

SECTORAL SYSTEM OF INNOVATION IN PAYMENT SERVICE OF VIETNAM: PRELIMINARY ASSESSMENTS

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Abstract:

Objectives of this study are to apply the approach of sectoral system of innovation to make preliminary views on the status of the innovation system in finance-banking sector of Vietnam for payment service. The study applies the use of questionnaires and in-depth interviews with experts and representatives of some organizations in finance-banking sector. The study shows the system of institutions and policies plays the important roles, seemly in the top rank, in promotion of innovation activities related to payment service. Besides, clients come to appear as a crucial factor to push up investment efforts of these organizations for innovation activities. Also, the leading roles of commercial banks and Fintech companies are rising as new actors to push up innovation activities in this sector.

Keywords: Sectoral system of innovation; Payment service.

Code: 19121004

1. Introduction

Innovations in payment activities already get very high attentions of policymakers and business communities worldwide during recent years. As Jerome H. Powell, Chairman of the US Federal Reserve indicates, the revolutionary changes in payment sector force finance-banking service suppliers to change if they do not want to be left behind (Powel, 2017).

In Vietnam, however, studies of innovation in sectors of service in general and the one in sector of payment systems in particular remain limited. Recent studies on innovation activities in finance-banking sector started only since the transformation to digital banks and appearance of a new type of companies (Fintech). One of the first records of that was the proceeding of the workshop “Revolution 4.0 and innovation in finance-banking sector” held by National Economics University in June 2018. Similarly to majority of studies on aspects of technological development in finance-banking sector, the studies here are focused on analysis of the status, development

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directions and impacts from new technologies without dealing with actors that push up innovations in the sector.

Then this study is to focus on the approach of Sectoral System of Innovation (SSI) to provide preliminary views on the development status of the finance-banking sectoral system of innovation, particularly payment activities of commercial banks of Vietnam. Results of the study give contributions to theoretical platform of the sectoral system of innovation, particularly in payment service sector and provide CEOs with recommendation of some solutions for development of sectoral system of innovation in finance-banking in general and in finance-banking activities in particular in Vietnam. Being limited in time and finance for the actual study we could not make assessments for the all of components of sectoral innovation system in the finance-banking related to payment service activities and their interlinks. Instead of that we make focus on analysis of the main component - core technologies and knowledge background of finance-banking sector as well as main actors promoting innovation activities in the finance - banking sector most related to payment activities.

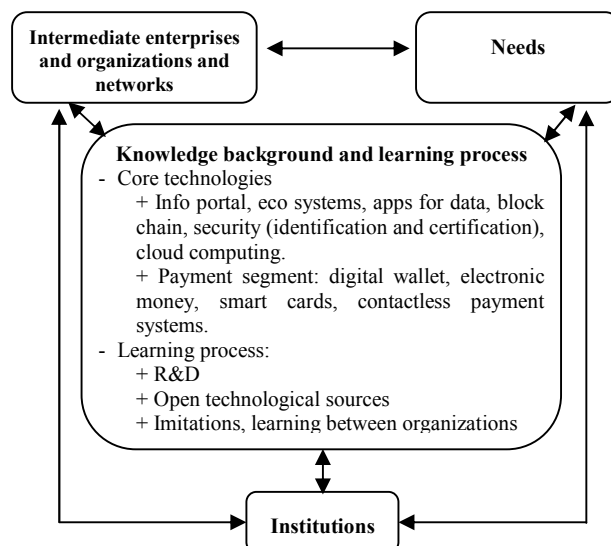
2. Analytical framework of the sectoral innovation system of finance-banking related to payment service

Payment service is the service of transfer of financial obligations between two sides or more (*Humphrey, 1995*). This service as substitution to the cash payment between sides is required to provide fast, sure, convenient and confidential operations. These requirements turn the payment service to a systematic procedure which links multiple sides, namely paying sides, intermediate financial institutions, central banks and receiving sides.

