



BANK OF THAILAND



Payment Systems Report 2013



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Payment Systems Report 2013



August 2013



Message from the Chairman of the Payment Systems Committee (PSC)

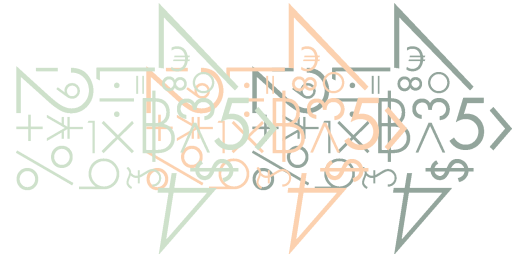
In 2013, the Thai economy was faced with volatilities from both domestic and external environment, which ultimately affected the implementation of macroeconomic policies, including payment systems policy. The Payment Systems Committee (PSC) thus directed particular emphasis to strengthening and developing the Thai payment systems to support the undertakings of economic activities in an efficient and stable manner. In this regard, a policy framework was formulated and ongoing payment systems development projects were continually implemented. As a result, completion and progress was observed on many fronts.

On payment systems infrastructure development, the PSC supported and pushed for implementation of core systems to enhance security and efficiency of payment systems usage. For example, a Local Switching system was developed and launched on 24 July 2013, as part of the effort to ascertain that Thailand is equipped with a network for payments of goods and services via debit cards. Furthermore, the Imaged Cheque Clearing and Archive System (ICAS) was implemented nation-wide to reduce cheque handling cost and collection time. These initiatives greatly benefited commercial banks, businesses and the general public.

To support the high growth of international transactions, the PSC oversaw the implementation of a Payment versus Payment (PvP) system to provide same-time settlements of foreign exchange transactions for financial institutions, thereby helping to reduce foreign exchange settlement risk. Through collaboration with the Hong Kong Monetary Authority, a linkage between the BAHTNET and the US Dollar Clearing House Automated Transfer System (USD CHATS) was established to allow operation to commence in 2014.

The PSC also took great interest on the promotion and development of payment systems services. In the previous year, the PSC collaborated with the Comptroller General's Department to support greater usage of e-payment services among government departments. Activities to promote e-payment usage and knowledge among users were also organized throughout the year to help users become better informed and confident in using e-payment instead of cash.

Payment systems standard setting was another area that the PSC deemed to be crucial in future phases of payment systems development. Given appropriate payment systems standards, not only will speed and accuracy of payment data transfers be improved, payment systems architecture will also become more open to welcome greater competition from new players, facilitate connection between domestic and international payment systems, and improve data security in accordance with international standards. Various payment



system standards were thus established by the PSC. For electronic cards, magnetic stripes in debit cards and ATM cards will be replaced with chips to enhance data security and strengthen consumer's confidence. Development of common standard for trade transactions between institutions, both public and private, known as e-invoicing standard, was also promoted to improve convenience in e-business and e-payment processes. Finally, the National Payment Message Standard (NPMS) was established to provide nation-wide standardized payment data messaging between businesses and financial institutions, thereby improving convenience for payment systems users. Looking ahead, the PSC planned to promote coverage of this standard to include all ASEAN countries in order to facilitate payment systems connectivity.

In addition, to ensure continual progress and sustainability of payment systems development, adequate payment systems oversight must be in place to ensure payment systems stability. Hence, international standards for payment systems oversight, namely the Principles for Financial Market Infrastructure, were applied to Thailand's context. These include oversight of Systemically Important Payment Systems, which comprises the BAHTNET, and oversight of Prominently Important Retail Payment Systems, which includes the cheque clearing system and the National ITMX Co., Ltd. These efforts will ensure that the relevant payment systems are able to operate continually without interruption, even in emergency circumstances.

Going forward, the PSC is committed to institutionalize the Payment Systems Association for private institutions that are key stakeholders in Thailand's payment systems. The Payment Systems Association will partner with the PSC and the Bank of Thailand to formulate policy recommendations and advance progress on various e-payment projects to achieve their desired objectives. At the same time, the PSC will monitor development in payment systems technology and potential risks to ensure that payment systems policy formulation continue to be appropriate for the constantly-changing environment. The PSC will also strengthen regulation and supervision of e-payment service providers to ascertain that users receive services that are stable, secure, and reliable.

Finally, the PSC is fully aware that an important success factor in payment systems policy implementation is cooperation from all stakeholders. The PSC alone could never achieve the aforementioned progresses and successes. As Chairman of the PSC, I would like to take this opportunity to thank all parties, both public and private, for your commitment and tireless efforts in working with us efficiently and closely towards our common goal in ensuring that Thailand's payment systems are efficient, stable, secure and compliant with international standards.

Prasarn Trairatvorakul

(Mr. Prasarn Trairatvorakul)

Chairman of the Payment Systems Committee

9 May 2014

The Payment Systems Committee (PSC)



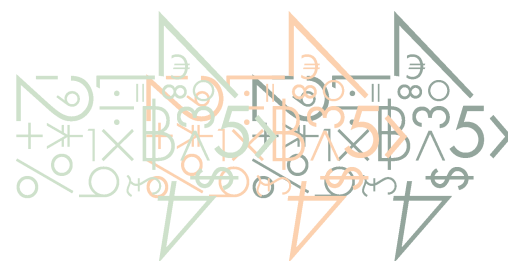
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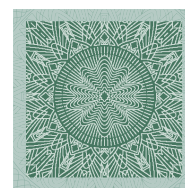


Secretary
Mrs. Ruchukorn Siriyodhin
Assistant Governor
Financial Institutions Policy Group



2013





Key payment statistics in 2012 - 2013

	2012	2013	
Total population	64.5	64.8	million
Nominal Gross Domestic Product (GDP)	11,363.0	11,897.4	billion Baht

Technological Infrastructure

Number of fixed-line telephone subscribers	9.9	9.4	numbers per 100 persons
Number of mobile phone subscribers	131.9	142.7	numbers per 100 persons

Payment Statistics

Number of Thai commercial banks 16 with	6,391	6,601	branches
Number of foreign commercial banks 15 with	19	19	branches
Number of Specialized Financial Institutions branches	2,425	2,549	branches
Number of post office branches	1,298	1,303	branches
Number of Automated machines ¹	52,242	56,851	terminals
Number of EFTPOS terminals ²	264,236	311,289	terminals
Number of credit cards	16,870,025	18,626,864	cards
Number of debit cards	42,988,140	45,241,477	cards
Number of ATM cards	24,108,467	24,101,957	cards
Currency in circulation per capita	17,628	18,363	Baht per person
Average cheque usage per capita	1.9	1.8	cheques per person per year
Monthly average value of credit card payments ³	4,611	4,594	Baht per card
Monthly average value of cash withdrawals via ATM card	6,967	8,381	Baht per card
Monthly average value of debit card payments ⁴	183	194	Baht per card
Monthly average value of cash withdrawals via debit card	9,639	10,579	Baht per card

¹ Includes both Automated Teller Machines (ATMs) and Cash Deposit Machines (CDM)

² EFTPOS (Electronic Funds Transfer at Point Of Sale) or EDC (Electronic Data Capture) terminals are machines that banks or service providers install at retailers to collect and send information on payment transactions made through debit and credit cards

³ Refers only to payments for goods and services through EFTPOS within and outside Thailand using domestically issued credit cards

⁴ Refers only to payments for goods and services through EFTPOS within and outside Thailand using domestically issued debit cards

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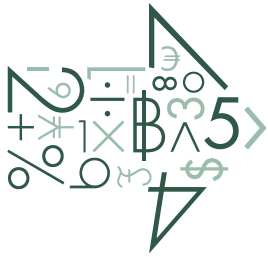


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I Payment systems policy and oversight in 2013

In 2013, the Payment Systems Committee (PSC) formulated payment systems policies and supported the Bank of Thailand (BOT) to implement various projects under the Payment Systems Roadmap 2012 – 2016, which is a five-year plan for payment systems development. The Roadmap envisions Thailand’s payment systems to be able to support domestic and international economic activities, undertaken by both the public and private sectors, in an efficient, stable and secure manner while also meeting relevant international standards. There are three main objectives, namely efficiency enhancement, risk reduction in payment systems, and payment services consumer protection. In addition, the roadmap also promotes necessary payment systems infrastructure development to support usage by individuals as well as businesses. Important progresses under the roadmap were as follows.

Figure 1: Payment Systems Roadmap 2012-2016

Vision: Making payment systems support efficient, stable and secure economic activities of the public and private sectors, both domestically and internationally

L 1 Objectives:	Efficiency enhancement			Risk reduction			Consumer protection
L 2 Projects:	Promotion and development of electronic payments		Promotion of payments systems access	Preparation for the AEC	Payment systems risk reduction		Enhancement of secure ATM usage
L 3 Plans	Promotion of electronic payments in place of cash	Electronic payment systems development	Standard setting		Reduction of risks associated with foreign exchange settlement	Reduction of risks associated with net settlements through BAHTNET	Consumer protection and financial literacy
Results:	Measures to promote efficient and secure usage of electronic payments channels to meet retail customers' needs		Varied, inclusive and efficient payment services for all population groups with appropriate consumer protection measures	Payment infrastructures that support financial systems connectivity and international trade	Risk management mechanism to handle foreign exchange settlements	Measures to deal with multilateral net settlements in BAHTNET	Guidelines for the improvement of ATM systems to enhance safety - Financial literacy to promote understanding and confidence in payment systems usage - Supervision to ensure confidence in payment systems usage

Source: Bank of Thailand

1. Efficiency Enhancement

1.1 Promotion and development of electronic payments

The BOT, under approval of the PSC, formulated a plan to promote and develop electronic payments, with the aim to encourage greater usage of e-payments and promote relevant payment systems infrastructure development so that it can serve all categories of users, from individuals to businesses, in an efficient, stable and secure manner. The BOT also supported the institutionalization of the Payment Systems Association (PSA) to coordinate with the PSC in formulating recommendations on payment systems policies and development together with ensuring effective implantation of approved policies and plans. In this regard, the Thai Bankers' Association was authorized to study and propose an appropriate institutional set-up, roles, duties, and composition of the PSC that includes all key stakeholders.

In 2013, the BOT, with support from financial institutions, businesses and government agencies made progress under the plan, including developing a common standard for trade transactions between institutions, both public and private, to facilitate a full fledged e-payment process, covering trade, payment and data transfer to relevant authorities. In this regard, an e-invoicing standard will be established for the retail sector as a pilot project before subsequent application in other economic sectors.

Moreover, the BOT cooperated with the Comptroller General's Department to promote usage of e-payment services instead of cash among government departments. Initiatives on this front included regulatory revision to enable government departments to accept payment via debit cards or credit cards issued by any commercial banks more conveniently. Discussion with the Revenue Department was also held to explore possible tax incentives to help encourage usage of debit cards instead of cash. Accordingly, due consideration would be exercised because government revenue could be directly affected.

Box 1: E-invoicing standard

The e-invoicing standard is common standard that will play an important part in facilitating electronic trade transactions between institutions, both public and private. At present, a number of businesses still rely on paper documents when making a transaction while payment for goods and services is usually made by cheque.

