolution. They considered the nature of the innovation process as well as the competitive environment in which technology evolves to explain the progress of the industry. With respect to evolutionary theorizing on economic growth, they argued that technological change may alter the character of innovation and competition and over time affect the structure of the industry.

New electronic means of retail payment that are currently being tested or implemented in a number of markets include multi-purpose prepaid or stored – value payment mechanisms for executing payments over open computer networks, such as the Internet (Electronic Money and E-money Institutions) (Elec. A precise definition of electronic money is difficult to provide; indeed, a number of official bodies have described and categorized these products in different ways. Electronic money products differ in their technical aspects from many conventional forms of payment. At present, there are two basic ways of representing the value of funds stored on electronic money device: (1) a “balance – base” type in which a single balance is stored and updated with each transaction; and (2) a “note – base” type in which electronic “notes” each with a fixed value and serial number, are transferred from one device to another (Report of the working party on electronic money, 1997).

² Herbert Smith LLP, 2009, London, United Kingdom

³ Centre for Commercial Law Studies, Queen Mary College University of London, united Kingdom.

Some major financial institutions and organizations around the world have also defined the concept of electronic money as follows: In 2009, European Central Bank (ECB) introduced the definition of “electronic money”, which means *“electronically, including magnetically, stored monetary value as represented by a claim on the issuer which is issued on receipt of funds for the purpose of making payment transactions, and which is accepted by a natural or legal person other than the electronic money issuer”*. The Bank for International Settlements defined electronic money as *“stored value or prepaid products in which a record of the funds or value available to the consumer is stored on a device in the consumer's possession”*. This definition includes both prepaid cards (also referred to as electronic purses) and prepaid software products that use computer networks such as the Internet (also referred to as digital cash).

The central banks of many countries have based on these basic principles to give specific definitions such as: The Law on Payment Services and Electronic Money issued by the Central Bank of Latvia in 2011 also defines electronic money as *“monetary value stored electronically (on a smart card or in computer memory)”* with the following characteristics: (i) it represents a claim against the issuer; (ii) it is issued on the basis of money received from a holder of e-money for payment transactions; (iii) it is used as a means of payment and is accepted by an individual or entity other than the electronic money issuer.

The Electronic Currency Law, drafted by the Central Bank of Cyprus in 2012, also states a similar definition of electronic money as *“monetary values stored electronically or as a representation of liability to the electronic money issuer, is issued on basis of the amount received to carry out the payment transaction, and is accepted for payment by an individual or entity other than the electronic money issuer”* .

The 2013 Electronic Money Regulation (equivalent to decree level) of the Central Bank of Kenya defines electronic money as follows: Electronic money is the monetary value representing the claim against the electronic money issuer with the following characteristics:

- (a) it is stored electronically, including by magnetic means;
- (b) it is issued on basis of the amount received by Kenya;
- (c) it is accepted as a means of payment by individuals or organizations other than the issuer.

The concept, nature and form of expression of e-money have the following basic features: “E-money is the monetary value stored on an electronic device/instrument and has the following features: (i) being secured by bank deposit at a 1:1 ratio; (ii) being expressed by recourse to an e-money service provider; (iii) being expressed in the form of prepaid cards provided by the banks and e-wallets provided by payment intermediary institutions; and (iv) being used as a means of payment for payment transactions.”

Therefore, *e-money is not a new currency but rather a form of expression of a legal currency in the form of payment instrument or means used to conduct payment transactions and secured at a 1:1 ratio of the legal currency.* In addition, the determination of e-money as a means of payment also helps State management agencies take effective measures to prevent tools which are not considered legal means of payment used to pay for multiple purposes or converted into cash.

2.1.6 Classification of e-money

Upon conducting a research on existing literature, there are a variety of types of electronic money in the world, but they are basically classified into three (03) categories, including:

Offline e-money

One of the forms of electronic money is offline e-money, such as prepaid cards or smart cards. A prepaid card is a card that has a certain amount of money recorded on it in written, electrical, or optical form, and it usually functions like a credit card. When a customer uses this card, the card acceptor will clear a part of the optical, magnetic or electronic range corresponding to the spent amount. However, most of these prepaid cards are usually used for single purposes only (for example, prepaid phone cards that are issued by telecommunications companies and can only be used to make calls at public phone booths) and, as a result, this can not be considered a complete e-money form.

Smart cards are an extension of prepaid cards. Just like prepaid cards, smart cards store a certain amount of money, but unlike prepaid cards, they usually contain electronic chips. Thus, smart cards can be used for a variety of purposes. This can be considered as a form of electronic money, because when people buy smart cards, they transform their money from traditional forms (cash,

payment accounts, coins, etc.) to electronic money. (Reynolds Griffith, Stephen F. Austin State University).

Online e-money (also referred to as e-Wallet)

Currently, there are many websites that offer online payment services without a bank account. These websites work in the following ways: a customer can sign up for an account and is provided with an "e-wallet" with a security code and personal information. That customer can then transfer their money from his or her bank account to the "e-wallet" and then directly use the money stored on his or her "electronic wallet" for online shopping at a store or participating in direct sales between customers on such shopping sites as Paypal, eBay or Alibaba. The most typical and popular of these websites is PayPal. Besides, there are many other similar websites with increasing popularity. At first, these types of electronic money are usually used only for sale transactions between customers, but they are becoming more and more widely accepted by businesses and organizations with online sales activities as well.

Digital cash

According to Webopedia, (2000) digital cash is defined as follows: "A system that allows a person to pay for goods or services by transmitting a number from one computer to another. Like the serial numbers on real dollar bills, the digital cash numbers are unique. Each one is issued by a bank and represents a specified sum of real money. One of the key features of digital cash is that, like real cash, it is anonymous and reusable. That is, when a digital cash amount is sent from a buyer to a vendor, there is no way to obtain information about the buyer. This is one of the key differences between digital cash and credit card systems. Another key difference is that a digital cash certificate can be reused." From this definition, it can be seen that for electronic money to be regarded as digital cash, it must satisfy 02 features: (i) it must be anonymous, and (ii) it can be sent from one person to another person.

2.1.7 Risks associated with electronic money

Risks associated with electronic money are divided into two (02) categories: (i) quantifiable risks, and (ii) non-quantifiable risks.

Quantifiable risks

Credit risk: the risk that a counterparty can not perform its debt repayment obligations to a credit institution. This is the most common risk associated with banking operations.

Liquidity risk: This is the risk that a credit institution is temporarily unable to meet the requirements on liquidity obligation upon the due date without suffering any loss.

Interest rate risk: This the the risk associated with the fluctuations of interest rates that result in a negative impact on financial situation of a financial institution.

Foreign exchange risk: This is the risk of fluctuations in exchange rates that may have adverse effect on financial situation of a financial institution (AI-Laham, AI-Tarawneh, Abdallat, 2009).

Non-quantifiable risks

Firstly, there is a strategic risk. This type of risk is related to the strategic objectives of a financial institution in which business strategies are developed and resources are focused to achieve the inappropriate objectives, and the quality of implementation is inappropriate as well. *Secondly, there is a compliance risk.* This risk involves the failure to comply with the provisions as prescribed by laws, rules, practices, and regulations, or ethical standards. *Thirdly, there is areputational risk.* This is the risk that reputation of a financial institution may be impaired by undesirable impacts of external fluctuations. *And fourthly, there is alegal risk.* This is the risk that a financial institution may be negatively affected by uncertainties in the legal framework that governs its operations. This can happen in such a cases where commercial law does not provide any specific regulation to settle a dispute between the issuer and the customer (Crockett, 1998) (AI-Laham, AI-Tarawneh, Abdallat, 2009).

In addition to above-mentioned risks, the emergence of electronic money system also poses concerns for electronic money issuers and regulators in managing this type of currency. Here are some key challenges for functional agencies:

The effective operation of the payment system and confidence in payment instruments

Another fundamental problem is that the development of electronic money does not jeopardize the smooth functioning of payment systems. Electronic money creates a technology that allows to use the means of payment effectively. However, this advantage can only be accepted if there is sufficient safety to make sure that electronic money is trusted and accepted by all users. In addition, the trend in using electronic money systems may force banks to reduce their capacities and resources for traditional payment systems. In such cases, the failure of an electronic money issuer may lead to the impairment of confidence in electronic money systems while it is no longer capable of switching to more traditional payment facilities. (ECB, 1998)

Protection of the customers and merchants

Electronic money represents the liabilities on the balance sheet of the issuer, which is prepared on the basis of cash amount or deposit provided by a customer, to be settled with merchants. As such, these liabilities represent assets that the customer may use for payment purposes. Like deposits, prepayments to the electronic money issuers are not idle but used for investment instead to gain returns on assets. This is similar to the case with value of bank deposits, in which value of electronic money may decrease, or even become zero, if the liabilities of the issuer are higher than value of the assets. As a result, financial integrity of the issuer will suffer in case the investment policy that it pursues is unreasonable. Risks to the issuer are more likely caused by liquid cash flow (if assets are liquidated with a severe resulting loss) than by credit risk.

In addition, central banks may face a situation of ethical dilemma if economic agents make a mistake to claim that they can support electronic money issuers to maintain public confidence in electronic money. It is also possible that some customers will not see the clear differences between the protection they receive with traditional bank deposits and the protection they will receive (if any) with forms of prepayments to the electronic money issuers.