As a system with well organized nature, majority of innovation activities in the system in relations to payment service normally hold close interlinks with clients instead of doing internal R&D activities (*Evangelista, 2000*). Business enterprises in this sector depend much on development of software or their own business know-hows. At the same time, the development of information technologies (IT) facilitate improvement of quality of supply services.

In this study we apply the frame of sectoral system of innovation (SSI) for preliminary views on the status of innovation system in payment service activities of the finance-banking system of Vietnam. The frame of SSI is the approach developed by *Malerba (2002, 2005)* from concepts based on National Innovation System (NIS). It is a type of approach of holistic nature instead of consideration of certain actual aspects of the process of innovation. The system approach method makes attentions on interactions

between actors in relations to innovation activities and analysis of the way these interactions get shaped through political, institutional and social factors (Fagerberg and Verspagen, 2009). The sectoral system of innovation, as described by Malerba (2005), is the interaction between components as knowledge background and learning process; enterprises, intermediate organizations and networks, institutions and needs. Besides, the geographical borders cause important impacts to the interaction of these components (Fig. 1). In this study, we make the limit of research scope in consideration of interactions of components as pushing actors and application of new technologies in finance-banking sector in relations to payment service as presented in Fig. 1.



Source: Developed by the authors from results by Newbury (2016), Malerba (2002, 2005) and Tether & Metcalfe (2004).

Figure 1. Components of the finance-banking sectoral system of innovation in relations to payment service

Table 1. Actors promoting sectoral innovation system of new technologies in finance-banking related to payment service.

Components	Description	Interactions promoting innovation and application of new technologies
Knowledge background and learning process		
Platform technologies	<ul style="list-style-type: none"> - Information and communication technologies are platforms to push up technologies in the sector. - Main technological trends related to 	Shaping development directions and application of technological forms in future.

	<p>payment service: shift from traditional cash money to electronic payment, from cheques, credit cards and debit cards to smart cards and contactless payment (KPMG, 2007); electronic wallet, digital money (Netherlands <i>NHTW</i>, 2016).</p>	
Learning process	<p>Through R&D activities, training of staffs, improvement and development of technology, inter-use of inventions developed by other banks, copy or purchase of patented technologies.</p>	<p>Impacting speed of innovation and application of new in the sector.</p>
<p><i>Business enterprises, intermediate organizations and networks</i></p>		
Business enterprises	<p>Commercial banks keeps on main roles in payment service supplying sector. Recently, some Fintech companies take parts in supply of this service. It includes payment processing, transfer, mobile payment, foreign exchange, credit cards, prepaid cards, incentive programs and rewards.</p>	<ul style="list-style-type: none"> - Participation of Fintech companies makes pressure on commercial banks push up innovations to maintain competitive positions. - Cooperation between commercial banks and Fintech companies lead to new applications for benefits of clients.
Intermediate organizations	<ul style="list-style-type: none"> - Universities and research institutes. - Finance-banking associations. - International institutions such as IMF and World Bank. 	<ul style="list-style-type: none"> - Fundamental science research. - Consultations for communities of enterprises. - Propagation, dissemination of knowledge, legal regulations, standards and norms applied in the sector. - Training of human resources.
<p><i>Institutional aspects</i></p>		
Official institutions	<ul style="list-style-type: none"> - International regulations (Uniform Customs and Practice for Documentary Credits - UCP, Uniform Rules for Collections - URC, Uniform Rules for Bank-to-Bank Reimbursements - URR, International Trade terms - Incoterms); legal regulations for domestic payment. 	<ul style="list-style-type: none"> - Innovations introduced in practical application need to meet the terms imposed by official institutions. - Appearance of new products, such as Fintech, leads domestic and international governance organizations to amend regulations.
Non-official institutions	<p>Rules established by enterprises to interaction with clients (rules for ranking, assessment, scoring, rewards points and etc.).</p>	<ul style="list-style-type: none"> - Rules for interaction between enterprises and clients form discrepancies in quality of services, lead to competitive advantages between enterprises. - Enterprises need to keep on updating and amending of rules to reflect wishes from clients.