Thus, to encourage greater usage of e-payment instead of cheque, the Working Group on Electronic Payments Promotion and Development (WG-EPD), consisting of representatives from the Payment Systems Association (PSA), the Thai Bankers' Association, the Federation of Thai Industries, the Thai Chamber of Commerce, the Electronic Transactions Development Agency and the Bank of Thailand, planned to draft the e-invoicing standard to facilitate a full-fledged e-payment process between institutions, both public and private. The standard will cover sales, verification, payment as well as e-tax document transfer to relevant authorities. Details are as follows

Improvement in electronic trade transactions by public and private institutions (e-business and e-invoicing)			
Track	Activity	Pain-points	Deliverables
1	Purchasing and selling	<ul style="list-style-type: none"> • <i>For paper document:</i> Exchange of paper document, including purchase order (P/O) and invoice, is costly and inconvenient. • <i>For e-document:</i> There is not yet a common standard to handle data formats that differ between institutions. 	1) A common standard to facilitate electronic data transfer between institutions 2) An implementation plan 3) A plan to expand coverage to other businesses
2	Payment and collection	<ul style="list-style-type: none"> • Payee is faced with inconvenience in payment reconciliation, for example, verification of information on the payer, goods and services description, payment installment, or bulk payment. 	1) e-payment information that facilitate reconciliation process 2) A channel for e-payment data transfer from payer to payee

Track	Activity	Pain-points	Deliverables
3	e-tax documents	<ul style="list-style-type: none"> • Businesses incur cost in filing tax document in paper format • There is a Revenue Department regulation on preparation, delivery and filing of e-tax invoices and e-receipts but compliance is still limited 	A plan to promote usage and exchange of e-tax documents among institutions and government departments

There are two main categories of standards on business data transfer, namely

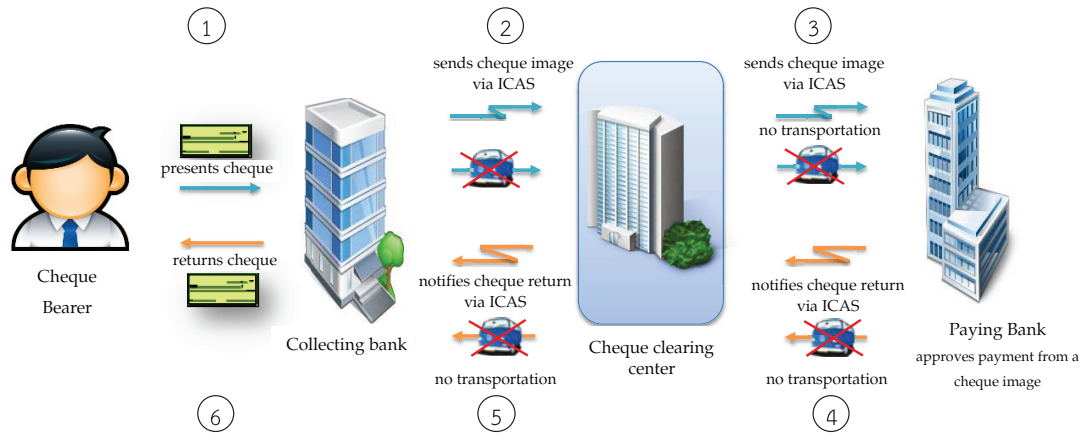
- 1) eXtensible Markup Language (XML)
- 2) Electronic Data Interchange For Administration, Commerce and Transport (EDIFACT)

From a comparative study of international e-invoicing standards, for example, Electronic Business Extensible Markup Language (ebXML) and Electronic Data Interchange For Administration, Commerce and Transport (EDIFACT), supplemented by discussion with domestic e-document transfer service providers, the WG-EPPD decided that XML (eXtensible Markup Language) provides an appropriate framework to be applied as a common standard for e-invoicing, given that it is easy to understand, flexible, and widely accepted internationally. Moreover, most Thai businesses are already familiar with XML, which is currently used in the National Single Window (NSW) project and the National Payment Message Standard. Development and testing of e-invoicing standard will start as a pilot project for the retail sector in 2014 – 2015. It is expected that implementation will begin in 2015 and that the standard can be applied to other businesses, going forward.

1.2 Imaged Cheque Clearing and Archive System (ICAS) development

The BOT developed the Imaged Cheque Clearing and Archive System (ICAS), which is an interbank cheque clearing system that uses a cheque image rather than a physical cheque for collection. The ICAS' objective is to shorten the nation-wide cheque clearing cycle to one day, especially inter-provincial cheques which originally took three to five working days to clear. Other objectives include enhancing cheque deposits window, mitigating risks from physical transportation of cheques, reducing costs related to cheque clearing and enhancing the efficiency of the cheque clearing system. The ICAS was launched for Bangkok and its vicinities on 3 February 2012, and later expanded to other provinces, beginning with Suphan Buri, on 15 November 2012.

Figure 2: Cheque clearing process in ICAS



Source: Bank of Thailand

In 2013, the BOT expanded coverage of the ICAS farther to cover major provinces in each region and later to other provinces. Then, nation-wide coverage was completed on 19 December 2013. Furthermore, to prepare stakeholders in each region for full operation of the ICAS, training sessions were organized for staff of member banks while promotional events were held for the business and legal sectors. A contingency plan was also formulated to handle system malfunction so that the ICAS could operate continually in a stable and secure manner.

Additionally, the BOT planned to cooperate with member banks to explore ways to minimize number of a special type of cheques that still require physical transportation, for example, amended cheque and stamped cheque, to further enhance efficiency of the ICAS.

1.3 Local Switching development support

The BOT, under approval of the PSC, in cooperation with related agencies pushed forward for establishment of a Local Switching (LSW) network that processes payment transactions of domestically issued debit card which locally spend for goods and services. The LSW would reduce dependence on international switching operators. It would also help maintain stability of Thailand's payment systems by ensuring that transactions of payment cards could be processed, even when there are interruptions or communication network problem of the international service provider's system, which could cause problems for the financial institutions sector.

The LSW operator for debit cards (National ITMX Co., Ltd) and member banks that provide debit card payment services began to submit debit card transactions via the LSW since 24 July 2013, in accordance with the Notification of the Electronic Transactions

Commission on “Rules, Procedures and Conditions regulating Electronic Payment Service Business” (No.2), B.E. 2555 (2012), which stipulates that implementation must commence by 1 September 2013. A temporary grace period of one year was extended for certain members that were not ready to comply with the requirement.

1.4 Establishment of National Payment Message Standard

The BOT together with the Electronic Transactions Development Agency (Public Organization) - ETDA, commercial banks, government departments, software developers, network operators, and a number of large corporations, developed the National Payment Message Standard (NPMS) to enable businesses and financial institutions to exchange payment data more conveniently by using standardized messages that comply with ISO to reduce data handling cost. In this connection, the NPMS Notification was promulgated by the Electronic Transactions Commission (ETC) on 2 January 2013, to encourage rather than strictly enforce NPMS usage. Given the differences in readiness of businesses and financial institutions, implementation could become costly should immediate transition to NPMS was enforced. Thus, in the initial phase, implementation of the NPMS would focus on large corporations that were more ready in terms of investment, along with some government departments.

In 2013, the BOT and the ETDA monitored progress of financial institutions in implementing the NPMS. Thailand Payment Market Practice Group (TH-PMPG)⁵ was also formed to provide a forum for technical discussion on the NPMS, and to test the consistency of new standards. The TH-PMPG also revised four formerly promulgated NPMS to ensure their compliance with the internationally-accepted Common Global Implementation (CGI)⁶ and stipulated two additional financial-institutions-to-businesses messages.

⁵Thailand Payment Market Practice Group (TH-PMPG) comprises NPMS users from various groups, namely, academic such as the BOT and the ETDA, bank and non-bank payment service providers, government departments, businesses, and Enterprise Resource Planning (ERP) software developers.

⁶CGI is a working group under the ISO 20022 that is responsible for overseeing and giving advice on implementation of the ISO 20022 in each country so that it is aligned internationally.

Box 2: Thailand's National Payment Message Standard

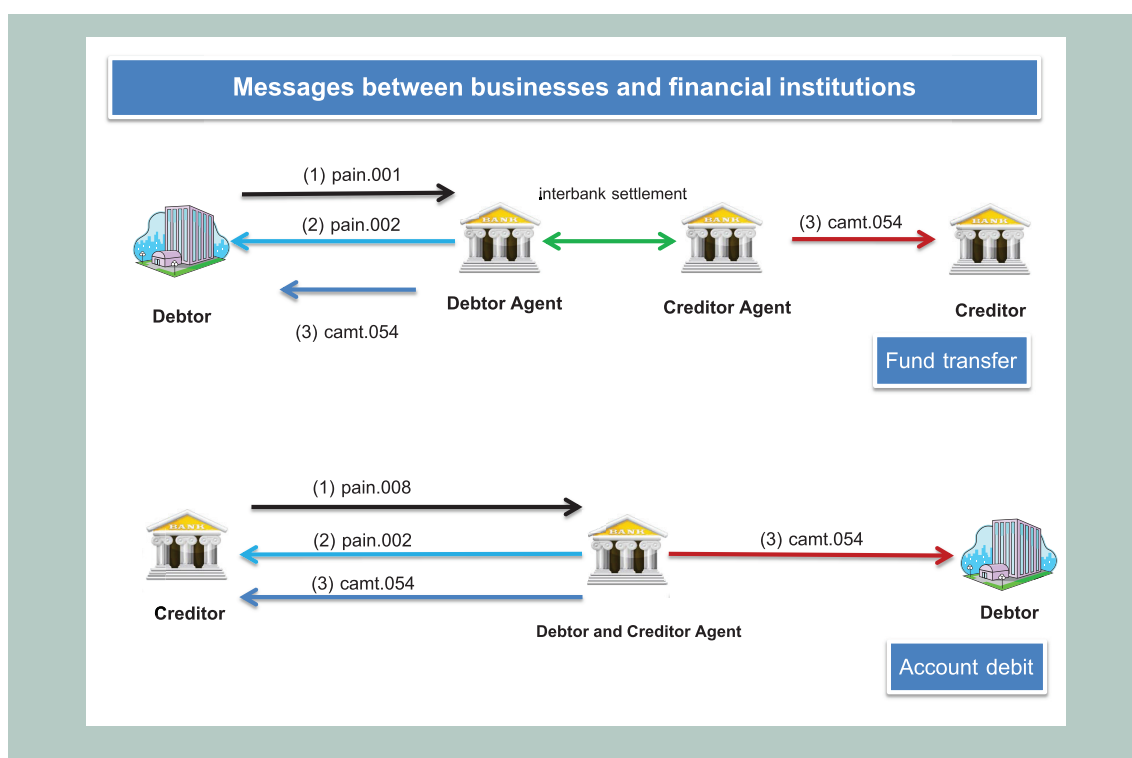
There are four electronic messages that are considered part of the National Payment Message Standard according to the Electronic Transactions Commission (ETC)'s Notification of 2 January 2013. These messages are used in six categories of payment services, namely (1) direct credit; (2) direct debit; (3) interbank bulk payment (ITMX bulk payment); (4) cheque outsourcing; (5) BAHTNET; and (6) international payment. The four NPMS concerned include two businesses-to-financial-institutions messages and two messages from financial institutions to businesses, as follows.

1. Two NPMS from businesses to financial institutions:

- Customer Credit Transfer initiation (pain.001.001.03) for businesses requesting funds transfer through direct credit, cheque outsourcing, ITMX bulk payment, BAHTNET and international payment
- Customer Direct Debit initiation (pain.008.001.002) for businesses requesting funds transfer through direct credit

2. Two NPMS from financial institutions to businesses:

- Customer Payment Status Report (pain.002.001.03) for financial institutions to inform customers of payment status
- Bank To Customer Debit Credit Notification (campt.054.001.02) for financial institutions to notify customers of transfer or account debit



The BOT and the ETDA also worked together to encourage financial institutions and related parties to adopt NPMS by circulating a Notification on “National Payment Message Standard” was promulgated by the ETC for adoption by financial institutions and businesses that agreed to take part in a pilot project as well as related government departments, namely the Comptroller General’s Department, the Revenue Department and the Excise Department. A hearing was also organized for financial institutions to provide information and receive feedback. In this regard, it was found that significant number of financial institutions started to adopt NPMS in order to provide channel for their clients to utilized e-payment for e-Customs and e-Guarantee; services of Customs Department which also adopted NPMS. This was followed by usage by foreign bank branches given that ISO 20022 was already being used by their parent companies. Overall, there were 13 financial institutions that adopted NPMS and 21 financial institutions that had not yet done so. However, five of the latter planned to begin adoption in 2014 while another two planned to do so in 2015-2016.

Furthermore, the BOT also monitored progress on usage of NPMS by other parties. For example, the Customs Dpeartment already began using it in their e-Customs and e-Guarantee services on 1 March 2013. Progress on utilizing NPMS to develop the payment gateway under the National Single Window (NSW) project was also made where system operation commenced on 30 November 2013, with a number of financial institutions being ready to offer the service.

1.5 Payment systems development to support the ASEAN Economic Community

The Working Committee on Payment and Settlement Systems (WC-PSS)

The BOT together with other ASEAN central banks formed the Working Committee on Payment and Settlement Systems (WC-PSS) to study the current payment systems landscape and propose strategic plans to develop a regional payment system. The WC-PSS is currently co-chaired by the BOT and Bank Indonesia.

This year, the BOT, as a co-chair of the WC-PSS, organized the 7th and 8th WC-PSS meetings in the Philippines and Singapore for members to discuss policy initiatives and report on work progress. Scope of work and action plan of the five task forces, namely Trade Settlement, Money Remittance, Retail Payment Systems, Capital Market Settlement and Standardization, were also discussed. A number of external experts were invited to attend the meetings to give comments and recommendations. In addition, WC-PSS also formulated a capacity building work plans, covering study visits by BCLMV countries (Brunei, Cambodia, Laos, Myanmar and Vietnam) to ASEAN5 countries (Thailand, Singapore, Malaysia, Philippines, and Indonesia). These study visits were aimed at helping BCLMV countries prepare for the upcoming ASEAN Economic Community (AEC).

Moreover, the BOT strived to encourage ASEAN members to adopt ISO 20022 for their payment message standard used for both domestic and international payment, so that businesses and financial institutions could carry out international payment more conveniently. In this connection, most members, particularly ASEAN 5 countries, already had plans to adopt ISO 20022. Nonetheless, most members were still concerned about their commercial banks' understanding of the standard. The BOT thus cooperated with the ASEAN Bankers Association (ABA) and the Association of Banks in Singapore (ABS), to organize workshops upon request from member countries. Moreover, the BOT also signed a non-disclosure agreement with the International Payment Framework Association (IPFA), an organization promoting the adoption of ISO 20022 for payment message standard, to access information that would be beneficial in formulating the ASEAN payment message standard, going forward.