Protection against crime

Inadequate management of operational risk and technical insecurity can make electronic money vulnerable to counterfeiting and fraud. If counterfeit money can be placed in circulation, it can lead to increased claims against the issuers that are no longer supported by available assets. Thus, financial integrity of the issuer will be threatened. This vulnerability may be greater for software-based, cryptographic systems, while card-based electronic money systems can also be used to protect a tamper-resistant chip.

In the context that information technology is developing so fast together with the appearance of cybercrime, counterfeiting and fraud risks can hardly be eliminated. Therefore, in the case an electronic money system is found to be counterfeit or fraudulent, it will not be able to appropriately cope with sophisticated tricks taken by the criminals. This issue is less important for programs where electronic money transactions are handled in the same way as deposits held by credit institutions. If an electronic money system is based on book entry principle, each payment will result in a debit or credit to the issuer's account. Therefore, criminal attacks may be detected in early stages and countermeasures may be taken quickly (Janson, 2004).

On the contrary, if electronic money could be transferred from one customer to another without any entry of transaction recorded by the issuer or clearing system, the systems could pose a higher operational risk because transactions can not be completely controlled. In addition, e-money programs that do not allow transactions between customers can also be truncated or merged with data transferred to the issuer or clearing system, which will result in difficulties in checking such transactions.

Another area of criminal crime involving electronic money systems is money laundering and tax evasion. If e-money programs enable the ability to make unlimited transfers, they can increasingly be used for criminal purposes. In fact, it is impossible to exclude market forces that promote the development of an electronic money system whose features are "more attractive" for money

laundering purposes (for example, the ability to perform transactions between customers, tracking personal transactions, etc.).

2.1.8 The differences between electronic money and virtual currency

The topic on electronic money and the legal framework for electronic money is presented in Chapter 1. However, to further clarify, the author analyzes the difference between electronic money and virtual currency as follows. In today's world, the term "digital currencies" has been mentioned more and more frequently and existed in various forms, but, fundamentally, the knowledge of digital currencies is relatively consistent. Such currencies are divided into two types, electronic money or e-money and virtual currency.

The concept of electronic money is discussed above. For virtual currency: As defined by the European Central Bank (ECB) and also commonly defined and interpreted in the world: *“A virtual currency can be defined as a type of unregulated, digital money, which is issued and usually controlled by its developers, and is used and accepted among the members of a specific virtual community.”*

From the above definition it can be seen that virtual currency is associated with the concept of virtual communities - which are places in the virtual network where individuals interact with each other. The popularity of virtual communities in recent years is associated with technological advances and the increased use of Internet in all aspects of life. In some cases, these communities create and circulate their own coins for exchange of the goods and services they provide, thereby creating a means of exchange and an unit of measurement for the virtual community itself.

Currently, virtual currencies can be divided into two main categories: non-convertible virtual currency and convertible virtual currency. Specifically: ***non-convertible virtual currency*** is a type of currency that is issued and used in a virtual world, such as online games, that follows its own rules of usage and can not be converted to *legal money* (such as USD, Euro, etc.) All of non-convertible virtual currencies are centralized virtual currencies because they are all created by a single issuer (game developer) for the whole community.

Convertible virtual currency is a type of virtual currency that is equivalent to real money and can be converted to legal currencies and vice versa. For example: Bitcoin, Altcoins, Litecoin, Perfect

Money, Webmoney, etc. Based on two main forms, it is possible to divide this type of virtual currency into two categories: *centralized convertible virtual money* and *decentralized convertible virtual money*. *Convertible centralised virtual currency* is a type of convertible virtual currency that is controlled by a single manager. This manager will issue such a virtual currency; establish rules of use, maintain a centralized ledger, and it also has the right to withdraw the outstanding virtual currency (from circulation). The exchange rate of this currency against prevailing currencies may be floating according to supply and demand principle or pegged according to the value of gold or basket of legal currencies. Some examples are WebMoney, PerfectMoney, etc. *Thus, non-convertible centralised virtual currency* (also known as **crypto-currency**) is an open source virtual currency that is based on algorithms, storage mechanisms, differential processing methods, and peer-to-peer transactions between participants in the system without a centralized management and issuer. For example, some of these currencies are Bitcoin, Ether, etc. Currently, this category of virtual currency is attracting a lot of attention and interest not only in Vietnam but also globally together with the strong development of the most prominent digital currency, Bitcoin.

Bitcoin is one of the virtual currencies that has received a lot of public attention in today's market. It was invented by a person whose name is *Satoshi Nakamoto*, who brought this idea to the network community for purpose of creating a secure transaction system. All of members of the system do not need to trust each other. In the context of the financial crisis (originating from the housing crisis) in the United States, Bitcoin began to spread globally in 2009. Bitcoin is generated and operated by a peer-to-peer computer system of the community of users of this cryptocurrency. An user in this network community can create Bitcoins by processing of a complex array of algorithms, known as Bitcoin "digging" process, and one will receive the Bitcoin that he created. However, the amount of Bitcoin is limited (its supply is set by the algorithm at a maximum limit of 21 million) so this "digging" process will not be able to generate Bitcoin when Bitcoin volume reaches the maximum limit. Nowadays, as the number of Bitcoins can still be generated by digging process, there are still a large number of users that adopt this method to create new Bitcoins in the context of Bitcoin price growing very high (approx. over USD 4,000).

Virtual money is *"the representation of value that the community of participants accepts and uses in transactions that are provided and managed by the issuer."* The study of ECB has identified some common features of virtual currency, including: (i) most of this virtual currency are not

accepted as legal means of payment; (ii) transactions are only made in the form of an agreement in the community of virtual currency users; (iii) it is not covered by banks and not issued by banks; and (iv) it is not be legally recognized and protected in the event of a dispute. Some virtual currencies that exist and are commonly used in the world today such as Bitcoin, Litecoin, Peercoin, Ripple, Darkcoin, Feathercoin, etc.

The differences between electronic money and virtual currency.

Virtual money, if being used as a unit of measurement, does not have a legal tender status as electronic money. ECB points out basic differences between these two currencies as follows:

Table 1: The difference between electronic money and virtual currency

| Feature | “Electronic money” system | “Virtual currency” system |
|-------------------------------|--|---|
| <i>Form of money</i> | Digital | Digital |
| <i>Measurement unit</i> | Traditional currencies (such as Euro, USD, etc.) with legal money status. | Invented coins (such as the Linden Dollar, Bitcoin, etc.) without legal money status. |
| <i>Scope of acceptance</i> | Accepted by non-issuers | Usually accepted in a certain virtual community |
| <i>Legal status</i> | With management | Without management |
| <i>Issuer</i> | The electronic money organization is established and operates in accordance with provisions of law | Non-financial private enterprises |
| <i>Money supply</i> | Fixed | Not fixed (subject to the issuer's decision) |
| <i>Repayment security</i> | Secured (by nominal value) | Unsecured |
| <i>Subject to supervision</i> | Yes | No |
| <i>Types of risks</i> | Mostly operational risk | Legal, credit, liquidity and operational risks |

Source: European Central Bank (ECB)

2.1.9 The impact of electronic money on monetary policy and the Central Bank

The increasing use of electronic money has led to various studies on the impact of this new money form on the ability to govern monetary policy, particularly the control of money supply by the Central Banks. Many economists believe that electronic money can completely replace real currencies, while others think that the impact of electronic money is not clear. The ability to control money supply depends on the definition of money (M1). Money supply (M1) includes currency, travelers' checks and non-term deposits. If the use of these variables decreases due to increased dependence on electronic money, M1 would not be considered as an accurate measure of money in the economy. Decreased measurement of monetary aggregates will limit the ability of the Central Banks to carry out open market operations and achieve the goal of money supply. In fact, this will be offset by "new digital monies are fully backed by assets such as gold or high-quality financial instruments. Therefore, the need to conduct open market operations will diminish, because the supply of money for transactions should automatically adjust to demand" (Rahn, 2000). If the money supply is assumed to be fixed, "when the currency weight decreases gradually as the use of electronic money increases, the scale of the central bank's assets and liabilities will be reduced, which may lead to a weakening of money management and of the interest rate management through open market operations" (Tak, 2002). (Al-Laham, Al-Tarawneh, Abdallat, 2009)

Here are some important impacts of electronic money on monetary policies of central banks: *The velocity of money is also affected by an increase in the use of electronic money.* Electronic money will inevitably reduce the time and space required to disburse payment costs and increase transaction volumes by facilitating transaction convenience (Tak, 2002). It can be seen that velocity of money will increase if electronic money is accepted first as a form of money, and then added to the sum used to calculate the velocity of money. While the rate of increase is a good signal that can not be measured when electronic money is not included in total money supply, this decreases the capacity of central banks in controlling monetary policy. *Impact on money multiplier.* Money multiplier is directly affected by the increase in the use of electronic money to replace conventional currencies. When electronic money is introduced, currency falls and deposits rise as a result of less individuals holding cash. As a result, the ratio of money supply decreases, and

money multiplier becomes higher, and the amount of money generated by the provision of fixed reserves is increased (Tak, 2002). This suggests that electronic money will directly affect money multiplier through currency rates. *Electronic money also affects required reserves of the central banks.* If the reserve requirement is set on electronic money balance, there will be no change as it is assumed that currency supply will fall relative to the increase of electronic money balance. However, this assumes that required reserve requirements of the central bank may be placed on all of electronic balances. This is not the case when private institutions are responsible for smart cards and money networks. *Finally, the impact that is most widely accepted by financial professionals is that electronic money can lead to the loss of seignorage, tax on mintage money.* This amount is used to run central banks and hence its loss can cause central banks to suffer financially. This amount is also used to finance government deficits and other programs and its loss may hurt the government as well. This loss can be countered by treating electronic money balance in a similar manner to demand deposits and enforcing reserve requirements.