Needs		
Types of needs	5 most important needs: Easy to use, Convenient for transaction, Dedicatedly responsive service, Customer insights and Greater values (<i>Microsoft financial service, 2017</i>).	Measures to satisfy these needs of clients push up competition between enterprises for application of new technologies as well as creation of new products.
Classification of groups of clients	Sectors of enterprises; individual clients, public sectors (supplying public services).	Every group of clients requires enterprises to adjust products and procedures of services to be the most appropriate ways for that.
Geographical borders		
Foreign investments	Establishment of branches by foreign enterprises or capital contribution for joint business with local enterprises.	<ul style="list-style-type: none"> - Supply of new products, management experiences, application of new technologies in branches or joint business units. - More pressures on domestic enterprises to promote innovations.
Trans-border services	Foreign enterprise supply trans-border services to domestic clients.	<ul style="list-style-type: none"> - More pressures on domestic enterprises to promote innovations.

Source: Summary by the authors

3. Research methodology

This study applies illustrative methods of analysis with use of the theoretical framework of sectoral system of innovation and two information sources to make preliminary views on the finance-banking sectoral system of innovation in relations to payment service. The first information source is the secondary sources from the top entities as State Bank, Ministry of Information and Communication. The second sources is the in-depth interviews with experts from enterprises and research institutions. Namely, the study team conducted interviews with 6 large sized banks (including one State owned commercial bank; 2 North Vietnam based banks and 4 South Vietnam based banks), 2 leading technological companies (which are implementing technological payment service), 2 securities companies and 2 research experts from State Bank. The interviews were conducted by 2019. In order to make effective interviews, the study team designed semi-structure questionnaires in advance to keep right orientations of the study topics. The semi-structure of interviews includes the following main components:

- Overall information about enterprises;
- Overall views on innovation activities by enterprises;
- Questions related to technological platforms and learning process;

- Questions related to relations between actors;
- Questions related to the roles of institutions and State policies;
- Questions related to needs of clients.

4. Results of the study

The results of studies include two contents. The first content is the identification of the component of core technologies of payment systems of Vietnam. This content is presented in Items 4.1, 4.2 and 4.3 of this paper. The second content is presented in the remaining items providing analysis of actors promoting innovation activities, application of new technologies in relations to payment service in finance-banking sector of Vietnam. The focus is made for analysis of knowledge sources and learning process; roles of business actors and, in particular, forms of new enterprises in the system; roles of the systems of institutions and policies; roles of demands and roles of international integration.

4.1. Infrastructure platform of the payment systems of Vietnam

During recent years, Vietnam made intensive investments for communication infrastructure as modern platform of technologies for development of payment systems. Namely, actually Vietnam operates: (i) Inter-Bank Payment System (IBPS); (ii) Electronic clearing system; (iii) Foreign currency payment system; (iv) Securities payment system; and (v) Retail payment system. These payment systems are inter-linked allowing the smooth payment operations locally and internationally.

According to data from State Bank (2019), by middle 2018 there are about 70 payment service suppliers implementing Internet based retail payment services and more than 35 retail payment service suppliers being based on mobile phone. State Bank allows non-bank organizations to supply intermediate payment service for low value retail payment transactions.

In comparison to other countries in the region, however, the coverage of communication infrastructure remains low causing impacts to implementation of electronic commerce and mobile banking. Majority of communication systems are concentrated in large cities without coming down to rural areas. According to Global Competitiveness Report by World Economic Forum (2018), the indicator of ICT application of Vietnam is ranked 95/140, very much lower than the ones of other countries in the region (*WEF, 2018*).