Box 3: ASEAN payment integration

The Working Committee on Payment and Settlement Systems (WC-PSS) was established under the supervision of ASEAN central banks to propose strategic plans to develop a regional payment system in five areas, namely Trade Settlement, Money Remittance, Retail Payment Systems, Capital Market Settlement and Standardization. Details of future work plans are as follows

Area	Current environment	Work plan
1. Trade Settlement	Settlement through correspondent banking, which is somewhat efficient	<ul style="list-style-type: none"> - Reduce fees by issuing a the Principles for Product Transparency and Disclosure for ASEAN financial institutions to improve understanding of customers, particularly SMEs, thereby enabling them to effectively compare fees of different banks - Reduce foreign exchange transaction costs by promoting local currency settlement, which will eliminate cost of double conversion. - Develop payment infrastructures in Brunei, Cambodia, Laos, Myanmar and Vietnam to support system linkages with other ASEAN countries
2. Money Remittance	Uses of unauthorized money remittance channels which vary in terms of efficiency, thus making consumer protection difficult	<ul style="list-style-type: none"> - Promote cooperation between labor exporting countries and labor importing countries - Organize a pre-departure program for workers to provide information on relevant financial services - Explore a possibility of establishing a website which provides a comparison of money remittance fees to help workers make appropriate decisions
3. Retail Payment Systems	Differences between countries result in connection difficulty. Inefficiency continues and fees remain high.	Utilize the Asian Payment Network (APN), which is currently being extended from providing only withdrawal and balance inquiry to international funds transfer through ATMs.
4. Capital Market Settlement	Differences in procedures continue to be an obstacle in cross-border settlement	<ul style="list-style-type: none"> - Capital market integration between Thailand, Singapore and Malaysia under the ASEAN Trading Link project enables Thai, Singaporean and Malaysian investors to trade more conveniently. The linkage will be expanded to other countries, going forward. - Formulate the ASEAN blueprint on post-trade linkage to enhance efficiency of payment and transfer of securities in the equity and bond markets. Such linkage will bypass commercial banks.

Area	Current environment	Work plan
5. Standardization	Inconsistencies in message standards result in high cost of data transfer and foreign exchange settlement	<ul style="list-style-type: none"> - ASEAN countries have agreed to use ISO 20022 as a reference for a common payment message standard, however, implementation timeframe has not been set because the readiness of each country is different, and the costs of migration is high. - Countries that are already using ISO 20022 payment message standard include Thailand, Brunei and Singapore - The WC-PSS and ASEAN Bankers Association (ABA) are preparing to organize national works hops in 2014 – early 2015 to enhance understanding of ISO 20022 among the seven ASEAN members that have yet to adopt the standard.

Support on development of payment infrastructure in ASEAN sub-region

The BOT made strategic progress in supporting economic and financial connectivity with Thailand’s neighboring countries (CLM), for example, Cambodia, Laos and Myanmar, to ensure that regional payment transactions, including trade settlement, investment, border trade, retail payment, and money remittance by foreign labor, could be conducted conveniently, efficiently, and securely. An action plan to support development of payment infrastructure in CLM was drafted, encompassing the following four areas.

- 1) Provide information for the CLM central banks regarding guidelines on development of payment infrastructure, establishment of an ATM pool, adoption of payment message standard, and bank note management. Commercial banks, the National ITMX Co., Ltd and the Processing Center Co. Ltd. will be invited to exchange views and give comments on these issues;
- 2) Enhance financial knowledge and understanding of commercial banks to promote border trade payment service and money remittance service;
- 3) Facilitate infrastructure connectivity, for example, ATM linkage through the Asian Payment Network (APN) and local switching system; and
- 4) Review regulations on foreign exchange controls that restrict local currency settlement.

Box 4: CLM payment infrastructure and future development plan

The CLM countries, consisting of Cambodia, Laos and Myanmar, have begun to develop key payment infrastructures to support economic expansion, increase in payment transactions which resulted from high growth in trade and investment, and economic integration with other ASEAN economies. Key payment infrastructure and future development plan of each country are as follows.

Cambodia

Payment infrastructure

Cash remains the most popular form of payment (more than 90 percent of total transactions) while there is also some usage of cheque (mostly in U.S. dollar). However, payment through electronic cards such as debit, credit, and ATM cards, remains limited. The ATM cash withdrawals and ATM funds transfer are mostly in-house transactions due to the absence of an ATM pool. However, there is an interbank network called “Easy Cash”, provided by Visa, which is used by seven commercial banks, to provide balance enquiry and cash withdrawal services. In addition, Cambodia currently does not have a Real Time Gross Settlement (RTGS) system for high-value funds transfer.

Payment systems connectivity between Thailand and Cambodia

Funds transfers is conducted through Western Union while withdrawals is done through ATM Link, which is a service provided for CIMB customers in 5 ASEAN countries, including Thailand, Singapore, Malaysia, Indonesia and Cambodia.

Laos

Payment infrastructure

Cash and cheque are the most popular forms of payment. The ATM cash withdrawals and ATM funds transfer is mostly in-house transactions due to the absence of an ATM pool. Payment via electronic cards such as debit cards and credit cards is limited. Nonetheless, some restaurants and hotels begin to accept debit cards and credit cards through the Visa and MasterCard networks. In addition, Laos has already set up a RTGS system for high-value funds transfer.

Payment systems connectivity between Thailand and Laos

An ATM linkage between Bangkok Bank (BBL) and Phongsavanh Bank (PSVB) allows PSVB’s local ATM card holders to withdraw cash in Thailand at BBL’s ATMs. There is a plan to offer international transfers in the near future. Furthermore, there is an international online money order service, which is a joint service offered by Thailand Post and Lao Post to facilitate international transfers.

Myanmar

Payment infrastructure

Cash is a popular form of payment though there is a plan to establish systems for retail funds transfer and high-value funds transfer. Recent efforts were development of an ATM pool by Myanmar Payment Union (MPU) and launch of debit cards in September 2012. However, usage in this initial phase is limited to some banks and cities where coverage expansion is underway. Moreover, there is some usage of credit cards through Visa, MasterCard and UnionPay International for payment in Kyat. Finally, an e-money service will be launched nation-wide in 2015.

Myanmar does not have a RTGS system though it utilizes an Electronic Funds Transfer (EFT), which is an almost real time system for high-value funds transfer.

Payment systems connectivity between Thailand and Myanmar

ATM linkages exist for Thai and Burmese commercial banks, for example, between Siam Commercial Bank and Kabawza Bank, and between Kasikorn Bank and Asia Green Development Bank, Ayeyaewaddy Bank, Myawaddy Bank and Kanbawza Bank, to offer international transfers. The main target customer of such service is Burmese workers in Thailand who wish to send money back home.

Looking ahead, Cambodia, Lao and Myanmar plan to become members of the Asian Payment Network (APN) in order to have their ATM networks linked with those of other ASEAN countries.

1.6 Studies and plans for local currency development

The BOT carried out feasibility studies and set up guidelines to promote the use of local currency for settlement of bilateral trade and investments between Thailand and some ASEAN countries, as well as Thailand and China, which would help reduce reliance on the U.S. dollar as well as lessen foreign exchange risk, which arises from volatility of the Baht vis-à-vis other currencies. In 2013, important progresses included the followings.

- 1) The BOT continued to cooperate and work closely with People's Bank of China, Bank Negara Malaysia, Central Bank of Myanmar, and Bank of Lao PDR, to facilitate the use of local currency for trade within ASEAN and and China. Further more, Bilateral Swap Agreement (BSA) with China was also signed to support payments for trade and investment. More BSAs are being considered with other central banks of neighboring countries.

2) The BOT also shared knowledge and promote understanding of the benefits from usage of local currency for entrepreneur and commercial banks. The BOT also calculated an average RMB/THB exchange rate⁷ from over-the-counter rates offered by commercial banks and published it on the website for reference rate. In accordance with the long term plan further strengthen relations between Thailand and China, an agreement was reached on a plan to promote RMB clearing service in Thailand. At present, the BOT is conducting a study of pros and cons of this service as well as a possibility of establishing RMB Clearing Bank in Thailand.

Table 1: Volume of RMB transactions by authorized persons during 2011 - 2013

(Unit: million U.S. dollar)

Year	Transaction volume Thailand-China	Export value Thailand-China	Import value Thailand-China	Trade value	RMB transaction/Trade volume (percent)
2011	169.9	26,250.4	30,051.7	56,752.1	0.3
2012	470.1	26,869.8	37,120.7	63,990.5	0.7
2013	814.2	27,238.2	37,726.6	64,964.9	1.2

Source: Bank of Thailand

Note: Volume of RMB for trade, investment or other purposes, by authorized persons, including commercial banks and Specialized Financial Institutions (SFIs) with FX licenses

3) At the regional level, a possibility in using local currency for foreign exchange settlement has been being explored by the WC-PSS though it is found that FX regulations in many countries are not conducive to facilitate the use of local currency, particularly on the opening of foreign currency deposit account by foreigners. Thus, the WC-PSS thus authorized each member country to conduct an analysis of their trade and investment within ASEAN in order to explore the possibilities of using local currency for settlement on bilateral arrangement.

⁷RMB or Renminbi is the main currency of the People's Republic of China

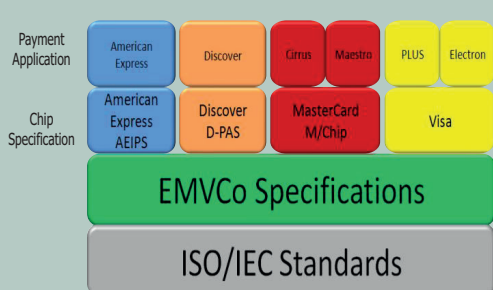
1.7 Chip standard for domestically-issued debit and ATM cards

The BOT, under approval of the PSC, stipulated guidelines and plans for chip standard for domestically-issued electronic cards in order to support migration from current debit cards and ATM cards to chip cards. The chip card initiative would help enhance the efficiency and scope of network connectivity between service providers, both domestic and international. Moreover, chip cards would also improve security and confidence in usage of these electronic cards to the same level as credit cards, which already employ chip technology.

In recent periods, the PSC established a timeframe for the migration from magnetic cards to chip cards whereby it was announced that new debit cards and ATM cards issued after December 2015 must all be chip cards. Financial institutions were also instructed to adjust their ATM terminals to be able to support chip cards by December 2015. In this regard, the BOT in conjunction with representatives from the Thai Bankers' Association, Foreign Banks' Association, SFIs, and ETDA, are in the process of determining a standard for domestically-issued electronic cards that is in line with EMV standards (Europay, MasterCard, and Visa), which are already in use. Guidelines for the transition and adjustment of cards and ATMs will also be provided to ensure compliance within the stipulated timeframe.

Box 5: Security standards for electronic cards

The EMV or Europay, MasterCard and Visa (EMVCo specification), is the most widely used standard for chip cards. The EMV ensures interoperability of chip cards and card readers. It is highly secured and protects against identity theft, counterfeit and other fraudulent actions.

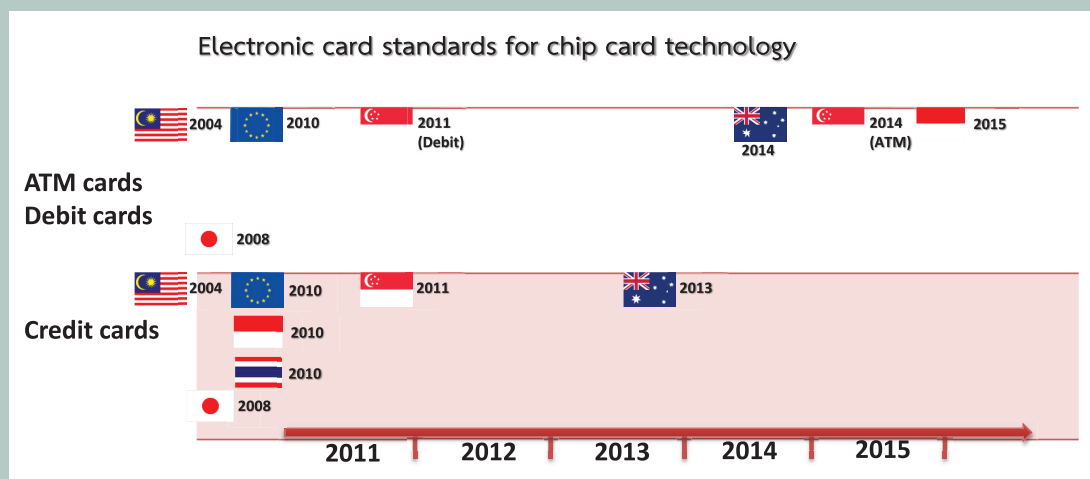


The EMVCo specification sets standards and formats for all levels of communication and data transfer, including, physical properties, production, chip standard, chip data structure, procedure for electronic data transfer, and related financial applications. Moreover, the EMVCo specification is in line with internationally

accepted standards for data communication such as the ISO/IEC 7816 for contact card and the ISO/IEC 14443 for contactless cards.