Currently, there are many various opinions on the impact of electronic money on monetary policy of the central banks (ECB, 2010). It is argued that e-money is, essentially, not much different from an existing conventional currency, so it does not affect monetary policy of the central bank. There are, however, opposing views that e-money has a huge impact on monetary policy, and may even nullify the effect of monetary policy. A report by ECB in 2010 introduced a number of recommendations on electronic money to central bank regulators. *Firstly, the central bank needs to protect the role of money as a "measure of value" for economic transactions.* With this recommendation, ECB believes that electronic money must be converted into real money, issued by the central bank of a country. However, this invisibly ignore such issues with foreign issuers and does not take into account the ability of customers to choose a different currency instead of using the official currency issued by the central bank. This is similar to the phenomenon of dollarization in the economy that has occurred in some countries in the world. *Secondly, the effectiveness of monetary policy instruments may be affected by the widespread adoption of electronic money.* This is the impact that receives the most attention from regulators. If electronic money is issued by a non-bank institution, money supply will temporarily increase due to the presence of electronic money, while old supply amount is not lost but its ownership is switched

from customers to issuers. Thirdly, *the emergence of electronic money may adversely affect content of currency index variables in achieving the goal of price stability*. One of the key determinants of the impact of electronic money on monetary policy is the issuer. Accordingly, in case the issuer is a bank, monetary policy is not affected because electronic money is only a form of cash. On the other hand, if the issuer is a domestic non-bank institution, electronic money can be considered as a traveler's checks and is included as part of the money supply. However, the real problem is that if the issuer is a non-bank institution in a foreign country, the central bank has no absolute authority over such a institution. Therefore, this will affect the calculation and measurement of money supply as well as the effectiveness of monetary policy instruments.

Tanaka (1996) emphasized that one of the most important characteristics of electronic cash is its transnationality, meaning that electronic cash has no boundary and is not under the control of any central bank. If electronic cash is only circulated within the national boundary and controlled by the central bank, it will have no impact on the economy. In practice, however, electronic cash is not limited to national boundaries, so there both positive (such as national payment) and negative (such as adversely affecting the national currency system) aspects of the payment process. This will cause conflicts between suppliers or users of electronic cash and central banks.

In this regard, type of electronic money also has an impact on the impact caused by electronic money on monetary policy. For example, in offline form, electronic money may be easier to control for central banks and stores will favor domestic systems, while customers will also choose domestic systems because of their convenience and wide acceptance. In contrast, for online electronic money, there is no physical limit to the method, as well as payment tools. Therefore, users can freely choose the services that they feel most appropriate and thus they can choose suppliers that are outside the control of the central banks. Nowadays, online form of electronic money is gradually becoming more prevalent than offline form due to its popularity, advancement and secure information.

2.1.10 A number of research models of electronic money introduced by some central banks

By reviewing the literature and studying various models of electronic money management adopted by some central banks, in this thesis, I would like to present two typical models of e-money adopted by central banks: one is the case of the Bank of China (based on Blockchain technology) and the other is the case of the Bank of England (based on bank deposit account model):

The model of the Central Bank of China

Background and principles of issuance: With the ambition to become the first country in the world to officially release and circulate digital currency in order to increase its influence and establish new rules and standards for China to govern this currency in the future, the Central Bank of China has taken a lot of efforts to investigate current monetary policy framework, money supply and monetization mechanism when designing digital currency. The study and preparation of digital money is a step in line with current trends. Unlike Bitcoin, digital currency issued by the Central Bank of China is a combination of technology solutions, designed and managed by laws and regulations to ensure the safety and security of the operating system.

In term of theoretical aspect and applied technologies the Central Bank of China is researching the potential and application of *Blockchains* technology, which is being used by Bitcoin system and researched by the Federal Reserve Bank of Germany and the Federal Reserve Bank of Russia. According to the Central Bank of China, this technology requires a lot of computers to store, and may not be able to handle today's transaction volume. However, based on a scattered ledger non-account model, *Blockchains* is the right choice to protect personal information of digital currency holders. *In terms of utility and security*, although there is still much debate over the issuance of digital currency, the Central Bank of China is well aware of remarkable advantages that digital currency will bring about, including: (i) convenience; (ii) balance between user privacy and maintenance of social order and handling of criminal activities; (iii) contribute to promoting the issuance of monetary policy; and (iv) digital currency will have no impact on monetary sovereignty due to its convertibility into money and the fact that its convertibility can be controlled.

According to a report by a major Chinese media agency - Caixin, PBOC has completed testing its transactions finalized with its own digital currency. Digital currency was tested on the basis of Blockchain and successfully tested in mid-December 2016. The experiment was conducted on distributed ledgers and some large commercial banks such as the Industrial and Commercial Bank of China (ICBC) and the Bank of China (BOC) - two of the oldest state-owned commercial banks in China, or such a private bank as WeBank that is attempting to digitize local currency of China, Renminbi. The report also revealed the government's plan to set up a digital payment infrastructure and have completed its functionalities to be ready for deployment. Once the system is ready, the exchanges that accept the central bank's pilot plan will be connected to the Shanghai Trading Platform to form a national system for bank draft transactions.

In addition, PBOC is seeking to set up its own *Digital Currency Research Institute* and announced its official recruitment in November 2016 with the goal of seeking for experts in the development area of blockchain technology, large data, system design and data encryption. One of mandated requirements is that candidates must have Master or Ph.D. degree in fields of cryptography or computer science on information security.

Model of digital currency supply adopted by the Central Bank of England

The Central Bank of England adopted an approach to digital currency issuance that aims at following goals: (i) Broaden the scope of monetary policy options, allowing new monetary policy tools to be used; (ii) Make financial system safer by allowing individuals, private companies, and non-bank institutions to settle directly through the Central Bank, thereby significantly reducing the centralized exposure of liquidity risk and credit risk in the payment system. At the same time, it also minimizes system risk posed by several large banks. Besides, this is a risk-free alternative for bank deposit accounts. Thus, the transition from bank deposit to digital currency can minimize the requirements on government guarantees for deposits and get rid of moral hazards from the financial system; (iii) Encourage competition and innovation in the payment system: A new regulatory framework will allow new entrants into the payment sector to compete with existing banks. At the same time, it also minimizes the need for smaller banks and non-bank institutions to

pay through larger banks (those that may offer adverse transaction fees to smaller competitors); (iv) Minimize printing, transportation, and storage costs for physical currencies; and (v) Promote the access to finance: Companies that provide digital cash account services may be the first and most important payment service providers while banks will be key lenders. Therefore, organizations providing digital cash accounts are functioning in the similar manner as providing accounts to customers, but not included in traditional banking services.

Unlike the directions given by some central banks (Central Banks of China, Japan, and Germany) regarding the consideration of using Blockchains technology for the digital currency system, the Central Bank of England is considering alternatives to digital currency without adopting the "scattered ledger" model. Accordingly, the Central Bank of England uses the same model of bank deposit as the basis for issuance of digital currency by using 02 models: *(1) Direct method through accounts at the central bank and (2) Indirect method through digital cash account providers.* While in the past, with the deposit account model, only commercial banks could open their accounts at the central bank. Now, the central bank can just simply provide digital currency to consumers by allowing them to hold digital cash accounts deposited at the Central Bank of England. To this respect, *the Central Bank of England will tend to use the "centralized accounting model" instead of using the "scatter ledger" model as adopted by Bitcoin.*

Model 1: Direct method through the accounts at the Central Bank

Under this method, the Central Bank of England will open for each client an account at the central bank. At the same time, it will provide customers with key, account number, and payment card for processing payment transactions. The central bank also provides other services (such as Internet banking, mobile banking, etc.) for customers to check, inquire for account statement, and perform transactions. At the same time, the Central Bank of England has also issued regulations on risk management, anti-money laundering and combat against terrorist financing for all of customer accounts.

The disadvantage of this model, however, is that the central bank, a state-owned organization, is burdened with a great deal of governance and service delivery, and will become a major

competitor to domestic commercial banks in providing payment services. In addition, the Central Bank of England has no commercial incentive to innovate its payment mechanisms, but it only provides basic services accepted by customers.

Model 2: Indirect method through digital cash accounts (DCAs)

Under this model, the Central Bank of England still plays the role of creating and maintaining digital cash accounts, but its difference is that all of payment and customer services will be provided or administered by companies in private sector. As a result, banks and technology companies (smartphone application developers) will become service providers that are responsible for providing accounting services, card payments, account checks, Internet banking or mobile banking, etc. Account holders can also make payment transactions through regular payment networks such as Visa, MasterCard, etc. in the same way that they make payments through a bank deposit account.