4.2. Most expanded payment technologies of commercial banks

With strong investment moves for internal payment systems of banks during recent years, commercial banks made radical development in terms of technological infrastructure on basis of core banking systems which allow commercial banks to proceed fast and exact payment transactions between branches of the same bank and, at the same time, to supply modern payment tools and services to meet best requirements of clients.

Banking cards

This sector keeps on development in terms of issuance of cards, number and value of transactions. According to data from State Bank (2019), by end of the first quarter of 2019, 48 banks of Vietnam have issued domestic payment cards in a volume of 76 million cards, more than 261,000 POS machines and 18,600 ATM. Here, commercial banks integrated more new operations in banking cards for payment of electricity, water, communication, insurance, traffic and on-line payment. At the same time, commercial banks pay more attentions to improvement of card services, mostly for higher security of banking cards.

As guided by State Bank, Vietnam National Financial Switching Joint Stock Company (Banknetvn) and Smartlink Card Service Company had completed the merging formality by 2014 for establishment of Unified Card Switching Center to meet increasing needs of payment in economic activities. State Bank also guides development of mobile facility based POS payment (mPOS) for fast implementation of card payment spots of small size to meet payment needs of rural areas.

By views of many experts, however, under of pressure to increase the number of cards, commercial banks have to issue cards for free which leads to situation of “died” cards or low value transactions. The percentage of operating cards of banks is only in range of 60-70% which make huge wastes of resources of banks and of the entire society.

Internet banking and mobile banking

Payment services made through internet banking, even developed since 2009, have confirmed the important role in markets. Actually, the prevailing trends are shifted from computers to mobile phones allowing users to operate fast transactions of payment. Nowadays, according to State Bank, in Vietnam all the commercial banks implemented the mobile phone based payment service with fast increasing number and values of transactions. Some commercial banks implement initial effective steps of mobile phone based service for payment of electricity, water, communication, calls, cable television, insurance and other needs.

According to Global Consumption Survey 2019 by the auditing company PwC, in South-East region Vietnam is the country with the highest growth rate of mobile equipment based payment service as by the first quarter of 2019. The number of clients using this mode of payment had increased from 37% by 2018 to 61% by 2019 (PwC, 2019).

4.3. New trends of payment modes in Vietnam

Digital wallet

In Vietnam the payment made through digital wallet appeared for the first time by 2008. According to Annual Report 2019 of State Bank, as by 31st December 2018, there are 27 types of digital wallets in Vietnam markets with 4.24 million digital wallets certified and linked with bank accounts. However there is a strong segmentation where 90% of market shares (volume and values of transactions) are in hands of 5 intermediate payment companies. As specially noted, these companies have State owned shares with the ownership rate from 30% and even up to 90%.

Digital wallets developed by Fintech companies in Vietnam try to link to banks for extending the community of users. In addition to coordination with banks, Fintech develops another strategy for development of digital wallets in framework of eco systems of applications. Typically, AirPay digital wallet gets integrated with Foody to become an official channel for order and payment activities of Foody and fast delivery service of foods by Now. Another case is cooperation of Moca and Grab.

Not only Fintech companies take parts in markets of development of digital wallets but some banks directly involve into development of this technology. Typically, Vi Viet Cards (Vi Viet = Viet wallet) issued by LienVietPostBank; digital wallet by Bank Plus in cooperation of MB Bank and Viettel; Timo by VPBank; MEED by Maritime Bank and Sacombank Pay by Sacombank.

Digital money

Despite of being mentioned mainly as a technology which causes a radical change of payment activities in future, the digital money halts in the initial stage of study by finance-banking organizations of Vietnam.

In commercial banks we made interviews with, the representatives give a view that the digital money is not the topic at center of current attentions. Banks only keep attentions on studies for blockchain technologies which are driving platforms of technologies of encoded digital moneys such as bit coin or Ethereum for exploration of potentials of applications in their business activities.