The BOT also became a member of the Common Ticketing Administrative Committee (CTAC) and the Program Management Services Committee, tasked with a responsibility to implement the Common Ticket Project of the Office of Transport and Traffic Policy and Planning, Ministry of Transport, in order to formulate e-ticket standards for common tickets to allow connectivity with e-payment services offered within and outside the transport sector. In this regard, the BOT believed that introduction of a common ticket would help promote e-payment further, especially low-value payment, as success was evident in the cases of Octopus in Hong Kong and EZ-Link in Singapore.

Box 6: International market migrations to chip cards



A number of countries are already using chip cards instead of magnetic cards for ATM, debit and credit cards, for example, Malaysia (2004), Japan (2008), Eurozone (2010), Indonesia (2010 for credit cards and 2013 for debit cards and ATM cards), and Singapore (2011 for debit cards and credit cards and 2015 for ATM cards). Other countries, such as Australia, plan to migrate to chip cards in 2013 for credit cards and 2015 for debit cards and ATM cards. For Thailand, chip cards are already being used for credit cards since 2010.

2. Risk reductions in payment systems

2.1 FX settlement risk reduction through Payment versus Payment (PvP) system for the Thai Baht

The PSC authorized the BOT to develop a Payment versus Payment (PvP) system for same-time settlement of foreign exchange transactions by financial institutions in order to reduce foreign exchange settlement risk.

Accordingly, the BOT considered alternatives in joining a suitable PvP network from a range of available ones, for example, the Continuous Linked Settlement (CLS). At present, the BOT is discussing the details of this initiative with CLS Bank. At the same time, progress on payment finality law is being monitored where it is now being reviewed by the Legal Execution Department and the Ministry of Finance.

In addition, the BOT considered a plan to include the Thai Baht in the US Dollar Clearing House Automated Transfer System (USD CHATS), operated by the Hong Kong Monetary Authority (HKMA). In 2013, the BOT together with HKMA and Hong Kong Interbank Clearing Limited (HKICL), developed a system to link the BAHTNET with USD CHATS. The BOT also held promotional events to provide information and receive feedback from commercial banks and related parties. The system is expected to be completed in July 2014.

Encouraging commercial banks to realize the importance of risk management was another task that the BOT focused effort to. Hence, a policy guideline on managing risks associated with the settlement of foreign exchange transactions was drafted, using the Basel Committee on Banking Supervision (BCBS)'s supervisory guidance as reference. The Guideline was later circulated among financial institutions on December 2013. In this connection, the BOT encouraged commercial banks to implement this Guideline to suit their foreign transaction volume, complexity and associated risk. The Guideline shall take effect on 1 January, 2015, onwards.

Box 7: Guideline on managing foreign exchange settlement risk

The continual increase in volume of cross-border trade and transactions has led to heightened foreign exchange settlement risk. Such risk is imminent when settlements are made at different times and could lead to potential exposures, loss of confidence, and even systemic risk to the overall payment systems.

The BOT has thus, formulated a guideline on managing risks associated with the settlement of foreign exchange transactions for commercial banks to apply in their foreign exchange business undertaking, using the Basel Committee on Banking Supervision (BCBS)' supervisory guidance as reference. Various areas of risk management are covered, encompassing the following seven key points.

1. Governance

Commercial banks should design a comprehensive risk management framework to cover all key risks related to foreign exchange business, namely principal risk, replacement cost risk, liquidity risk, operational risk and legal risk. The Board of Directors should be tasked with a responsibility in ensuring compliance with the risk management policy and procedure set in the framework.

2. Principal risk

Commercial banks should join the Financial Market Infrastructure (FMI) system with a foreign exchange settlement in a form of Payment versus Payment (PvP) in order to reduce principal risk. Nonetheless, in an event that a commercial bank is unable to settle through PvP, it should still define, measure, monitor and control principal risk, appropriately and sufficiently.

3. Replacement cost risk

Commercial banks should have a plan to reduce replacement cost by defining, measuring, monitoring and controlling replacement cost risk of foreign exchange transactions right from the moment of trade execution to settlement completion and account balance crediting or debiting.

Box 7: Guideline on managing foreign exchange settlement risk

4. Liquidity risk

Commercial banks should define, measure, monitor and control liquidity need as well as liquidity risk from foreign exchange transactions, currency by currency.

5. Operational risk

Commercial banks should define, measure, monitor and control operational risk appropriately. A risk management system should be in place to process foreign exchange transactions in an efficient manner, both in normal and emergency times.

6. Legal risk

Commercial banks should make certain that legal contracts and business agreements are fully enforceable. The scope of enforcement should span over all activities that a commercial bank must perform in order to complete a foreign exchange settlement.

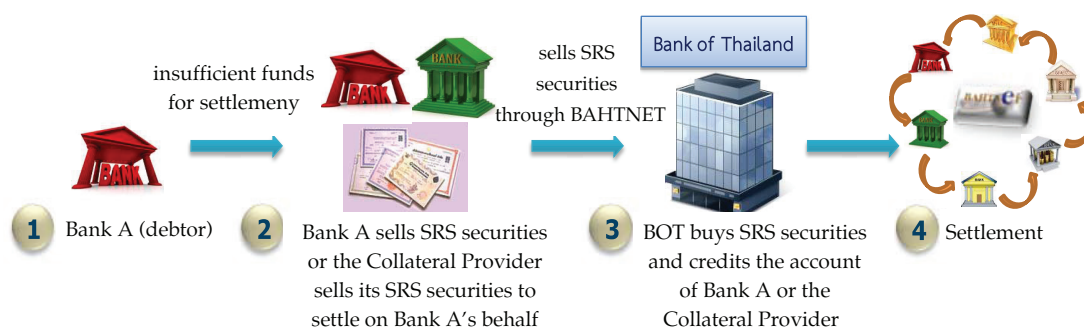
7. Capital for FX transactions

In calculating the amount of capital that commercial banks should hold, all risks associated with foreign exchange settlement, including principal risk and replacement cost risk, must be accounted for. Commercial banks should also make certain that the level of capital is sufficient to absorb potential loss exposures.

2.2 Risk Management of the BAHTNET

The BOT formulated measures to manage risks associated with multilateral net settlement through BAHTNET, known as the Securities Requirement for Settlement (SRS), to help reduce settlement risk in the payment systems those utilize net settlement in BAHTNET. The measure requires member banks to pledge collateral with the BOT to guarantee that settlement can be completed within the required timeframe, thereby preventing a potential systemic risk.

Figure 3: BAHTNET settlement process using the SRS



Source: Bank of Thailand

Since 2013, the BOT has been drafting a regulation and notifications as well as developing a system to support the SRS and making the necessary preparation and improvement of the work process. Discussions with related parties and financial institutions needing to adopt the SRS were also organized in order to fine-tune system development and ensure efficient implementation of the SRS. In this regard, the BOT plans to launch the SRS within the final quarter of 2014.

2.3 Principles for Financial Market Infrastructures (PFMI)

The BOT, under approval of the PSC, implemented the Principles for Financial Market Infrastructures (PFMI), announced by the Bank for International Settlements (BIS) in April 2012, to provide guidelines for Thailand's payment systems oversight. The BIS stipulated that oversight of all Systemically Important Payment Systems (SIPS) of a country should be conducted according to PFMI. There are 18 principles relating to the payment systems and 5 principles relating to roles and responsibilities of a central bank in payment systems oversight. For non-SIPS such as the retail payment system, appropriate oversight standards shall be considered and applied.

In 2013, the BOT conducted an assessment of the BAHTNET according to the PSC's announcement that the BAHTNET was to be considered as an SIP and oversight activities was to be conducted according to the PFMI. The self assessment reflected that operation and risk management of the BAHTNET was in line with PFMI overall, with no shortfalls to be addressed immediately. Nonetheless, to enhance BANTHET's efficiency and alignment with international standards, some adjustments were recommended, for example, expedition of payment finality laws to reduce legal risk and strengthening of cooperation with other FMI supervisory authorities such as the Securities and Exchange Commission Thailand (SEC) to facilitate regular policy dialogues.

Moreover, the BOT also prepared a self assessment guideline for Prominently Important Retail Payment Systems (PIRPS), using 14 relevant principles under the PFMI as reference. In this connection, the PSC authorized the BOT, operator of the ICAS, and the National ITMX Co., Ltd., operator of the Interbank Transactions Management Exchange (ITMX), to conduct self assessments and proceed with necessary adjustments in order to comply with international standards.

3. Payment services consumer protection

3.1 Payment service providers oversight

Given the rapid expansion in e-payment services, more complex payment systems technology, and the broadening range of bank and non-bank service providers, the BOT's payment systems oversight was thus designed to ensure soundness and reliability of e-payment service providers. At the same time, oversight measures were aimed at enhancing the business sector's competitiveness and the government sector's efficiency. Important oversight areas were as follows.

Oversight of e-payment

The BOT supervised e-payment service providers according to the Royal Decree on Regulating Electronic Payment Services B.E. 2551 (2008), under the Electronic Transactions Act B.E. 2544 (2001). According to the Royal Decree, there are three categories of supervisory standards, namely, List A for businesses that are required to make notification to the BOT, List B for businesses that are required to make registration with the BOT and List C for businesses that are required to acquire licenses before providing services.

In 2013, the BOT conducted the following oversight activities.

(1) Considered applications for List B licenses and proposed recommendations for licensing List C to the Electronic Transactions Commission (ETC) for approval. At the end of 2013, there were 9 List B service providers and 86 List C service providers including 30 banks and 56 non-banks. The total number of licenses issued was 121. There was still no List A service provider.

(2) Regulated and supervised e-payment service providers in complying with relevant Royal Decrees and Notifications and provided supervisory report and findings of non-compliance to the ETC on a regular basis.

(3) Revised rules, procedures and conditions in providing e-payment services with the aim to make them better aligned with the current economic environment as well as changes in business models. Examples included revision of regulation concerning risk of e-payment business size and type, determination of payment agent regulation and revision to reporting rules and format. These amendments were already approved in principle by the sub committee on legal policy and the sub committee on the supervision of electronic transaction and e-government service. Related Notifications were also drafted and submitted to the relevant sub committees for consideration. Once approved, a hearing would be organized to receive comments from stakeholders prior to final adjustment and submission to the ETC for authorization.

(4) Drafted the Royal Decree under the Electronic Transactions Act B.E. 2544 (2001) on the supervision of e-payment services provided by Specialized Financial Institutions (SFIs) as tasked by the ETC. The Fiscal Policy Office (FPO) was also consulted in the process and the draft was submitted to the Minister of Information and Communication Technology for consideration.

Oversight of e-money service providers

The BOT conducted oversight activities on non-bank e-money service providers according to the Ministry of Finance's Notification on Business that Requires a Permit According to Section 5 of the Notification of the Revolution Council NO. 58 (e-money businesses) dated 4 October 2004. In 2013, the number of non-bank e-payment service providers was 8, unchanged from 2012.

The BOT also supervised e-money service providers according to the Royal Decree on Regulating Electronic Payment Services B.E. 2551 (2008), under the Electronic Transactions Act B.E. 2544 (2001). In 2013, there were 6 e-money service providers under List B and 15 e-money service providers under List C.

Furthermore, this year, the BOT also proceeded to improve rules, procedures and conditions on e-money to better reflect changes in the business environment, enhance efficiency of risk management, and align with the Royal Decree on Regulating Electronic Payment Services B.E. 2551 (2008). At present, the BOT is in the process of amending the relevant Ministerial Notifications to be submitted for approval by the Ministry of Finance.

Finally, the BOT also closely monitored new payment innovations in order to assess potential risks that could affect consumers. In this regard, the BOT provided announcement to inform stakeholders of new developments, for example, virtual money (e.g. Bitcoin) and its associated risk.

Box 8: Bitcoin

Bitcoin is a type of electronic data, developed by a group of people, using a computerized technology, for usage as a medium of exchange. Bitcoin is stored in a “Wallet” application while a Bitcoin address is created on a laptop or smartphone. The Wallet can be used to transfer Bitcoin. Recently, Bitcoin has been used for payment of goods and services, particularly those purchased over the internet, as well as for currency exchange where the exchange rates are set by a group of people who are equipped with a computerized system to support Bitcoin storage and transfer.

Apart from Bitcoin, there are other types of electronic data with similar properties but using different names, for example, Litecoin, Peercoin, and Namecoin.

Risks from Bitcoin

Most central banks consider that Bitcoin and other similar electronic data is not a legal tender. It has no intrinsic value and the trading value varies according solely to the demanding and supplying of the investors. Thus, Bitcoin value is highly volatile and can become worthless anytime when there is no longer a demand. As such, the following risks can arise:

1) The value is highly volatile because it is dictated purely by users' demand irrespective of actual economic conditions.