All of payment transactions with DCAs are electronic transactions, which are linked directly to accounts opened at the Central Bank of England. As a result, DCAs provide liquidity to meet the ability to pay for all of customer transactions at all times. Legally, it is worthy to note that digital currency in DCAs belongs to account holders, but not to DCA providers. Digital currency can be kept separately in the customer account at the Central Bank of England without being recorded on the balance sheet of DCA providers. DCA providers are only managers, not owners of these funds. Therefore, they are not allowed to issue loans, pay interest, or grant overdrafts to customers and do not cause any risk at all. For the Central Bank of England, since the amount of money in a digital cash account can become a debt asset on the balance sheet, the government will issue unsecured bonds as collateral for these funds.

Through this model, the Central Bank of England can overcome the limitations of the model by:

- (i) Relieving the burden of governance and administration on the Central Bank of England;
- (ii) Helping with directing the supply digital cash in the market, in addition to the Central Bank of England's provision of digital cash account services as a public service, businesses may also be involved in providing above model to improve the competitiveness of customers, products, market share and innovation in the payment system;

(iii) Using available legal framework in the UK;

(iv) Helping to improve the competitiveness of the payment service through today's common accounts.

2.2 Legal framework for electronic money management

2.2.1 Legal regulations

In its nature, instruments stored on mobile phones, Internet or magnetic cards are all electronic money, so it is very necessary to introduce a common e-money regulatory framework and specific guidelines for each type of this currency. The provisions of the law on electronic money and electronic money issuers must ensure the following four criteria:

(i) The central bank should introduce regulations on electronic money to make sure that the issuance of electronic money does not generate money circulation in the economy and that electronic money issuers (EMIs) are not allowed to receive or send money, and it must absolutely not allow interest payments on amounts charged by users. Therefore, the central bank requires that the amount collected by EMIs must be deposited into a secured account that has been registered in at least one bank.

(ii) There should be legal regulations on the principles and methods of protecting customers' money stored in EMIs' secured accounts, such as a mechanism to ensure the separation of funds between the customers and EMIs, as well as between various customers.

(iii) There should be a licensing mechanism for EMIs and the conditions for licensing.

(iv) There should be strict regulations on the dealership network of EMIs and payment intermediary services.

2.2.2 Legal framework for electronic money management in the world

Many countries have developed legal framework and applied many policies and measures to the management of the supply and use of electronic money:

European Central Bank

In 2009, the European Central Bank issued the **Electronic Money Directive**, which lays down regulations applicable to both banks and non-banks in the EURO region. Under this Directive, above organizations are required to meet the requirement on charter capital (the issuer must have a minimum chartered capital of 350,000 EURO). At the same time, EMIs may, in addition to providing payment services, provide other services (such as providing credit or facilities) if they meet the strict requirements of European Union (EU). In addition, EMIs are not allowed to receive deposits or proceeds from electronic money issuance operations. Such amounts must be deposited into a secured bank account within 24 hours; the amount so deposited is interest-free, and whenever customers request a cash refund, EMIs must be repaid with full value. Currently, the provisions set out in this Directive have been applied by central banks in Eurozone and they have also issued separate guidelines for electronic money management.

Ghana

In 2002, the Ghana Central Bank issued the **Guideline on Principles for Electronic Money Issuers** with the goals of (i) promoting the widespread application of risk-free finance for the safety and wellbeing of financial systems; (ii) expanding financial services that link traditional branch-based distribution channels to day-to-day transactions; (iii) making sure that electronic money is only provided by financial institutions regulated by the Banking Law and that non-bankable legal entities are licensed to participate in electronic money trading and related activities under strict supervision and management of the Central Bank of Ghana; and (iv) ensuring the interests of customers of electronic money issuers such as effective claim, fair treatment, information transparency, etc.

Tanzania

In 2015, Tanzania drafted the **Law on Electronic Money**, which requires non-bank institutions to be licensed by the regulators to provide electronic money. In addition, banks are only allowed upon meeting the requirements on opening accounts to conduct transactions related to electronic money for those who are not eligible to open normal accounts.

Malaysia

The electronic money system was first introduced in Malaysia in the 1990s and the demand for its use has increased over time. With a history of more than 20 years using electronic money, research has shown that the demand for physical coin is slowly becoming obsolete. In Malaysia, electronic money or e-money falls under what is known as a "payment instrument" which is defined by the Financial Services Act 2010 ("FSA") as "any instrument, whether tangible or intangible, that enables a person to obtain money, goods or services to make any payment". FSA allows the Central Bank of Malaysia to choose payment instruments as the designated payment instrument (DPI), where electronic, debit and credit cards are on the list of approved DPIs.

The Central Bank of Malaysia has issued legal regulations for electronic money issuers. Accordingly, according to the Financial Services Law 2010, an issuer is "any person or entity acting independently or in an agreement with another individual or organization shall be liable for the payment obligation for means of payment, arising from the person being issued or user of such means of payment". The approval of the Central Bank of Malaysia must be obtained before any individual is allowed to issue a DPI. Only incorporated companies in Malaysia under the Companies Act 1965 may apply to become an issuer. Malaysia has taken further steps to promote the use of electronic money and the Central Bank of Malaysia has supported the development of this currency.

Before 2005, only Malaysian banks were allowed to issue electronic money. Today, the central bank has liberalized its guidelines by allowing non-bank organizations to issue electronic money. However, the issuers of electronic money also face a great deal of responsibilities and must comply with the standards set by the Central Bank of Malaysia, together with FSA's operating conditions. Although regulations and guidelines are already in place to assist electronic funds registrants, information on the Central Bank of Malaysia's decision to issue electronic money is still limited. In addition, the Central Bank of Malaysia also set limits on capital of foreign owners for electronic money licensing, leading to more difficulties for foreign registrants to apply for its approvals. One of the requirements for electronic money licensing is regulation on charter capital. European Union has issued the Electronic Money Directive, which specifies the limit of charter capital and

capital funds that the issuer of electronic money is required maintain. In 2009, EU directive reduced the limit on charter capital from EUR 1 million to EUR 350,000, removing unbalanced barriers and restrictions on obtaining approval as required.

Bank of Cyprus

In 2012, the Central Bank of Cyprus issued the Electronic Money Law, which stipulates that electronic money is "means electronically (including magnetically) stored monetary value, as represented by a claim on the issuer, which is issued on receipt of funds, for the purpose of making payment transactions and which is accepted by a natural or legal person other than the issuer." In this regulation, electronic money may be issued in the Republic of Cyprus by various entities, including: banks; banks licensed by competent authorities of the member states; cooperative credit institutions; organizations providing postal payment services; and electronic money issues under the relevant Act.

Chapter 3: Data and research methods

3.1 Overview of data and research materials

The thesis uses data and research materials from central banks and financial institutions of various countries. Particularly, data is collected from documents posted on the website of the Bank for International Settlements and statistics posted on the website of the State Bank of Vietnam. From information on BIS`s website, experiences in electronic currency management and development of some countries in the world such as reports on electronic currency of the European Union have been put forward, then lessons for proposals and orientations about the electronic currency in Vietnam have been drawn. At the same time, data about prepaid bank cards or e-wallet have helped the writer to evaluate the current state of electronic currency in Vietnam, from which it is possible to see the whole picture of the actual status of electronic currency in Vietnam, compare and assess the legal framework of the electronic currency in Vietnam with other countries in the world, then shortcomings of the legal framework in regulating the electronic currency in Vietnam are identified. In addition, the thesis also uses materials from articles of a number of domestic and foreign scholars published on the specialized journals.

3.2 Research methodologies

Based on the collected data and documents, data is sorted and analyzed for evaluation and selection of information to be considered in the thesis. During the research the author finds that the topic of this thesis is a new and urgent issue. In collecting reference materials, similar topics on electronic money research are almost nonexistent in Vietnam. Therefore, the main source of data for the research under this topic comes mainly from external source.

Participation in organizing Workshops

Electronic money is a new issue not only in Vietnam but also in the world. As previously discussed, however, many countries have now enacted a legal framework for electronic money management. However, at the workshops with the participation of many IT specialists, experts in banking and finance sector, and policy makers, they all said that the development of electronic

money is facing with a lot of opportunities and challenges. Thus, a systematic research of the legal background for electronic money management is necessary.

At workshops, a lot of information and exchanges were received to learn more about management experiences and approaches to the electronic currency. According to experts, it is necessary to clarify the nature of electronic currency to avoid the confusion with virtual currency. The writer himself, on some forums, presented the nature and the behavior of competent authorities toward the electronic and virtual currency management. In fact, the writer has attended lots of seminars on the development of means of payment and payment services in the context of the strong development of information technology. However, there are not many seminars directly discussing on the electronic currency. However, the information obtained from bank specialists, bank managers, and policymakers help the writer to gain practical knowledge and make practical contributions to the research on the topic of electronic currency.

Direct interview

To clarify some of the contents and research issues under this thesis, the author conducted a direct interview. Although the number of interviewee was limited (about 20 people), the respondents were directly involved and well-versed in the topic matter of this thesis. The author interviewed 10 people that are policy makers and researchers in field of payment instruments and payment services provided in the economy; five of whom are senior managers in banking sector and other five are working in information technology sector.

From the research methods and approaches, results of the analysis indicate that that electronic money is a new problem and is being studied in many countries around the world. Vietnam is not falling outside that trend, and it is necessary to conduct an analysis and research to improve the legal framework for electronic money. Thanks to the results from direct interviews, the writer can verify judgments and then find that the selection of this topic for study is really meaningful in Vietnam in the present context.