Smart cards

The shift of domestic payment cards from magnetic cards to smart cards with use of chips is one of focal solutions of banking sector which was approved by the Prime Minister in the project for development of non-cash payment, 2016-2020 period. It is seen as important solution of Vietnam for avoidance of fake cards and other frauds.

However, by end of the second quarter of 2019, only 7 banks including Vietcombank, VietinBank, BIDV, Agribank, Sacombank, TPBank and ABBank issued officially domestic chip cards for contactless payment service with fast and secured payment transactions. However, the shift from magnetic cards to smart cards is costly then majority of banks do not implement largely yet.

Contactless payment technologies

The contactless card appeared in Vietnam for the first time by 2013 when Eximbank coordinates with MasterCard to introduce MasterCard PayPass. And by 2017-2018 other banks such as Vietcombank, Sacombank, SCB, Techcombank, Vietcapital Bank and etc. join them in issuance of contactless cards at the same time. In Vietnam, however, this technology also remains in initial stage as introduction into other modern payment modes, after digital wallet and QR code payment. This shows there is a big room for explosive development of the contactless payment mode in future, especially in context of active attentions of users for this type of cards.

4.4. Roles of knowledge background and learning process

R&D activities

R&D activities by finance-banking organizations of Vietnam can be divided into two groups. *The first group* is research activities for development of new products, development of markets and improvement of organizational modes for management of business activities. *The second group* is R&D activities in relations to information systems.

For the first group, during recent time, internal research activities get pushed up. For example, ACB sets up its own API programming group; HD Bank develops its own specific products for large clients such as VinaMilk; Sacombank develops its own QR system for payment operations and ATM withdrawing operations and etc.

For R&D activities in relations to information technologies, it is first to note that majority of banks have their own IT centers for operation of systems. The core banking component of the IT systems of banks is all out-sourced

for development. IT centers coordinate the management of out-sourcing activities and development of some components and specifications to meet compatibility to practical activities of their banks and the context of Vietnam.

Learning between actors

Learning between actors is seen as an important channel for finance-banking organizations of Vietnam to get knowledge. Ideas for new products come usually from external sources and get implemented by the world's large financial organizations, foreign banks and large local banks. HD Bank leading staffs, in our interviews, make know that "site visits to large financial institutions such JP Morgan as well as large companies which apply successfully technological solutions in practical activities in India, China, Japan and others help the bank leaders surely make investment steps for new technologies". Activities to introduce new technologies from technological companies help the banks to catch technological trends. Foreign technology suppliers would provide source technologies. They have local partners such as FPT or CMC for localization activities in order to give supports upon detail requests by individual banks.

Feedbacks from clients form also a channel for learning, as confirmed by some banks. For example, the close interaction and works with VietjetAir and Coopmart help HD Bank complete the payment system to meet very high requirements from these partners.

Banks state also the regular workshops with Information Technology Agency of State Bank let them get and update useful contents on technologies such as it provides IT staffs of banks with update knowledge on blockchain technologies and general operational techniques of banks, protection keys and exercises against attacks and etc.

Open technology sources (purchasing, merging, franchising, joint venture, joint business)

As reflected by commercial banks during interviews, the import of technologies is made mainly by assertiveness of bank leading bodies, the roles of foreign partners not being so much. Strategic shareholders themselves are banks and, in many cases, they are slow moving in these activities and then have no important roles in development of new technologies. Also, they themselves do not supply new technologies then they can only provide consultations and introduction of technology suppliers.

4.5. Roles of actors in finance-banking sectoral system of innovation of Vietnam

Roles of traditional actors

In relations to payment service, commercial banks are traditional actors that supply services. These organizations have to keep permanent activities of innovation and investments for technology development in their competition to meet increasing requirements of a developing economy. Since actually they are main suppliers of finance-banking services they hold important roles in pushing up innovation in the whole system.