2) Data theft is common since electronic data must be stored on a computer, thus, users can easily lose such data through theft or equipment damage.

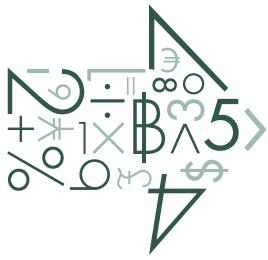
3) Absence of consumer protection can be a problem since Bitcoin is not considered a legal medium of exchange. Therefore, should a user encounter fraud or any problem in usage (e.g. incorrect transfer and non-delivery of promised goods and services), enforcement of legal actions can be difficult. This is not a problem for transfers through commercial banks or authorized service providers can be tracked, systematic data monitoring and money collection channels are in place.

3.2 Knowledge dissemination and promotion of e-payment to the public and private sectors

In 2013, the BOT organized talks and disseminated knowledge on e-payment along with its do's and don't's to various users, for example, school students, university students and the general public. Different types of activities were arranged, including the nation-wide Teachers' Education Program, the Money Expo 2013 and the BOT Challenge and Experience. Knowledge dissemination was also carried out through printed and electronic publications, for example, educational columns in magazines and newspapers, radio and TV interviews of BOT executives, BOT website and the Financial Consumer Protection Center's Facebook.

3.3 Consumer protection mechanism

This year, the BOT reviewed existing consumer protection measures for electronic card payment and conducted a comparative cross-country study of international consumer protection measures. Subsequently, the guideline for e-money Consumer Protection Measures was drafted to serve as a common standard for both bank and non-bank e-money service providers, which would help increase consumer confidence. The guideline would later be circulated to concerned parties for implementation.

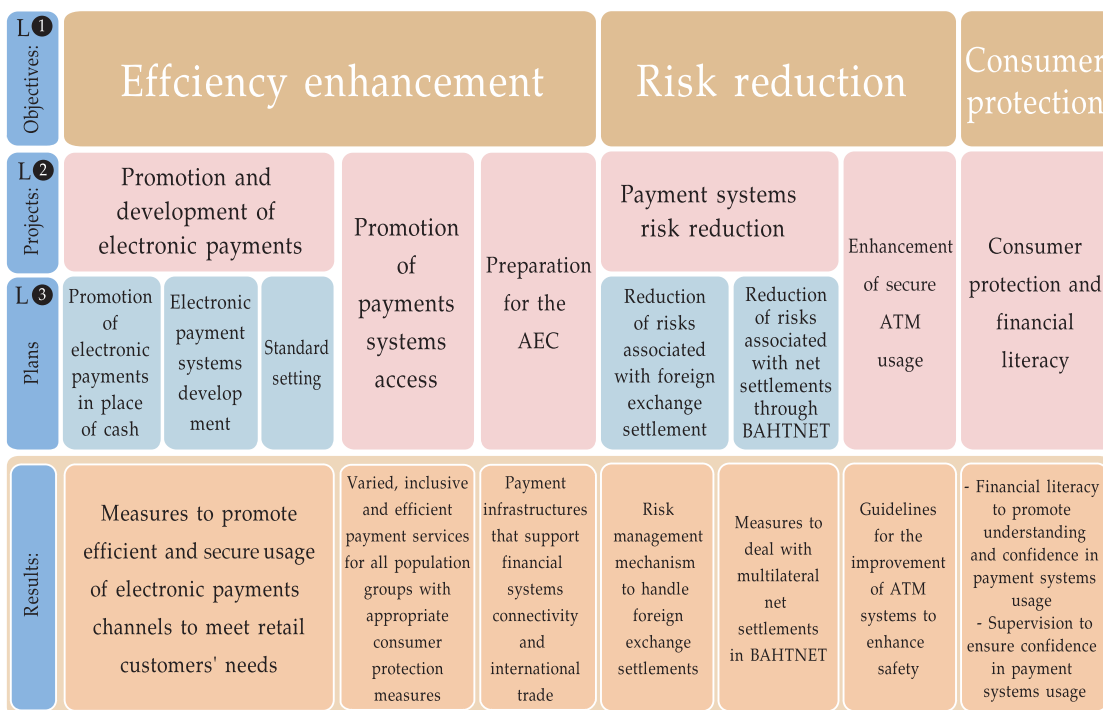


II Review of Payment Systems Roadmap 2012 - 2016

On 4 November 2011, the PSC gave its approval for the Payment Systems Roadmap 2012 – 2016 along with its work plans, to be used as a framework for payment systems development during 2012 – 2016. The Roadmap aims at making Thailand’s payment systems supportive of efficient, stable and safe economic activities of the public and private sectors, both domestically and internationally. Three key objectives are included in the Roadmap, namely efficiency enhancement, risk reduction and consumer protection.

Figure 4: Payment Systems Roadmap 2012 - 2016

Vision: Making payment systems support efficient, stable and secure economic activities of the public and private sectors, both domestically and internationally



as of 4 November 2012

Source: Bank of Thailand

The PSC also tasked the BOT with the responsibility in monitoring and assessing development in various aspects of the environment that could affect implementation of the Roadmap. The assessment is performed on an annual basis, with results submitted to the PSC for appropriate revisions to the Roadmap.

1. Key developments in Thailand's payment systems during 2012 – 2013

Key developments and trends that significantly affected Thailand's payment systems during 2012 – 2013 were 1) customer behavior; 2) service provider's business development; 3) new challenges; and 4) roles of public and private stakeholders. Details are as follows.

1.1 Customer behavior

There was an increasing trend in e-payment usage by customers, including retail, business and large institution customers. Branchless channels became more popular, especially in urban areas. Thanks to the increase in internet and mobile phone subscribers, reduction in prices of smartphones, and greater familiarity and acceptance of e-commerce, as reflected by higher growth in this line of business. Social media such as Facebook, Line and Twitter also became more commonly used. This behavioral change was in line with the international trend where consumers switched to use e-payment as a primary payment channel. For example, in Hong Kong, 90 percent of daily financial transactions are being conducted through ATMs, call centers, mobile phones and the internet. Meanwhile, in the United States, it was projected that the primary payment channel in 2016 would be mobile phones, with approximately 20 – 30 transactions/month while branch visits would reduce to only 1 – 2 times/year.

For Thailand, however, despite the increasing trend in retail e-payment, the total volume continued to be small compared to cash. The proportion of e-payment transactions per capita in Thailand remained less than developed and peer countries such as Malaysia and Singapore. Moreover, customers in the rural parts of the country still faced with restrictions in financial access, in terms of travel distance to the nearest branch as well as knowledge on electronic finance, including usage of ATMs or internet banking. As a result, rural customers still preferred to use services from community financial institutions or individuals who offer payment services by making internet transfers from their own account and charging fees from customers.

As for institutional or business customers, there was an increasing trend in e-payment usage. Retailers offered more options for customers to make e-payment, including Mobile Point of Sale (MPOS), EFTPOS, e-commerce and e-wallet. Large institutional customers also began to recognize the importance of e-business⁸ in order to facilitate connectivity between parties, enhance business efficiency, and reduce time and cost of operation.

The public sector also gave its support to e-payment by establishing clear e-payment and e-document implementation plans. Notable examples included the Revenue Department which started using e-tax invoices instead of issuing paper receipts in 2012, the Office of Transport and Traffic Policy and Planning, Ministry of Transport, which continued to work on developing a common ticket that could be used as e-money for payment of both fares as well as goods and services, the Comptroller General's Department, which planned to implement the Electronic Government Procurement system (eGP) and revise concerned measures to promote greater usage of e-payment amongst government offices, and the Ministry of Information and Communication Technology, which established the Government Data Center and planned to allow usage of smart cards (ID cards) for transactions with government offices as well as financial transactions.

1.2 Service provider's business development

Payment systems service providers began to take more interest in mobile payment while the search to increase financial access opportunities for rural customers continued. Details are as follows.

Commercial banks, key developments included:

1) Financial services through mobile applications on smartphones were launched by all large commercial banks. A number of commercial banks also offered MPOS services, reflecting the fact that mobile banking service was aimed mainly at urban customers with access to the internet.

2) Many commercial banks began to expand their services to rural areas by utilizing services of non-bank agents such as Thailand Post Co. Ltd., convenient stores, and mobile phone outlets, in order to utilize their existing community networks.

3) Pricing strategy was used by many commercial banks to compete for customers. Examples included fee waiver for inter-provincial transactions and fee waiver for withdrawal and balance enquiry at all ATMs nation-wide.

⁸e-business refers to business transactions that are conducted through electronic channels, computers, IT communication and the internet, to enhance the efficiency of business process, satisfy customers' needs in a fast and effective manner, reduce cost, and expand business opportunities.

4) Commercial banks' income from payment service fees increased continually, thanks to higher usage of e-payment. The trend would likely continue if commercial banks could expand customer base further. In this regard, international studies showed that the proportion of payment service fee income for banks in developed countries reached approximately 30 – 40 percent of total income. For Thailand, this proportion was at 10 percent during 2010 – 2012.

Specialized Financial Institutions (SFIs), particularly the Bank for Agriculture and Agricultural Cooperatives (BAAC) and the Government Savings Bank (GSB), were continually active in offering services to rural customers, especially through community financial institutions and farmers credit cards. Both banks also planned to provide more internet banking and mobile banking to their customers. In this regard, the BAAC was in the process of developing an internet banking and mobile banking system together with offering service via an agent so that a community financial institution or local business could make transfers, payments, deposits, and withdrawals on behalf of customers. Meanwhile, the GSB planned to introduce mobile banking service to complement its micro-finance operation.

For non-bank e-payment service providers, important service providers included e-money service providers, which were subsidiaries of telecommunication companies. In this period, many of these service providers began to offer e-payment through smartphones to allow customers to make transfers or bill payments more conveniently. Discussions with commercial banks were also arranged to find ways to join efforts on agent banking since these companies recognized an opportunity to utilize their extensive network of mobile outlets for this operation. Thailand Post Co. Ltd., another payment service provider with an extensive network of branches and postmen, also planned to expand payment services to rural customers. In this regard, Thailand Post introduced a service called "Post@Home" which offered money transfer right at the customers' homes. Post@Home was already used to deliver payment to volunteers in the Village Health Volunteer Potential Development project and accept payment for utility bills from customers in four pilot provinces, namely Lopburi, Phang Nga, Chiang Mai and Roi Et. Discussions with the Ministry of Interior are now being held in order to make this service available for home delivery of senior pensions.

At the same time, international payment service providers, for example, Paypal, Google, Facebook and Square⁹ also stepped up their role in the retail market and became important competitors of commercial banks. Electronic card services by Visa and MasterCard also began to experience pressure from competitors in China, India and Brazil, who offered lower fees and were gradually expanding their customer base to international markets. The e-wallet market was also on the rise while MPOS was expected to replace EFTPOS soon due to its cheaper card receiver terminals and compatibility with smartphones and tablets.

⁹Manufacturers of debit card and credit EFTPOS terminal, operated through mobile phones

1.3 New challenges

Technological changes and threats which could potentially affect e-payment services and thus commanded interest from domestic and international supervisory authorities included the followings.

Payment fraud became a significant threat that deterred users from using e-payment. Types of fraud included identity theft where data was used to make electronic withdrawals inside and outside the country, attack via call center phone lines where victims were lured to make transfers over ATMs, phishing where data such as account password was stolen over the internet, and installation of a Trojan or Malware on mobile phones where key data or One Time Password (OTP) was transmitted to a thief's mobile phone.

Although the amount of damages from the above types of fraud was not high, news about their occurrences led to deterioration in confidence which was the main reason against e-payment usage. Thus, it would be crucial for authorities to find ways to resolve as well as prevent these types of fraud from occurring. During this period, commercial banks strived to regularly provide financial knowledge to customers in order to strengthen their knowledge on risk prevention together with build confidence in the services' security measures.

There were several **new payment products that came with modern innovation**, for example, Bitcoin, a virtual currency with no economic tie to any legal currency in terms of value. Nonetheless, this virtual currency was accepted for payment for goods and services by some groups of people. E-money, provided by well-known websites such as Amazon coins and Facebook credits was another example. Though the use of this type of e-money was restricted to certain goods (single purpose), the number of users already started to climb quite significantly. Moreover, these new types of payment still lacked clarity regarding supervisory standards in many countries where most countries only directed efforts to monitoring potential risk. Thus, e-money oversight continued to be an issue which authorities must find a suitable balance between innovation promotion and maintenance of security standards.

1.4 Roles of public and private stakeholders

In many countries, public and private organizations that resulted from collaboration between payment service providers began to step up e-payment promotion and development of payment systems infrastructure. Examples of key developments on this front are summarized as follows.