Chapter 4: Analysis and Results

4.1 The framework on electronic money in the world

In the framework of this thesis, a number of countries and territories with research results and legal frameworks on electronic money are selected, including European Union (EU), United States, Japan, Singapore, Malaysia, etc.

4.1.1 European Union (EU)

In 1998, the European Central Bank published an article on the ***Report on Electronic Money*** with the following definition: “*Electronic money is broadly defined as an electronic store of monetary value on a technical device that may be widely used for making payments to undertakings other than the issuer without necessarily involving bank accounts in the transaction, but acting as a prepaid bearer instrument.*”

In September 2000, European Parliament and European Commission ratified Directive 2000/46/EC, which defined electronic money as a claim against the issuer, which is stored in electrical appliances and converted into and corresponding amount of cash from the issuer with a value not lower than the value of electronic money; and which is accepted as a means of payment by organizations other than the issuer.

Key regulations related to electronic money and electronic money issuers have recently been amended and laid down in Directive 2009/110/EC of the European Parliament and of the 16th Council of the Parliament, September 2009, on the pursue and careful monitoring of business activities conducted by electronic money issuers, amending Directive 2005/60/EC and Directive 2006/48/EC and repealing Directive 2000/46/EC (referred to as the Electronic Money Directive).

Accordingly, electronic money is broadly defined as the electronic storage of monetary value on a digital device that can be widely used to pay for an entity other than the issuer, in which there is no direct involvement of bank accounts in the transaction. Electronic money can be issued in two popular forms: (i) card based, and (ii) software based. According to Article 2 of the Electronic

Money Directive, the definition of electronic money has following features: (i) it is electronically stored; (ii) it is issued based on the receipt of real money; and (iii) it is accepted by an individual or entity other than the electronic money issuer.

Electronic money issuers

The Electronic Money Directive contains two different provisions on electronic money issuers and electronic money institutions. The list of electronic money issuers recognized by member states of the European Union includes: Credit institutions as specified in point 1 of Article 4 of Directive 2006/48/EC; electronic money organizations; postal remittance organizations that are entitled to issue electronic money in accordance with national law; European Central Bank and national central banks if they are not active as monetary authorities; public authorities and member states or local governments if they operate as public authorities. Thus, according to the list above, it can be seen that an electronic money organization is one of the types of electronic money issuers according to the directive on electronic money of the European Union.

An electronic money institution is a non-bank entity that has the right to issue electronic money on the basis of meeting re-requisite conditions, including the requirements on initial capital of electronic monetary institutions, its operations, etc. Such requirements apply only to electronic money organizations but not to other types of electronic money issuers, such as credit institutions, postal remittance organizations, etc. To issue electronic money as an electronic money institution, a legal entity must comply with certain requirements set out in the Electronic Money Directive, designed primarily to protect the consumers and operations of technical system of electronic money organizations.

The requirements that a legal entity must comply with in the Electronic Money Directive, include, as follows: (i) requirement on initial capital of an electronic money institution, which is USD 350,000; (ii) requirement on separating the management of electronic money organizations from activities not related to or for the purpose of the issuance of electronic money; and (iii) requirements on additional activities of an electronic money institution.

In addition to issuing electronic money, an electronic money organization may carry out other activities as mentioned in the list of activities permitted under Article 6 of the Electronic Money Directive. These activities include: provision of payment services, operational support services and other services that are closely related to the issuance of electronic money, operating as a payment system, and so on. However, unlike credit institutions, electronic money organizations are not allowed to receive deposits or cash payments from the public.

Regulation on the issuance of electronic money

The Electronic Money Directive does not provide clear guidance on the process of issuing electronic money, but only mentions some general rules, such as prohibiting organizations other than EMIs from issuing electronic money, or require the issuer of electronic money to issue electronic money for a higher amount than the received amount. Since there is no clear rules at the European Union level, specific contents can be adjusted at national level by each of member states. However, in the absence of more stringent regulations by member states, electronic money issuers may enjoy greater freedom in their business.

4.1.2 United States

Definition of and regulations on electronic money

To date, the approach to electronic money, definition of and regulations governing electronic money in the United States differ significantly from those adopted by the European Union. Firstly, at Federal level, there are no regulations governing electronic money that are similar to EU Directive on Electronic Money, so it is possible to collect most of rules and requirements for electronic money as well as for issuers. However, the issuance and use of electronic money in the United States is regulated at different levels of legal documentation (including state level).

Unlike the European Union, there is no unified definition of what is considered as electronic money, nor is there a uniform term referring to electronic money. For example, US Financial Crimes Act (US Treasury Department) uses the term 'virtual currency', while some other organizations and individuals use the term 'electronic money'. Since there is no unified definition

of electronic money, a publication by the Washington University School of Law lists some types of *facilities* that may be considered as electronic money in the United States:

Electronic money that exists on the Internet is identified as “money or an alternative amount of money to be converted by information stored in a computer chip or a personal computer (PC) so that it can be transferred to information systems like the Internet.” Electronic money that exists on the Internet includes a 'token or standard system' when a user owns an electronic token from a bank or non-bank issuer and uses it instead to make transactions on the Internet. Once the beneficiary accepts this transaction as a payment, he or she can ask the issuer to redeem it. Stored value products (such as prepaid cards or stored value cards) may be accepted as payment for the purchase of goods and/or services.

Depending on the number and range of card acceptors, the systems may be considered as closed (these cards are only accepted by the issuer itself) or open (where stored value cards may be accepted for payment by a large number of non-issuer organizations or individuals), or mixed (there are certain restrictions on organizations and individuals that accept the value stored in the card). Stored value products, not only including the stored value cards but also value stored on other devices. An 'electronic document' may be used and accepted as a means of payment for transactions made on the Internet, but may not be converted into real money. Internet money transfer services are provided by banks and/or non-bank organizations and payment is possible via mobile payment facilities, etc.

Thus, contrary to the European Union, the United States has no unified approach to the issue of electronic money. The regulations on electronic money (or similar instruments) are quite dispersed. digital cash account or similar instruments may be prescribed by federal law, and may also be regulated at state level. This makes the regulations for electronic money in the United States are stated at many levels and, to a certain extent, become more complex than simple regulations on electronic money adopted in the European Union.

Electronic money issuers

In the United States, electronic funds (or similar amounts) may be issued by banks or non-banks. Bank issuers are regulated by regulations at federal level while non-bank issuers are regulated by regulations at state level. The U.S. Monetary Services Act (UMSA) has been approved and is proposed to apply to all states by the National Commissioner for the Unification of State Laws. UMSA has resolved and clarified some of matters related to “digital cash account”, which are defined as “currency values as evidenced by electronic records” and “currency values” as “a means of exchange, whether or not to be paid”. UMSA is only issued in certain states and territories (such as Alaska, Arkansas, Iowa, Puerto Rico, Texas, Virgin Islands of the U.s. Vermont, and Washington) that have adopted legal frameworks using similar approaches. UMSA establishes some rules applicable to electronic money issuers. Unlike EU Electronic Money Directive, UMSA not only applies to electronic money issuers and electronic value card issuers, but also applies to “remittance” service as well as organizations that provide such activities. According to UMSA, remittance means “selling or issuing payment instruments, storing value, or receiving money or money amount for transfer purpose”. Thus, instead of just listing a limited range of electronic money and issuers as in the case of EU Electronic Money Directive, UMSA generally stipulates that money issuers are organizations that carry out remittance service (Anastasiia Burau,2014).

Regulation on the issuance of electronic money

In the United States, the issuance of electronic money (or similar instruments) is not strictly regulated, so it provides a platform of freedom for electronic money issuers. However, some of the more strict provisions may be prescribed by state laws, such as the Commerce, Investment and Complaints Act of the State of Florida that provides for some general rules that applies in this case, such as the requirement on printing specific data, such as name of the authorized organization, on the payment instruments (including the digital cash account) to be issued.

4.1.3 Singapore

In Singapore, *there is no specific definition or regulation for electronic money*, but the Monetary Authority of Singapore (MAS) has issued regulations on Stored Value Facility (SVF), which is considered as a form of prepaid electronic cash or card that can be used in the system of SVF issuer; some forms of electronic SVFs are also known and exist in the form of e-money. SVF

issuer is considered as an organization that holds stored value. SVF issuer in Singapore can be compared to other e-money issuers in other countries. Payment System Oversight Act (PSOA), revised in 2016, is issued by the MAS and its related regulations govern the distribution and management of SVFs.

Some of key regulations and highlights of Singaporean Law on Stored Value Facilities are as follows:

Characteristics of SVF:

Payment System Oversight Act defines a widely accepted SVF tool as a value stored tool facility the following characteristics: (i) Stored value is accepted by the owner of SVF; (ii) an approved bank shall be solely responsible for the stored value.

Requirements on Know your customer (KYC):

The use of SVFs by customers in Singapore generally does not require them to provide personal identification numbers (PINs) or signatures.

Regarding issuance and payment model:

An SVF payment model in Singapore can be either a single-purpose payment model or a multi-purpose payment model. A single-purpose SVF issuance and payment model is an SVF model that is used only to pay for either goods or services, or both of them, as provided by the organization that owns such stored value. Single-purpose SVF models are not subject to most of the provisions of the Payment System Oversight Act.