In addition to this traditional actor, we have intermediate organizations (universities, research institutes and associations), international institutions (IMF, World Bank, ADB and etc.) and State authority agencies (Government, Ministry of Finance, and National Financial Supervisory Commission). According to our surveys, however, the roles of intermediate organization in pushing up innovations in the finance-banking sectoral system of innovation are not high in the present time.

Roles of new actors: Fintech companies

During the period from 2015 to now, Fintech companies start their involvement into the finance-banking sectoral system of innovation of Vietnam, particularly in intermediate payment service with 28 State Bank licensed units.

As shown by our interviews with finance-banking organizations and Fintech companies, the development of technologies in Fintech sector during the last time experiences a very fast development. As indicated by the leader of a commercial bank through the interview: “In certain aspects, today the banks are facing many challenges from Fintech companies. It occurs in almost all the products of service which used to belong specifically to traditional actors of finance-banking sector such as payment, domestic money transfer, international money transfer, remittance service, loans, individual finances, investment, insurance and others. In terms of products, Fintech companies are capable of issuing, within a very short time, new products which are close to clients and have high applicability. In terms of creativity, they are highly superior since they are not under control by legal barriers as banks are. They are capable of applying the newest technologies, particularly automation technologies, artificial intelligence, analysis of social networks and others and then capable to bring better experiences than the products supplied by banks. In terms of risks, Fintech companies accept risks in a larger range and higher level, even accept to face ventures. In this context they are easier to make approaches to the clients who were never

clients of banks or below the standards of banks. The challenges from Fintech companies, at the same time, lead to competition for mutual development and win-win cooperation between Fintech companies and finance-banking organizations for novel, unique and superior specificities of financial products which traditionally are arid”.

4.6. Roles of the system of institutions and policies

Institutions and policies play the top important roles in forming the legal framework to promote innovation activities of finance-banking organizations. Differently from other economic activities, business activities of finance-banking organizations, in any country, are conducted under tough control of State institutions on basis of specific laws in the sector. Therefore, any action of State institutional agencies to amend related policies would cause positive or negative impacts to innovation activities in the sector. As seen by the view of the interviewed commercial banks and securities companies, without the approval made clearly by State authorities for a new product, no finance-banking organizations dare to apply it, even if the idea and technological solution for it are available.

As illustration, the application of electronic payment technology could advance strongly when State Bank promulgates a series of guiding indications to remove barriers for finance-banking organizations to move up during the 2014-2016 time. For those technologies that do not get yet guiding indications by State Bank for, the commercial banks only take them for initial studies or slow development. For example, the issuance of contactless cards just gets introduced by mid 2019 after State Bank issues the Set of basic standards for domestic chip cards and the Set of basic standards for specific technical descriptions of QR Code.

The lack of a dedicated legal document with full regulations for supply of electronic banking services and electronic money as an unified and tough legal framework for this sector leads to difficulties in application of some new technologies. Namely, there is no clear regulations to deal with the practice of the no-use of any payment means without being permitted or the restricted use of certain permitted payment means and, as results, no banks dare to develop electronic moneys.

Also, due to lack of clear road maps for policies to deal with application of new technologies such as big data, cloud computing and eKYC, finance-banking organizations make only initial studies without doing strong decisions to introduce these technologies into practical implementation. In practice there exist some fears that the application of trans-border payments may lead to money laundering and payment operations for illegal activities.

This situation makes State Bank to issue regulations to constrain banks in development of convenient means for trans-border payment.

Regarding Fintech sector, since March 2017, the Fintech Steering Committee of State Bank was set up to guide studies for 5 Fintech aspects (namely, blockchain; peer-to-peer lending - P2P; electronic Know Your Customer - eKYC; Open Application Programming Interface - Open API; and Digital payment) as platform to build up the pilot legal frame for Fintech (regulatory sandbox). Thanks to these guidelines, Fintech activities get more intensive as observed during recent time. However, the fear for erroneous actions remains a psychological burden toward finance-banking organizations preventing them from pro-active steps in application of new Fintech forms.