Public sector

Public sectors in many countries began to develop payment systems infrastructure and formulate rules for payment systems oversight, including:

1) Promotion of e-payment usage by developing infrastructure to stimulate new innovations that could enhance the efficiency of electronic transfers, for example, the Faster Payment system in the United Kingdom, the Real-time Retail Payment system in Australia, and cheque scanning technology for mobile phones, e-cheque, and Electronic Bill Presentation and Payment (EBPP) system in Hong Kong. Moreover, some countries resorted to the use of pricing strategy to stimulate e-payment. In Malaysia, for example, e-payment service fee was reduced while cheque usage fee was hiked. Meanwhile, in the euro area, a ceiling for interchange fee for debit card and credit card usage was implemented.

2) Supervision of service providers by issuing regulations to prevent risk associated with new technology, for example, guidelines on Mobile Payment/Near Field Communication (NFC) services in Hong Kong and the euro area.

Private sector

Private sectors in many countries were encouraged to strengthen their roles in formulating policy recommendations and developing payment systems infrastructure, for example:

1) Establishment of the Australian Payments Council (APC), comprising key service providers in Australia, to study and make recommendations on the direction of payment systems development to the Reserve Bank of Australia (RBA).

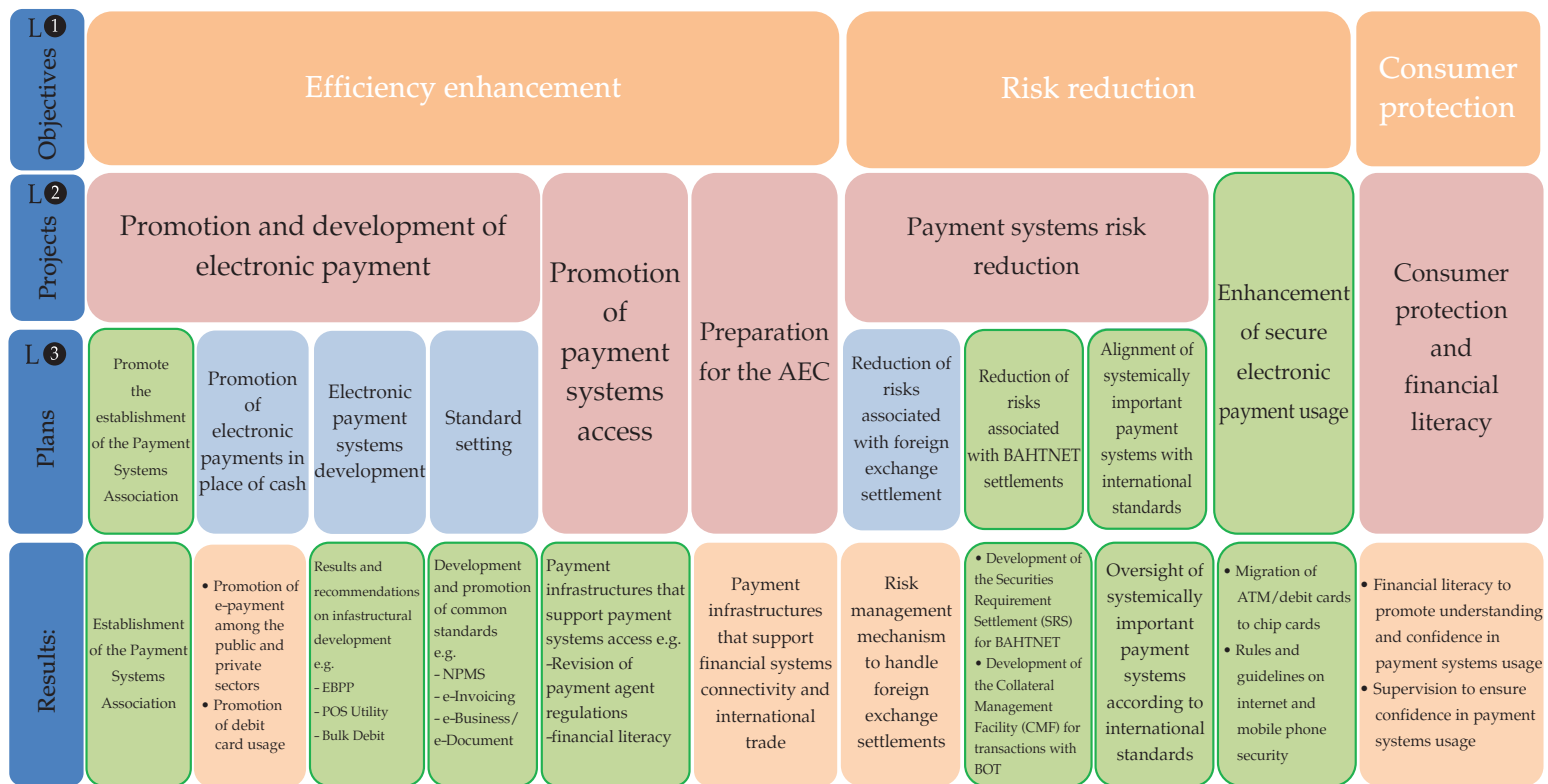
2) Launch of the White Label ATM project by Malaysian Electronic Payment System (MEPS), the operator of Malaysia's ATM Pool, under which MEPS would install ATM terminals for member banks to use. The initiative would reduce installation cost faced by member banks and expand the ATM network to remote areas. At the end of 2013, the total number of ATMs installed by MEPS reached 200 terminals. A target of 1,580 terminals was planned over the next five years.

3) Cooperation of telecommunication service providers in Indonesia in improving operations to facilitate interoperability. As such, since May 2013, it became possible for an e-money customer to transfer funds across a particular network to a receiver who used a different telecommunication network.

2. Revisions to the Payment Systems Roadmap 2012 - 2016

From the above review of Thailand's payment systems environment in terms of access, infrastructure, efficiency and key developments, on 6 May 2014, the PSC assessed that it was necessary to revise the Payment Systems Roadmap 2012 – 2016 to better suit the new environment. Details are as follows.

Figure 5: Revisions to the Payment Systems Roadmap 2012 - 2016



■ New or revised plans

as of 6 May 2014

Source: Bank of Thailand

2.1 Revisions on efficiency enhancement

Work plan on efficiency enhancement was revised as follows.

Promotion and development of electronic payment plans for 2012 onwards were supplemented with more details, most of which were plans that BOT in collaboration with the Comptroller General's Department and relevant working groups were already working on, including:

1) Establishment of the Payment Systems Association, a private institution that comprises payment systems stakeholders. The Association would be responsible for studying and monitoring new innovation and changes of payment systems environment in order to formulate recommendations on policy and direction for payment systems development. Expedition of payment systems infrastructural development would also be under the Association's purview.

2) Promotion of electronic payments in place of cash, namely promotion of e-payment amongst public and private sectors. For the public sector, the BOT cooperated with the Comptroller General's Department to revise related regulations in order to facilitate more convenient electronic funds transfer. The scope of e-payment promotion would be expanded to include government departments with high volume of payment transactions. Existing products such as credit cards would continue to be promoted through various incentive schemes, for example, tax and fee incentives.

3) Electronic payment systems development through conducting a feasibility study of various areas of infrastructure development that would enhance efficiency and convenience of service as well as reduce operating cost for service providers. Examples included the Electronic Bill Presentation and Payment (EBPP) system, the POS Utility, an increase in installation of EFTPOS terminals and an interbank funds transfer system that could serve customers' needs more conveniently.

4) Standard setting, encompassing development of national standards such as the National Payment Message Standard and the e-invoicing standard, as well as collaboration with related parties such as the Revenue Department, the Customs Department and the Electronic Transactions Development Agency, to promote an e-business approach that is holistic in nature, covering initial contact, sales, payment and delivery of e-document, amongst public and private sectors.

Promotion of payment systems access plans were amended to better align with the environment. The former plan to promote mobile banking and payment was refocused to infrastructure development to facilitate payment systems access, particularly, access through an agent, which became increasingly popular among banks, non-banks and SFIs. In this regard, the BOT would emphasize on making appropriate regulatory revisions to promote service reliability, especially on oversight of agent banking service providers. The BOT would also provide financial knowledge to payment systems users to enhance understanding and confidence, and monitor business models of different groups of service providers in order to assess the need for further regulatory revisions.

2.2 Revisions on risk reduction

Work plan on risk reduction was revised as follows.

Reduction of risks associated with BAHTNET settlement plans were expanded from including only net settlement issues to covering financial institutions' management of overall settlement risk in relation to the Collateral Management Facility (CMF) for transactions conducted with the BOT. This new focus on overall settlement risk spans over the Intraday Liquidity Facility (ILF), bond repurchase/resale, and the Securities Requirement Settlement (SRS) for multi-party net settlement through the BAHTNET.

Alignment of Systemically Important Payment Systems (SIPS) with international standards plans were included to lay down work on oversight of SIPS according to the Principles for Financial Market Infrastructures (PFMI), which commenced in 2013, including:

1) Oversight of payment systems under BOT's operation, namely the BAHTNET and the ICAS. Activities included formulation of policy and guidelines for oversight activities by BOT departments that are in charge of system operation and those that are responsible for oversight, system assessment for compliance with the PFMI, efficiency enhancement, Business Continuity Management (BCM), and other activities to support compliance with the PFMI.

2) Coordination with authorizes that are tasked with oversight activities of other payment systems infrastructures, including the SEC, which is in charge of securities settlement and delivery, in order to ensure that risk management of SIPS are well aligned and consistent with the principle of cooperative oversight as stipulated by the PFMI.

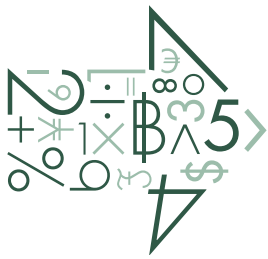
3) Oversight of Prominently Important Retail Payments Systems (PIRPS) operated by the private sector, for example, the ITMX, according to the PFMI. Activities included annual assessment of the level of importance of various retail payments systems, self assessment of PIRPS by their respective operators, submission of self assessment results to the BOT, and assessment by the BOT.

Enhancement of safe electronic payment usage plans were expanded from focusing only on safety in ATM usage to safety in all usages of electronic payments, in line with the increasing popularity of internet banking and mobile banking. Activities included formulation of rules and guidelines for security measures for internet banking and mobile banking, supervision of service providers, and monitoring of new innovations and challenges that could potentially affect users in order to formulate appropriate support measures.

2.3 Revisions on consumer protection

Plans were changed to include events to promote financial literacy amongst the general public, school students and university students through various channels including articles, interviews and activities conducted by the Financial Consumer Protection Center and BOT regional offices. Selected topics for each target group would vary according to the requirement and suitability in each time period.

Moreover, the BOT would issue the guideline on electronic payment consumer protection and strengthen the effort to supervise service providers by focusing on areas pertaining to consumer protection in order to ensure that practices would be in line with regulations and conditions pre-announced to service users.



III Data and statistics in payment systems

The PSC monitored important trends and development in payment systems in order to formulate payment systems policy that would ensure efficiency, security and stability, thereby leading to consumer confidence. In this connection, data and statistics in payment systems played a crucial role in reflecting key changes in Thailand's payment systems that would lead to more effective policy deliberation.

In 2013, the Thai economy slowed down as a result of various domestic and external factors and led to a slower growth in payment transactions through various channels and instruments. In particular, cheque usage, which was the business sector's main payment instrument, declined significantly, in terms of volume and value. Nonetheless, electronic payments, transactions through smartphones and tablets, and internet payment continued to grow owing to the convenience offered along with higher users' familiarity and confidence in the security measures. More service providers also began to offer services through these instruments. Overall, in 2013, despite slowdowns in transactions via other payment channels, remarkable growth rates were still registered for internet banking and mobile banking.