When stored value exists in a multi-purpose SVF model that exceeds the limit specified in the Payment System Oversight Act, this SVF is considered to be widely accepted SVFs. Currently, the minimum limit is SGD 30 million (equivalent to EUR 20 million). The operations of a multi-purpose SVF must be approved and licensed by MAS. Thus, an organization providing SVF and payment services as a multi-purpose SVF having no more than SGD 30 million (or an equivalent amount any other currency) in its total deposits in any other bank is required to obtain MAS's approval.

Compliance with regulations on anti-money laundering and combat against terrorist financing:

In the event that an SVF organization becomes a related SVF, it must comply with MAS Payment System Oversight Act (PSOA-N02), which requires organizations to hold stored value facilities to comply with regulations on anti-money laundering and combat against terrorist financing. These regulations were issued in November 2007 and require stored value facility management organizations to implement KYC measures to establish and verify users' identities.

SVF organizations have been licensed and approved by MAS in Singapore as of December 2016, including four organizations:

- (1) 'EZ-Link Card' provided by EZ-Link Ltd., was approved on January 31, 2007.
- (2) 'NETS CashCard' provided by Network for Electronic Transfers (Singapore) Pte Ltd (NETS) was approved on January 31, 2007.
- (3) 'NETS FlashPay' provided by NETS was approved on 9 April 2010; and (4) 'CapitaVoucher' provided by CapitaLand Voucher Co., Ltd. was approved on December 2, 2016.

4.1.4 Indonesia

In 2009, the Central Bank of Indonesia issued regulations on electronic money (Bank Regulation). Accordingly, electronic money is defined as a payment instrument that meets the following criteria:

- a) It is issued based on nominal value of money deposited by the owner of the electronic money issuer;
- b) Its nominal value of money is stored electronically in a media such as a server or chip.
- c) It serves the role as an instrument or facility of payment for a merchant not being an electronic money issuer;
- d) Value of electronic money transferred by the owner and managed by the issuer is not classified as a savings deposit under the Banking Law of Indonesia.

With the development of information and telecommunications technologies, the term “electronic money” has become known as a payment instrument or facility (formerly known as prepaid cards), as well as forms other than prepaid cards. Such instruments or facilities of payment in the form of electronic money are being issued by both bank and non-bank institutions

4.2 Electronic money and legal framework for electronic money in Vietnam

4.2.1 Bank prepaid card

In 1996, the first bank card in Vietnam was issued by the Joint Stock Commercial Bank for Foreign Trade of Vietnam (Vietcombank). In the early stage, card service was limited by many factors such as: legal basis, economic conditions, technical infrastructure, etc. Now, the use of bank cards has gradually become popular, especially in cities and towns; social consciousness of bank card payments has changed positively.

Bank cards are growing strongly; the number of issued cards and card transaction turnover have increased continuously; by the end of 2016, the number of issued cards reached over 111.2 million cards (an increase of 262% compared to that in the end of 2010); card transactions are expected to continue increasing over the upcoming years. In addition to traditional services such as cash withdrawal, bank transfer, or bank statements, commercial banks have integrated more features into bank cards for payment of bills and services such as payment of electricity and water bills, telecommunications fees, insurance, air tickets, payment for shopping, online services, etc.

Table 2. Percentage (%) of transaction volume and value of bank card transactions among all retail banking facilities, 2006-2016

| Year | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Transaction volume | 5.76 | 5.84 | 5.75 | 8.11 | 7.60 | 8.57 | 9.19 | 8.12 | 9.23 | 15.51 | 14.43 |
| Transaction value | 0.95 | 0.57 | 0.53 | 0.84 | 1.86 | 1.2 | 0.21 | 0.24 | 0.28 | 0.46 | 0.47 |

Source: State Bank of Vietnam

In the past, there were 03 organizations that provided card transaction switching and clearing services, namely Banknetvn, Smartlink and VNBC. Since 2007, SBV has coordinated with relevant ministries and agencies to develop a scheme to build a Unified Card Switching Center (UCSC) to submit to the Prime Minister for connection of card payment systems of commercial

banks and card switching organizations to a Nationwide unified system. With the direction of the State Bank of Vietnam (SBV), card switching companies completed the interconnection to the networks of ATMs (in 2008) and POSs (in 2011) on national scale, through which a bank card can be used for withdrawal of money and payment at most ATMs / POSs of other banks, making it greater convenience for cardholders and contributing to the promotion of card transactions in residential areas.

By the end of 2011, SBV instructed VNBC and Banknetvn to complete and unify switching function from VNBC to Banknetvn. In 2014, the Prime Minister approved of the policy on merging Smartlink into Banknetvn and by mid-2015, the merger was completed under the direction of the State Bank of Vietnam. This was an important step to create a technical foundation for the development of card payment and promote the role of the State in field of card payment.

Current card switching systems are currently providing switching services for ATMs and POSs for UCSC, and have also offered a number of applications, such as: intermediary for payment via mobile phones or Internet; the Center has an open design and is easy to get upgraded when the number of members and transaction volume increase, high security, and is ready to meet the requirements on EMV chip card transaction switching; linked to other international card and switching organizations of other countries. Safety and security issues are of important concern to these organizations. Their security systems are solidly developed at different levels.

SBV also focuses on speeding up the development of card payment service via point of sales (POS) in accordance with the Master Plan for Card Payment Development in 2014-2015 period, especially the development of mobile POS payment services (mPOS), aiming to increase the volume and value of payment transactions, making payment via POSs become a habit of cardholders, and thereby making actual contributions to the promotion of commercial card transactions in residential areas.

Table 3. Quantity of ATMs, POS/EDCs in 2006-2016 period

| Year | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|
| ATM | 2,100 | 4,800 | 7,700 | 9,700 | 11,400 | 13,300 | 14,300 | 15,200 | 16,000 | 16,900 | 17,500 |
| POS | 14,000 | 18,500 | 24,900 | 34,100 | 51,900 | 69,600 | 104,500 | 129,600 | 172,000 | 223,300 | 263,400 |

Source: State Bank of Vietnam

Technical infrastructure for card payment has been improving continuously over the years. The number of ATMs and POSs has been growing rapidly. By the end of December 2016, there were nearly 17,500 ATMs and more than 263,000 POS / EDC (8.1 times and 18.8 times more than those by the end of 2006, respectively).

4.2.2 Intermediary payment service

Due to the strong development of e-commerce and diversified demands of customers in Vietnam, there have been some non-bank organizations that provide intermediary payment services, such as e-Wallet, electronic payment portal for payment of e-commercial transactions, prepaid charge, or essential goods and services (MobiVi, Payoo, VNPay, ECPay, M_Service, etc.). These services are responsible for supporting payment solutions and services of commercial banks. In addition to participating in the intermediary payment market, there are a number of telecoms and gaming service providers, such as Viettel BankPlus, Game Online (VTC PayGate) , websites/e-commerce transactions (such as Bao Kim, Ngan Luong, etc.)

E-wallet service is a new payment service with a lot of potential and is being offered by UCSC in cooperation with commercial banks in order to serve low value retail transactions, such as: payment for transactions on e-commerce websites, online payment via mobile phone, payment of bills or purchase, etc. Since 2008, SBV has allowed 08 non-banks to pilot providing e-wallet intermediary payment services. As of July 15, 1977, the State Bank licensed 23 organizations to provide intermediary payment services officially operating in the market.

In 2016, there were 12 organizations providing electronic payment gateways with over 11.6 million transactions, worthing nearly VND 6,294 billion. For collection and payment services, there were 12 service providers with over 8.6 million transactions, worthing nearly VND 6,845 billion. Electronic money transfer service was provided by 03 organizations with nearly 1.9 million transactions. For e-wallet services, there were 14 service providers in 2016. Based on the results of implementing e-wallet service, it shows that e-wallet service had a strong growth in 2016. Total number of e-wallets issued by the end of 2016 reached 3.8 million wallets with 126.6 million transactions, worthing nearly VND 53,110 billion, an average of VND 419,625 per

transaction. Partners involved in providing intermediary payment services were also expanding. By the end of 2016, more than 40 commercial banks had joined in cooperating with providers of intermediary payment services for implementation of the services. Organizations that were licensed to provide payment intermediaries also actively sought for partners and expand their scope of service provision. Specifically, by the end of 2016, there were 4,193 units accepting payments via e-portal, 437 units accepting payment collection services, and 4,226 units accepting payment for services using e-wallet of UCSC. This was considered as an important link in the expansion of accepting units and promotion of electronic payment, thereby bringing practical benefits to banks, customers, and suppliers of goods and service.

4.3 Legal framework for electronic money in Vietnam

Existing regulations related to e-money are included in a number of separate legal documents or indirectly mentioned in the following documents:

Law on the State Bank of Vietnam No. 46/2010/QH dated 16/6/2010:

Clause 3 Article 2 stipulates: “The State Bank shall perform the State management function on monetary, banking and foreign exchange activities; perform the central bank function on money issue and banking activities of credit institutions and provision of monetary services by the Government.”

Clause 15 Article 4 stipulates: “15. Providing payment services through accounts means the provision of payment instruments; implementation of payment services for checks, payment orders, collection orders, bank cards, letters of credit and other payment services to customers via customer accounts.”

Clause 2 Article 28 stipulates: “2. The State Bank shall manage payment instruments in the economy.”

Law on Credit Institutions No. 47/2010/QH dated 16/6/2010:

Article 97 on e-banking activities: “Credit institutions may conduct business activities through the use of electronic instruments under the State Bank’s guidance on risk management and regulations of the law on e-transactions.”