4.7. Roles of demands

Clients, particularly large clients and client organizations, play very important roles in promotion of innovation in finance-banking sector. The 5 requirements by clients as noted above lead to continuous moves of innovation by finance-banking organizations and Fintech companies during recent time.

Our interviews show that banks and securities companies record the roles of large clients and their key partners in urging requirements and pressure for innovation. As example, HD Bank leading bodies share that their strategic partners such as VinaMilk, VietjetAir, Petrolimex, HD SAISON or retail companies such as Coopmart, BigC and Lotte make requests to the banks to complete the eco system, namely: VinaMilk requests the management of cashes and internet banking for sale spots of VinaMilk and overdraft for their transactions, VietjetAir requests for ticket booking and payment through internet banking, HD SAIGON financial company requests to link loans with HD Bank accounts; Petrolimex requests for payment solutions in relations to supports for POS payment in fuel stations, retail companies requests for POS payment and management of cash flows and etc.

Banks also share the views that clients from public sectors such as EVN, water supply companies, hospitals, schools and others make requests for electronic bills which force banks to develop technologies for fast and convenient payment procedures.

Visibly, the demands from clients in Vietnam remain huge putting exploration challenges to finance-banking organizations. As presented above, the habitude of payment-by-cash remains large. As seen from *White Pages of Vietnam Electronic Trade 2019*, majority of on-line buyers still choose of cash mode of payment upon receiving goods. 82% of buyers

confirm it in surveys, 42% of them use bank transfer mode of payment and 31% of them use various types of payment cards (*E-Commerce and Information Technology Agency, 2019*).

4.8. Roles of economic integration

Since the WTO entrance by 2007, Vietnam has been pro-active in negotiations, signature or completion of formalities for approval and implementation of the most Free Trade Agreements (FTA). Vietnam has opened doors for the sector of finance-banking services more than any other countries with the same development level regionally and worldwide. Up to now, foreign banks are allowed to be present in Vietnam under various forms including representative offices, branch offices, joint venture banks (foreign banks not being allowed to have over 50% of registered capitals), JV capital leasing companies, full FDI capital leasing companies, JV finance companies, full FDI capital companies and full FDI banks.

The Vietnam presence of the world leading foreign banks such as HSBC (licensed by 2009), Standard Chartered, ANZ-Bank, Shinhan Bank (licensed by 2008), Hong Leong (licensed by 2009) and others help push up transfer of technologies, knowledge and management skills under various forms (learning from competitors, mobility of staffs and etc.).

As shown by our interviews with commercial banks, the observation of moves for application of technologies by competitors provides important sources for activation of investments for application of new technologies by local banks. This meets well practical reality where foreign banks are the first units to introduce new technologies into Vietnam, from credit cards to development of retail banks, from application of information technologies in internal management activities to application of them in distribution channels of banks such as internet banking, mobile banking, tablet banking and social network/media. Actually, while commercial banks of Vietnam still use traditional distribution channels through transaction offices/branches, ATM, POS, phone banking, home banking and call center, and gradually shift to internet banking and mobile banking, foreign banks in Vietnam started application of the new type of retail banks (namely City Bank with Smart Banking, HSBC with First Direct and etc.). It is the prototypes that some domestic banks such as BIDV, MB Bank, SHB, VIB and others are learning.

5. Conclusions

This study is focused on the approach of sectoral system of innovation to provide preliminary assessment of the system of innovation in payment

sector of the finance-banking system of Vietnam. The information obtained from our surveys and interviews and results of our studies lead to the following initial remarks for this system.

During the last decade, the finance-banking sectoral system of innovation of Vietnam makes considerable transformation turns, particularly in sector of payment service. The cash mode of payment, however, still keeps large market shares. The card service has made quantitative advances without doing sensible qualitative moves. The new modes of payment such as internet banking and mobile banking make fast development steps during recent time which activates investments by other banks in the second wave of moves. This can be seen as solutions to avoid heavy investments for ATM and POS systems. Besides, some new mode of payment such as digital wallet, smart card and contactless payment technologies are introduced into application by banks in close cooperation with Fintech companies.