1. Payment infrastructure development

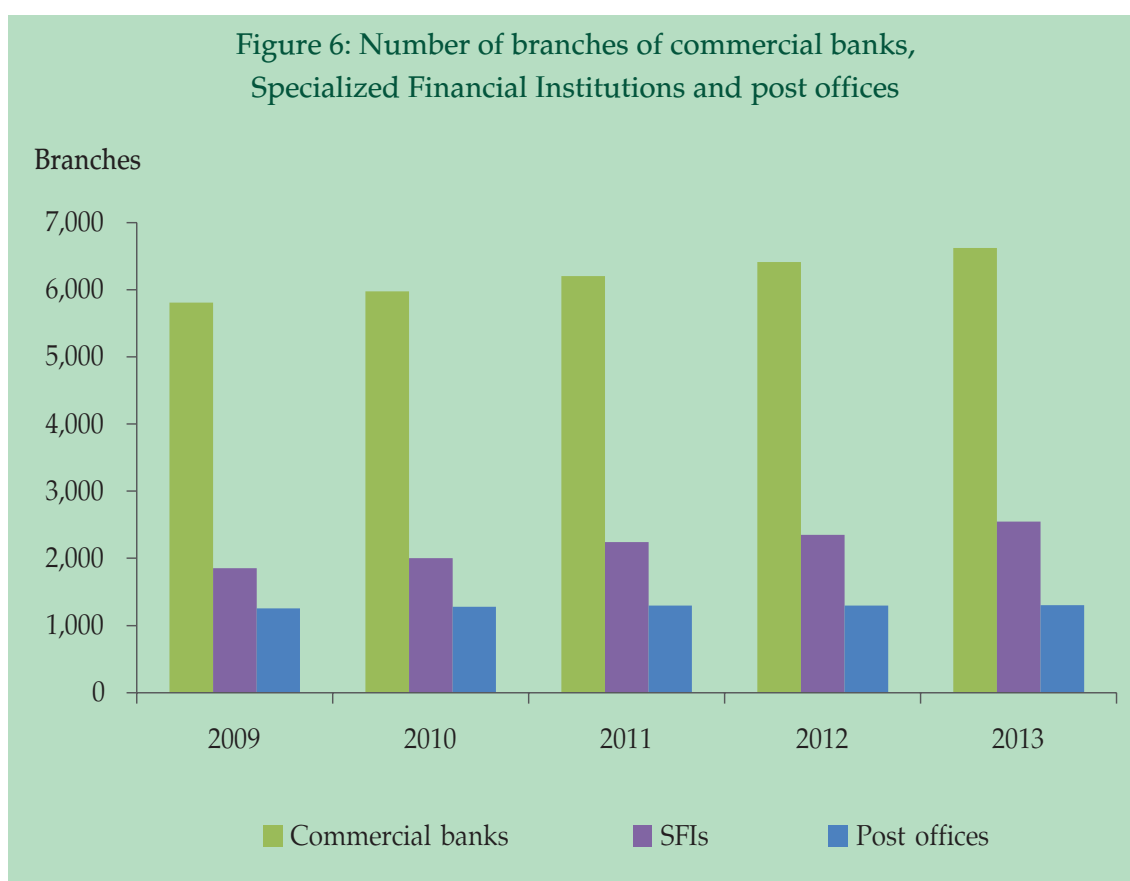
In 2013, key payment infrastructures, comprising bank and non-bank branches, the internet, mobile phones, ATMs and CDMs, and EFTPOS terminals, continued to expand from the previous year, particularly mobile phones which registered a significant growth. In this regard, the number of mobile phone subscribers was 1.4 numbers per person.

These payment infrastructures helped deliver payment systems services that were efficient, convenient and fast, thereby enabling people in all areas to access payment services or electronic banking services more conveniently. Customers could deposit, withdraw and make payment for goods and services by themselves at any time without being restricted by opening hours of branches.

1.1 Branches of commercial banks, Specialized Financial Institutions, and post offices

In 2013, branches of commercial banks, SFIs and post offices continued to increase from the previous year. The numbers of branches of these service providers were as follows.

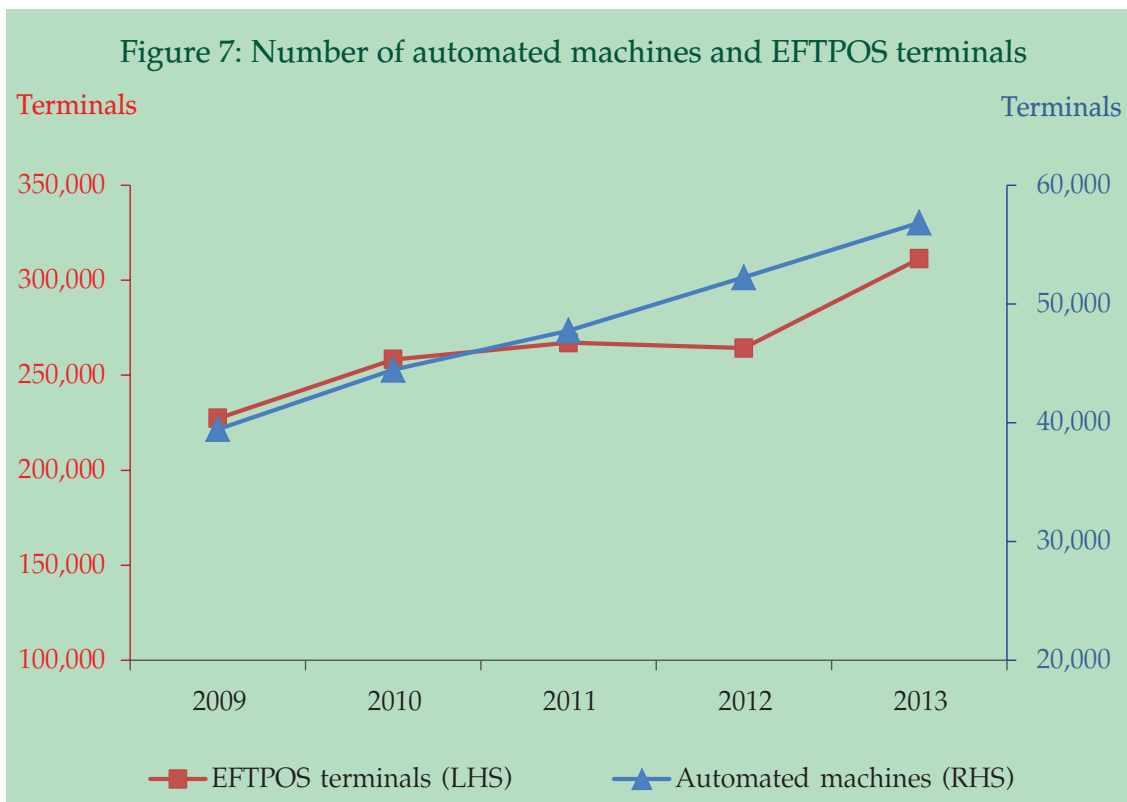
- Branches of commercial banks stood at 6,620 branches, increasing by 210 branches from the previous years. Of these, there were 6,601 Thai commercial bank branches and 19 foreign bank branches. All of the increase owed to Thai commercial bank branches.
- Branches of SFIs stood at 2,549 branches, increasing by 201 branches.
- Branches of post offices stood at 1,303 branches, increasing only by 5 branches.



Source: Bank of Thailand

1.2 Automated machines and EFTPOS terminals

At the end of 2013, there were 56,851 automated machines which included ATM and CDM terminals altogether, increasing by 8.8 percent from the previous year. The number of EFTPOS terminals stood at 311,289 terminals, increasing by 17.8 percent from the previous year with most of the increase coming from two-in-one (magnetic stripe and chip contact) terminals. Moreover, this year, there was also an increase in MPOS¹⁰ card receiver terminals while the older Zip Zap¹¹ terminals that were previously used as back-up terminals decreased from 29,440 terminals to 21,110 terminals.

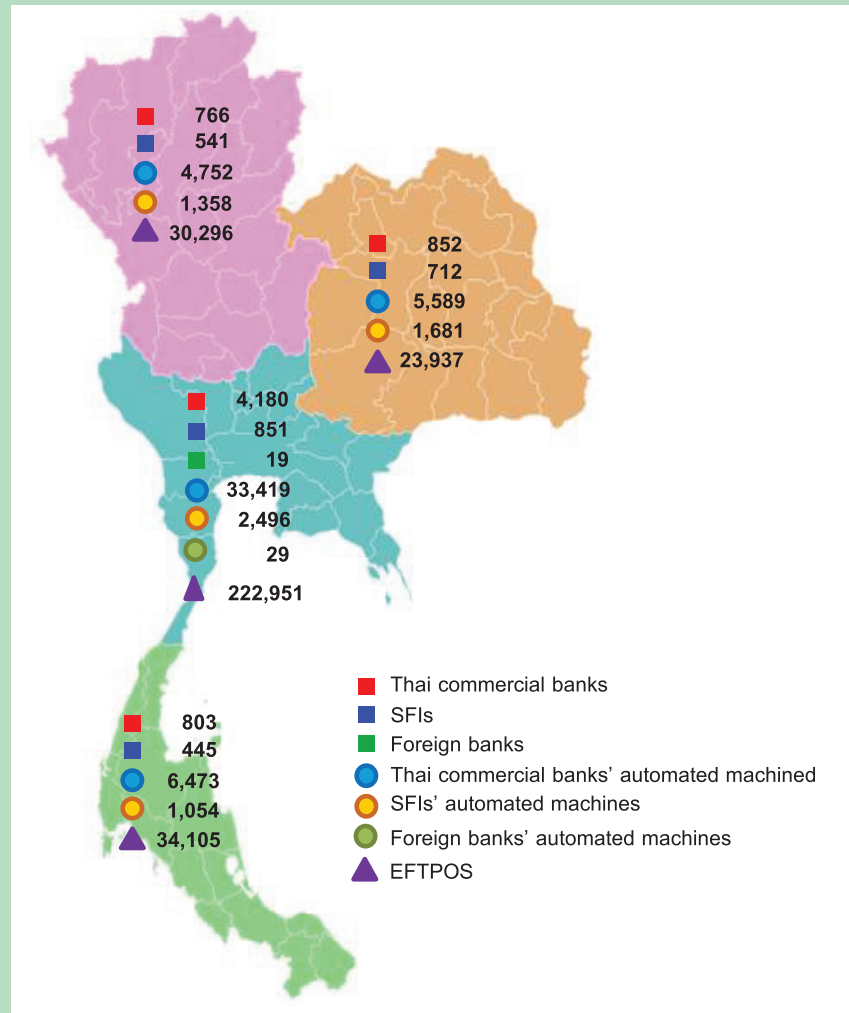


Source: Bank of Thailand

¹⁰ Mobile Point Of Sale or MPOS terminals are portable devices that have been developed for usage with smartphones or tablets to process debit card and credit card transactions anywhere with the internet.

¹¹ Credit card terminals with the Imprinter or Zip Zap technology are not directly connected to the credit card network. When merchants want to use these terminals, the credit card would be placed underneath a carbon paper receipt so that when the card is swiped, the credit card numbers could be recorded on the paper. Normally, banks or merchants would set the maximum authorization limits themselves and these could vary among merchants. However, if a particular payment exceeds the pre-authorized amount, the merchant would need to contact the bank or credit card terminal issuer to ask for approval.

Figure 8: Distribution of financial institutions' branches, automated machines and EFTPOS terminals by region

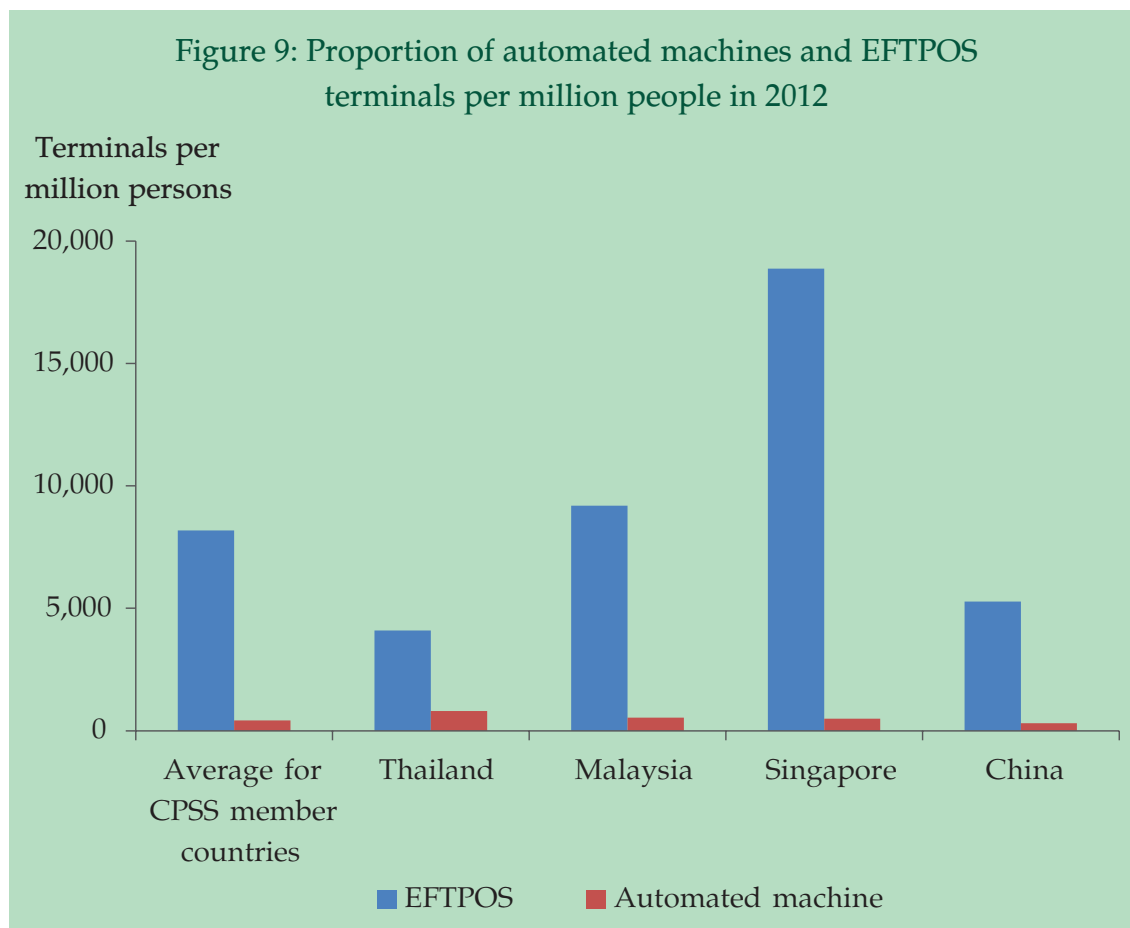


Source: Bank of Thailand

In 2013, in terms of regional distribution, the number of branches of Thai commercial banks, foreign banks and SFIs in the northern, north-eastern, and southern parts of the country increased only marginally and stood similarly at 1,307, 1,564 and 1,248 branches, respectively. The central part of the country including Bangkok and vicinities had the highest number of branches at 5,050 branches, or 55 percent of the total number of branches, which stood at 9,169 branches. Moreover, the number of automated machines and EFTPOS terminals increased for all regions and followed a similar pattern to branches, with the central part of the country including Bangkok and vicinities having the highest number of automated machines of 35,944 terminals or 63 percent of the total number of terminals, which stood at 56,851 terminals. The number of EFTPOS terminals in the central part of the country including Bangkok and vicinities was also the highest at 222,951 terminals or 72 percent of the total number of terminals of 311,289 terminals.