Clause 5 of Article 98 on banking activities of commercial banks stipulates: “5. Provision of payment instruments.”

Decree No. 101/2012/ND-CP dated 22/11/2012 of the Government on cashless payment and Decree No. 80/2016/ND-CP dated 01/7/2016 amending, supplementing some articles of Decree No. 101/2012/ND-CP:

Clause 6 Article 1 stipulates: “6. Cashless payment instruments used in payment transactions (hereinafter referred to as payment instruments), including: Checks, payment orders, collection orders, bank cards and other payment instruments as prescribed by the State Bank.”

Clause 8 Article 4 stipulates: “E-wallet service provides customers with an electronic identity account created by service providers based on information carriers (such as electronic chips, sim cards, and computers...), allowing storage of a monetary value secured by the equivalent deposit value of the money transferred from the customer’s payment account at the bank to the E-wallet service provider’s payment security account at 1:1 ratio.”

Circular No. 39/2014/TT-NHNN dated 11/12/2014 of the SBV Governor providing guidance on payment intermediary services, which stipulates the provision of e-wallet services by the payment intermediary service providers.

Clause 3, Article 4 of Circular No. 19/2016/TT-NHNN dated 30/6/2016 stipulating bank card issues (as amended by Circular No. 26/2017/TT-NHNN dated 29/12/2017) as follows: “Prepaid cards are cards that allow cardholders to implement card transactions within the value of money deposited into cards corresponding to the amount paid to card issuers.”

Thus, in the current legal regulations, e-money in Vietnam has been stipulated as prepaid bank cards or e-wallets. However, the legal framework for e-money in Vietnam needs to be further completed and supplemented to ensure its fullness and comprehensiveness in order to meet practical requirements and in line with international practice.

4.3.1 Regulations on prepaid cards

Regarding prepaid cards, the Circular No.19/2016/TT-NHNN date June 30, 2016 on bank card operation states as follows:

Prepaid card means a card that authorize its holder to conduct card transactions within the value limit deposited to the card corresponding to the amount of money already prepaid by its holder to the card issuer. Prepaid cards include: Personalized prepaid card (identifying the cardholder) and anonymous prepaid card (not identifying the cardholder). Card issuers: (i) Commercial banks, banks for social policies, and branches of foreign banks are permitted to issue cards provided that their licenses or amended licenses issued by the State Bank indicate the card services; (ii) Banks for social policies are permitted to issue cards as prescribed by the Government and the Prime Minister; (iii) Financial companies are permitted to issue credit cards subject to the approval of the State Bank. Factoring companies are not permitted to issue cards; and (iv) Any credit institution that is permitted to conduct foreign exchange transactions may enter into an agreement on card issuance with an international card association. Its BIN will be issued by such international card association.

Organizations eligible for processing card payments include: (i) Commercial banks, banks for social policies, and branches of foreign banks are permitted to issue cards provided that their licenses or amended licenses issued by the State Bank indicate the card services; (ii) Banks for social policies are permitted to issue cards as prescribed by the Government and the Prime Minister; and (iii) Acquirers licensed to conduct foreign exchange transactions are permitted to process payments of cards whose BINs are issued by international card associations.

4.3.2 Regulations on digital wallets

Circular No. 39/2014/TT-NHNN dated November 22, 2012 guiding the intermediary payment services states as follows:

Digital wallet service

Digital wallet service is a service providing customers with an identified electronic account created on data storage device (such as chips, mobile phone SIM cards, computers ...) by providers of services, allowing to store a monetary value which is guaranteed by the value of equivalent deposit transferred from the payment accounts of customers at banks to payment guarantee account of providers of digital wallet service for the ratio of 1: 1 and used as a means of non-cash payment.

Provision of Digital wallet

Providers of digital wallet services are not allowed to:

- a) Issue more than 01 (one) digital wallet to a payment account of a customer at a bank;
- b) Extend credit to customers using digital wallets, to pay interests on the balances of digital wallets or any actions which may increase the monetary value on digital wallets.

Providers of digital wallet services must provide instruments for the State Bank to check, monitor in real time the total amount of money of customers on the digital wallets and the total amount of money in the accounts to ensure payments of providers of digital wallet services at the banks. Money shall be deposited to and withdrawn from digital wallets through the payment accounts of customers at the banks.

4.4 Legal gaps on e-money in Vietnam

Reviewing and evaluating the current status of e-money in Vietnam and based on international experience in e-money management, there are some restrictions in the legal framework for e-money in Vietnam as follows:

Firstly, legal documents on e-money have not kept pace with changes in international practices and reality. Studying international experience on e-money, in most of other countries, there is a relatively complete system of legal documents on e-money. As mentioned above, some countries have issued e-money regulations at various levels, such as the Law on Payment Systems (Russia, Turkey, India,...) Guiding principles/regulations on e-money (Ghana, Kenya, Tanzania), which stipulate the concept, conditions for e-money providers, licensing, management and supervision of e-money provision,... In Vietnam, although some legal documents have amended stipulations on prepaid bank cards and e-wallets (which are forms of e-money), they have not yet been consistent and comprehensive. Therefore, it is necessary to soon complete the legal framework for e-money in Vietnam, which clarifies the concept, form, nature and issues related to e-money to satisfy the State management requirements, as well as keep up with the development trend of technology science and international practices.

Secondly, the nature of e-money is unclear to determine the scope and subject of management. In fact, the current legal documents in Vietnam mention prepaid bank card, e-wallet, and payment intermediary providers only. In the meantime, some countries around the world have developed applications that allow non-bank institutions, including telecom operators, to provide e-money on mobile devices⁴. To ensure consistency in understanding the concept and clarifying the nature of e-money, as well as to ensure the effective management and supervision of legal payment systems and instruments in Vietnam, it is necessary to have a consistent and comprehensive concept of e-money in legal documents in Vietnam. Based on that, the scope of forms of e-money and subjects of management, i.e. banks and non-bank institutions that are allowed to provide e-money when fully meeting legal regulations are clarified.

Thirdly, the regulation on management and supervision of e-money provision is not consistent. In practice, regulations on management of e-money provision in the form of prepaid bank cards and e-wallets have been adjusted in some current legal documents but have not yet met the State management requirements in the context of strong influence of science and technology on payment activity. Prepaid bank cards, for example, are stipulated in the Circular on bank card activities which does not stipulate different conditions or nature of e-money (i.e. there is no binding stipulation or significant difference from debit cards and credit cards); meanwhile, the regulation on e-money of other countries around the world stipulates that e-money providers must maintain total money at commercial banks, central banks or other independent institutions, with a value equal to or not lower than the value of e-money provided.

On the other hand, although the conditions on e-wallet service provision by non-banking institutions have been established to help payment intermediary institutions provide e-wallet services, contributing to the development of cashless payment and bringing convenience to users, with the emergence of some new technologies, new models and new operations, it is required to complete regulations on management and supervision on these institutions to ensure consistency throughout the service provision before, during and after licensing.

⁴ Examples include India, Kenya, Tanzania.

Chapter 5. Conclusion

Although this is a new topic studied for a short time, the thesis has provided some of the most general concepts of cryptocurrency used by many countries in the world as a basis for formulating the legal framework for cryptocurrency management in their countries. In Vietnam, recognizing or finding a concept of cryptocurrency will enable policymakers and lawmakers to clarify the nature of cryptocurrency so as to identify the scope, subjects and provide an appropriate legal framework.

This thesis has thoroughly studied the legal framework for cryptocurrency in many countries around the world, from the European Central Bank for Cryptocurrency Directive to African countries (such as Kenya, Tanzania) or countries with the similar conditions and in the same region with Vietnam such as Singapore, Malaysia. In fact that the studies on the legal framework for cryptocurrency in some countries in the world show that despite the different forms of management, the countries are fundamentally homogeneous regarding the nature of cryptocurrency and legal framework has been formulated to manage the supply of cryptocurrency in a safe and effective way.

In Vietnam, although no legal documents directly and fully deal with cryptocurrency, the terms of cryptocurrency have appeared in the form of bank cards or e-wallets; simultaneously, the studies also show that such methods of payment develop strongly in the quantity and value of transaction, and it shows that the development trend of cryptocurrency in Vietnam is indispensable. From systematic study of issues related to cryptocurrency and assessment on the real situation of supplying and using the cryptocurrency in Vietnam, it allows the necessary and appropriate proposals to be proposed in order to improve the legal framework of cryptocurrency in Vietnam.

5.1 Limitations of the research topic

Within the framework of this thesis, I have tried to study the nature of electronic money and the legal framework for electronic money in the world. I also assess current situation of electronic money in Vietnam to improve the legal framework for electronic money. However, since this is a new issue, there is no scientific research or theoretical literature in this field. Therefore, the content of the article inevitably contains limitations. At present, not only Vietnam but also other developed

countries are in the process of finalizing the legal framework for e-money is in the process of finalizing the legal framework, which is a topic of debate related to the impact of e-money on monetary policy or money supply in the economy.

Will the Central Banks of countries issue e-money in the future? In fact, some countries in the world are conducting research on currency money, such as the Federal Reserve's Fedcoin; Riskbank - Swedish Central Bank has started a project to determine the viability of eKrona (Morten Bech, Rodney Grratt - Report 9/2017). However, within the scope of this research, e-money is not a new currency but rather a form of expression of a legal currency in the form of payment instrument or means used to conduct payment transactions and secured at a 1:1 ratio of the legal currency.