Amid actors promoting innovation activities of finance-banking sector of Vietnam, the institutions and policies play highly important roles. Without clear approvals from State authorities, finance-banking organizations dare not to apply new means, even if these ideas and technological solutions are available. Also, the learning remains important, particularly the one from competitors and clients.

The appearance of Fintech companies leads to new actors for innovation activities in payment sector. From one side, these companies create new modes of payment quite competitive to traditional organizations in finance-banking sector. From another side, however, they offer chances for cooperation as well as new services to support traditional organizations.

As it is seen in other sectors of services, clients play crucially important roles in provision of ideas and stimulating forces for finance-banking organizations. Those banks that have large clients as strategic partners with high requirements of service are the very units which make strong investments for innovation activities. In addition to that, the sector of public services emerges as segments where finance-banking organizations compete in their efforts for supply of modern payment means coupled with supply of on-line public service.

Finally, international integration offers environment of learning for finance-banking organizations. Also, international commitments help Vietnam complete the legal system in this sector up to international standards and norms which facilitate development of new products and services by local finance-banking organizations. Nevertheless, the commitment by Vietnam to open largely the finance-banking sector in international financial agreements leads to increasing pressures to local finance-banking

organizations and requires them to make innovations to hold their market shares and develop new moves to international markets./.

REFERENCES

1. E-Commerce and Information Technology Agency (2019). White Pages of Vietnam E-Commerce, since 2019.
2. Vietnam State Bank (2019). Annual Report 2019, State Bank.
3. Hung, N.V. (2013). State roles in forming and developing of National Innovation System in Vietnam. Ministerial level research project report, NISTPASS, (in Vietnamese).
4. KPMG (2007). Banking on innovation? The challenge for retail banks.
5. De Nederlandsche Bank (2016). Technological innovation and the Dutch financial sector. De Nederlandsche Bank.
6. Microsoft financial service (2017). The top five things a customer needs from their bank. Taken from Microsoft Industry Blogs.
7. WEF (2018). The Global Competitiveness Report 2018.
8. PwC (2019). Global consumer insights survey 2019. PwC.
9. Humphrey, D. B. (1995). Payment systems: principles, practices, and improvements. Washington, D.C., The World Bank.
10. Evangelista, R. (2000). "Sectoral patterns of technological change in services". *Economics of Innovation and New Technology*, 183-222.
11. Malerba, F. (2002). "Sectoral systems of innovation and production". *Research Policy*, 31(2), 247-264.
12. Tether, B. S. and J. S. Metcalfe (2004). Services and 'Systems of Innovation'. Malerba, F. (ed.). *Sectoral Systems of Innovation: Concepts, Issues, and Analyses of Six Major Countries in Europe*. Cambridge University Press, Cambridge, UK.
13. Malerba, F. (2005). Sectoral systems: how and why innovation differs across sectors. *The Oxford handbook of innovation* (pp 181-208). Oxford: Oxford University Press.
14. Fagerberg, J. and Verspagen (2009). "Innovation studies - The emerging structure of a new scientific field". *Research Policy*, 38, 218-233.
15. Newbury, P. M. (2016). Technological Change and the Evolution of Sectoral Systems of Innovation in Highly Regulated Industries: A Study of the Australian Electricity Industry. A thesis submitted for the degree of Doctor of Philosophy at The University of Queensland in 2016.
16. Powell, H. J. (2017), "Innovation, Technology, and the Payments System". Remarks of the Member of the Board of Governors of the Federal Reserve System at the Conference *Blockchain: The Future of Finance and Capital Markets?* The Yale Law School Center for the Study of Corporate Law, Weil, Gotshal & Manges Roundtable, Yale University, New Haven, Conn. March 3, 2017.