In the modern life and under the strong impact from the 4th Industry Revolution, especially in developing countries like Vietnam with limited people having bank account, the development of e-money instruments is effective for the people to access banking-financial services. Then the challenges of e-money in risk management, security assurance, safety and protection of interests of service users should be noted.

5.2 Recommendations

On August 21, 2017, the Prime Minister issued Decision No. 1255/QD-TTg on approval of the Proposal to establish a comprehensive legal framework for administration of virtual property, virtual currencies and electronic money. Accordingly, the Prime Minister has assigned the State Bank of Vietnam to undertake the primary responsibility for, and coordinate with concerned ministries, branches and units, in scrutinizing, studying and proposing the amendments, supplements and promulgation of legal norms and documents on electronic money. Therefore, this will be a good opportunity to conduct a comprehensive evaluation of electronic money in Vietnam to guide the proposal to improve the framework for electronic money in Vietnam.

Electronic money is a relatively new payment method, which is in its early stage of development and has just started to grow at a global scale. Therefore, it is not possible to evaluate the positive and positive effects that it has, as well as the negative impacts and risks. Even the legal system in the world and in each country is insufficiently regulated and incomplete. However, the development of electronic money in the future is certain as it is a modern and convenient payment method.

Through the study of international experience and trends in digital money associated with the development of science and technology, we can see the modernness and benefits of electronic money. However, considerations must be taken on risks involved as well (such as money laundering, drug trafficking, tax evasion, etc.) and appropriate infrastructure (payment, settlement, risk management, etc.). In the current context of Vietnam, the introduction of electronic money requires careful research with a long-term goal to reduce the risk and take advantage of the benefits of electronic money. Therefore, it is necessary to improve the legal framework for electronic money in Vietnam in a timely manner to meet the practical needs for the development and application of electronic money in Vietnam.

To ensure the comprehensiveness and consistency on e-money in Vietnam in the current context, the legal framework for e-money should firstly, clarify the concept, nature and form of expression of e-money, licensing authority, conditions for e-money provision; procedures for managing and controlling risks, safety assurance, transaction information security, as well as complying with regulations on laundering prevention, protecting customer benefits, and rights and responsibilities of related parties in the legal documents.

Secondly, it is necessary to define the scope and subject of e-money provision to issue appropriate management regulations. According to international practice, apart from banks and credit institutions, non-bank institutions are allowed to provide e-money when they meet prescribed conditions and are licensed by the authorities or Central bank. In the context of Vietnam's realities, to promote the development of cashless payment, improve access to financial services for people,

banks and branches of foreign banks may provide e-money in the form of prepaid cards; and payment intermediary providers may provide e-money in the form of e-wallets.

Thirdly, the regulation on conditions for e-money providers should be strict. To ensure the safe and sound operation of e-money provision in Vietnam, it is necessary to issue strict conditions for e-money providers such as capital requirements, personnel, technical infrastructure, network, information technology system, mechanism for security and safety supervisor, protection of interests and assets of customers, information and reporting regime, safety regulations on customer identification (KYC), anti-laundering regulations; rights, obligations and responsibilities in providing e-money of banks to other organizations... At the same time, non-bank institutions must develop risk management procedures, not mobilize deposits; electronic funds must be deposited into a security account at banks without interest and whenever the customer requests cash refund, the institutions must refund the proper value.

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APPENDIX 1

GDP/people

| Countries | GDP PER PERSON (USD) | | | | |
|-----------------|----------------------|--------------|--------------|--------------|--------------|
| | 2011 | 2012 | 2013 | 2014 | 2015 |
| Australia | 67.740 | 68.687 | 64.478 | 61.189 | 51.003 |
| Belgium | 48.016 | 45.009 | 46.829 | 47.648 | 40.379 |
| Brazil | 13.231 | 12.338 | 12.240 | 11.911 | 8.649 |
| Canada | 53.307 | 53.038 | 53.341 | 51.014 | 43.493 |
| China | 5.432 | 6.090 | 6.750 | 7.575 | 7.904 |
| France | 44.077 | 41.071 | 42.849 | 42.986 | 36.432 |
| Germany | 46.820 | 44.034 | 46.526 | 47.889 | 41.169 |
| Hong Kong | 34.937 | 36.585 | 38.167 | 40.076 | 42.214 |
| India | 1.557 | 1.529 | 1.559 | 1.615 | 1.650 |
| Italy | 38.162 | 34.581 | 35.372 | 35.555 | 30.130 |
| Japan | 48.244 | 48.670 | 40.492 | 38.200 | 34.472 |
| Korean | 24.160 | 24.445 | 25.993 | 27.982 | 27.214 |
| Mexico | 10.760 | 10.205 | 10.731 | 10.906 | 9.506 |
| Netherlands | 53.543 | 49.442 | 51.577 | 52.138 | 44.296 |
| Russia | 14.226 | 15.044 | 15.551 | 14.274 | 9.098 |
| Saudi | 23.594 | 25.139 | 24.816 | 24.499 | 20.828 |
| Singapore | 51.235 | 54.004 | 55.982 | 56.009 | 52.890 |
| South Africa | 8.074 | 7.588 | 6.956 | 6.566 | 5.801 |
| Sweden | 59.540 | 57.106 | 60.258 | 59.120 | 50.320 |
| Switzerland | 88.125 | 83.076 | 84.624 | 85.871 | 80.950 |
| Turkey | 10.399 | 10.448 | 10.754 | 10.283 | 9.117 |
| England | 41.243 | 41.652 | 42.417 | 46.452 | 43.878 |
| USA | 49.804 | 51.470 | 52.800 | 54.635 | 56.116 |
| Viet Nam | 1.069 | 1.749 | 1.960 | 2.028 | 2.109 |

Resource: CPSS, Payment system statistics of countries 2015

APPENDIX 2

ICT Development Index 2015

| Countries | (ICT Development Index - IDI) | | | |
|-------------|-------------------------------|----------|------|----------|
| | 2016 | IDI 2016 | 2015 | IDI 2015 |
| Đan Mạch | 3 | 8.74 | 2 | 8.77 |
| Switzerland | 4 | 8.68 | 5 | 8.50 |
| England | 5 | 8.57 | 4 | 8.54 |
| Hong Kong | 6 | 8.46 | 7 | 8.40 |
| Sweden | 7 | 8.45 | 6 | 8.47 |
| Netherlands | 8 | 8.43 | 8 | 8.36 |
| Nauy | 9 | 8.42 | 9 | 8.35 |
| Japan | 10 | 8.37 | 11 | 8.28 |
| Luxembourg | 11 | 8.36 | 10 | 8.34 |
| German | 12 | 8.31 | 13 | 8.13 |
| Niu Di lân | 13 | 8.29 | 16 | 8.05 |
| Australia | 14 | 8.19 | 12 | 8.18 |
| USA | 15 | 8.17 | 15 | 8.06 |
| France | 16 | 8.11 | 17 | 7.95 |
| Filand | 17 | 8.08 | 14 | 8.11 |
| Singapore | 20 | 7.95 | 19 | 7.88 |
| Canada | 25 | 7.62 | 23 | 7.55 |
| Spain | 26 | 7.62 | 27 | 7.46 |
| Italy | 37 | 7.11 | 36 | 6.89 |
| Rusian | 43 | 6.95 | 42 | 6.79 |
| Portugal | 44 | 6.94 | 45 | 6.64 |
| Uruguay | 47 | 6.79 | 49 | 6.44 |
| Hungary | 48 | 6.72 | 46 | 6.60 |
| Bulgari | 49 | 6.69 | 50 | 6.43 |
| Argentina | 55 | 6.52 | 56 | 6.21 |
| Chi lê | 56 | 6.35 | 57 | 6.11 |
| Malaysia | 61 | 6.22 | 66 | 5.64 |
| Brazil | 63 | 5.99 | 65 | 5.72 |

| | | | | |
|--------------|------------|-------------|------------|-------------|
| Turkey | 70 | 5.69 | 69 | 5.45 |
| China | 81 | 5.19 | 84 | 4.80 |
| Thailand | 82 | 5.18 | 79 | 5.05 |
| South Africa | 88 | 5.03 | 86 | 4.70 |
| Mê hi cô | 92 | 4.87 | 96 | 4.45 |
| Pê ru | 101 | 4.42 | 100 | 4.23 |
| Fiji | 102 | 4.41 | 102 | 4.16 |
| Philippines | 107 | 4.28 | 106 | 3.97 |
| Indonesia | 115 | 3.86 | 115 | 3.63 |
| Campuchia | 125 | 3.12 | 127 | 2.78 |
| Kênya | 129 | 2.99 | 129 | 2.78 |
| Cuba | 135 | 2.73 | 133 | 2.64 |
| Nigeria | 137 | 2.72 | 137 | 2.48 |
| India | 138 | 2.69 | 135 | 2.50 |
| Myanmar | 140 | 2.54 | 153 | 1.95 |
| Laos | 144 | 2.45 | 144 | 2.21 |
| Bangladesh | 145 | 2.35 | 143 | 2.27 |
| Tanzania | 167 | 1.65 | 167 | 1.54 |
| Việt Nam | 105 | 4.29 | 104 | 4.02 |

Nguồn: ITU 2016.