In 2012, Thailand’s ratio of automated machines per one million persons stood at 810, higher than CPSS¹² countries which had an average ratio of 415. In this regard, Thailand’s ratio of automated machines per one million persons was also higher than Singapore, China and Malaysia. For 2013, the ratio continued to rise for Thailand to register at 877. However, Thailand’s ratio of EFTPOS terminals per one million persons stood at 4,099 terminals, lower than CPSS countries’ average and Malaysia by about half and lower than Singapore by five times.

From above statistical comparisons, it was evident that electronic card payment was still not a popular choice amongst Thai consumers and retailers. Nonetheless, a slight improvement in this trend was noted whereby the number of EFTPOS terminals in 2013 grew by 17.8 percent from the previous year.



Sources: BIS (2013) Statistics on payment and settlement systems in the CPSS countries, the World Bank: World development indicators, Bank of Negara Malaysia and Bank of Thailand

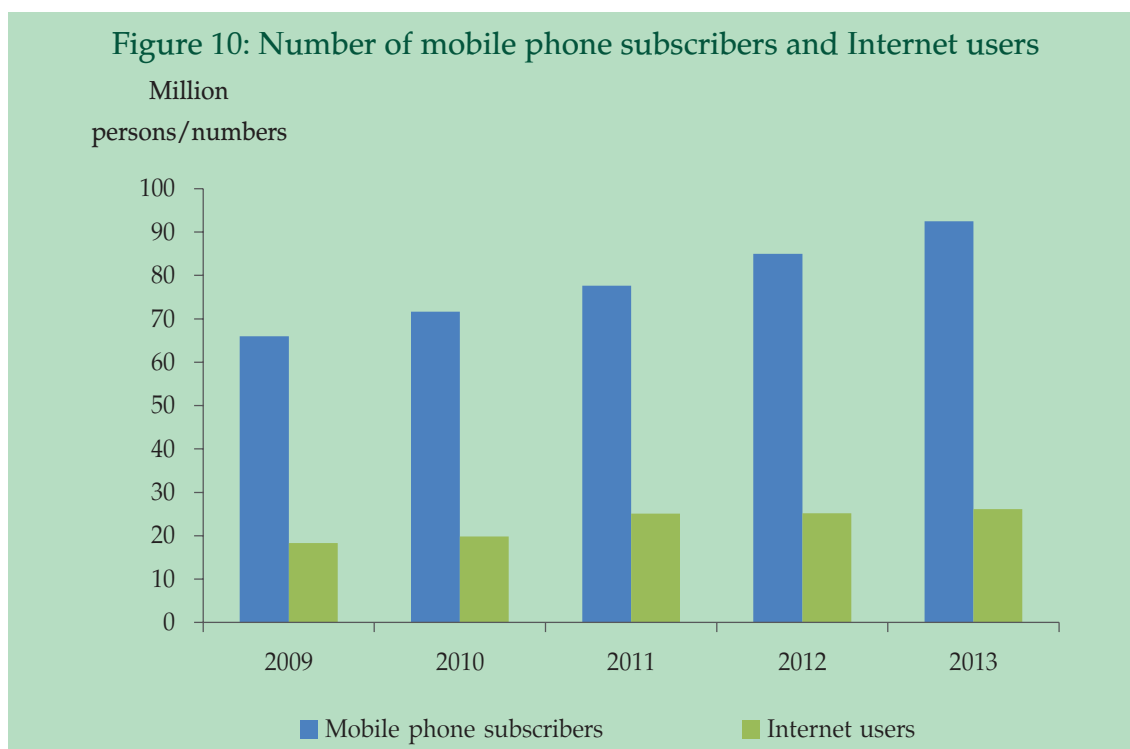
¹²The Committee on Payment and Settlement Systems (CPSS) was established by the Bank for International Settlement (BIS) to monitor payment systems development in member countries as well as international linkages. A working group was established to study and present various data and statistics of 23 member countries including Australia, Belgium, Brazil, Canada, China, France, Germany, Hong Kong SAR, India, Italy, Japan, Korea, Mexico, Netherlands, Russia, Saudi Arabia, Singapore, South Africa, Sweden, Switzerland, Turkey, United Kingdom and United States.

1.3 Subscribers of mobile phones and Internet users

At the end of 2013, the number of mobile phone subscribers stood at 92.5 million numbers, equivalent to 142.7 percent of the population. In other words, one person has more than one mobile number. This represented an increase of 8.8 percent or 7.5 million numbers from the previous year. Such a trend reflected that modern functions and types of mobile phones were able to respond to customers' needs at every level. In addition to making and receiving calls and texting messages, customers now used mobile phones to search for information and make e-payment. Prices also became more affordable. As a result, popularity of mobile phone usage continued to be maintained. Most subscribers, equivalent to 80.8 million numbers or 87.4 percent of all subscribers, remained with pre-paid service. This represented an increase of 7.4 percent or 75.2 million numbers from the previous years.

Meanwhile, internet users at the end of 2013 stood at 26.1 million persons, increasing slightly by 100,000 persons or 3.9 percent. The number of internet users in Bangkok and vicinities was the highest amongst all regions, accounting for 68.2 percent of all internet users. The southern part of the country had the second highest level of usage or 52.4¹³ percent of all internet users.

The observed trend of increasing mobile phone and internet usage had a positive influence on the utilization rate of electronic payment. In this regard, the total number of mobile banking account grew from 864,312 accounts in 2012 to 1,164,796 accounts this year, equivalent to a 34.8 percent increase. Similarly, the number of internet banking accounts jumped from 6,645,161 accounts in 2012 to 8,033,061 accounts this year, equivalent to a 20.9 percent increase.



Source: Office of the National Broadcasting and Telecommunications Commission (NBTC) and National Electronics and Computer Technology Center (NECTEC)

¹³ A survey on telecommunication usage of Thai population during 2012 – 2013 conducted by the Office of the National Broadcasting and Telecommunications Commission

2. Major channels and payment instruments

Summary of 2013

The softening of the economy during the latter part of 2013 led to a slowdown in the volume and value of payment transactions through various channels and instruments. Growth rate of cheque and electronic payment usage declined to less than the average rate observed during the past five years. Nonetheless, usage of electronic cards, for example, ATM, debit and credit cards, continued to grow at a rate higher than the record over the past five years. In terms of transaction value, however, growth registered at only 8.5 percent, which was less than the average of 14.3 percent observed during the last five years.

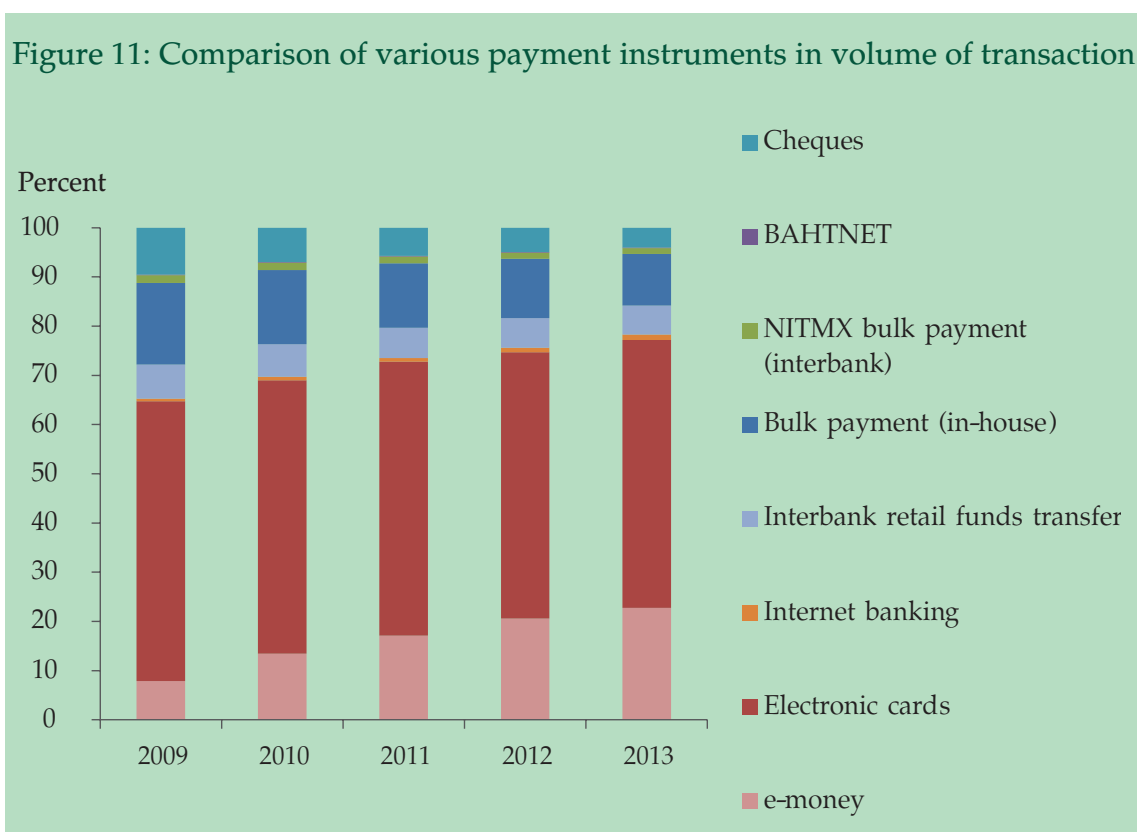
Overall, payment transactions followed the trend and objective of the PSC to enhance payment systems efficiency whereby utilization of e-payment channels, including high-value funds transfer, bulk payment, retail funds transfer, electronic card, and e-money, increased by more than cheque usage, both in volume and value.

Table 2: Payment transactions via different payment systems in 2013

	Volume	Value	Average per transaction	Growth		Cumulative Annual growth rate (CAGR) over 5 years (2009 - 2013)	
	(thousands)	(billion baht)	(baht)	Volume (%)	Value (%)	Volume (%)	Value (%)
Cheque	118,365	64,581	545,609	-3.8	-0.4	-1.0	3.6
High-value funds transfer	3,253	679,723	208,952,659	10.4	4.7	12.9	8.5
Bulk Payment	343,157	19,253	56,106	4.2	9.9	9.9	8.8
Retail transfer ¹⁾	625,177	30,054	48,073	15.3	22.5	18.8	23.8
Electronic card ²⁾	931,936	6,862	7,363	12.0	8.5	9.5	14.3
E-Money	669,211	48	72	30.6	35.8	57.2	44.8

- 1) Include interbank Online Retail funds transfer and intrabank funds transfer (including payment for goods and services) via Automated machine, internet, mobile phones and branches of commercial banks
- 2) For example, ATM, debit and credit cards for payment for goods and services and transfers (not including ATM withdrawals)

A comparison of different types of payment channels revealed that the proportion of cheque usage shrank quite notably, decreasing from 5.0 percent in 2012 to 4.0 percent this year. Meanwhile, the proportion of e-money and internet banking rose from 20.6 and 0.9 percent in 2012 to 22.7 and 1.1 percent in 2013. Such trends were expected to continue in the next periods thanks to service providers' promotional campaigns, technological development and expansion of internet network coverage which would enable wider, more convenient and more affordable access to these services. Utilization of other payment channels did not change much from the previous year whereby the proportion of electronic cards remained highest at 54.4 percent of total transaction volume.



Source: Bank of Thailand

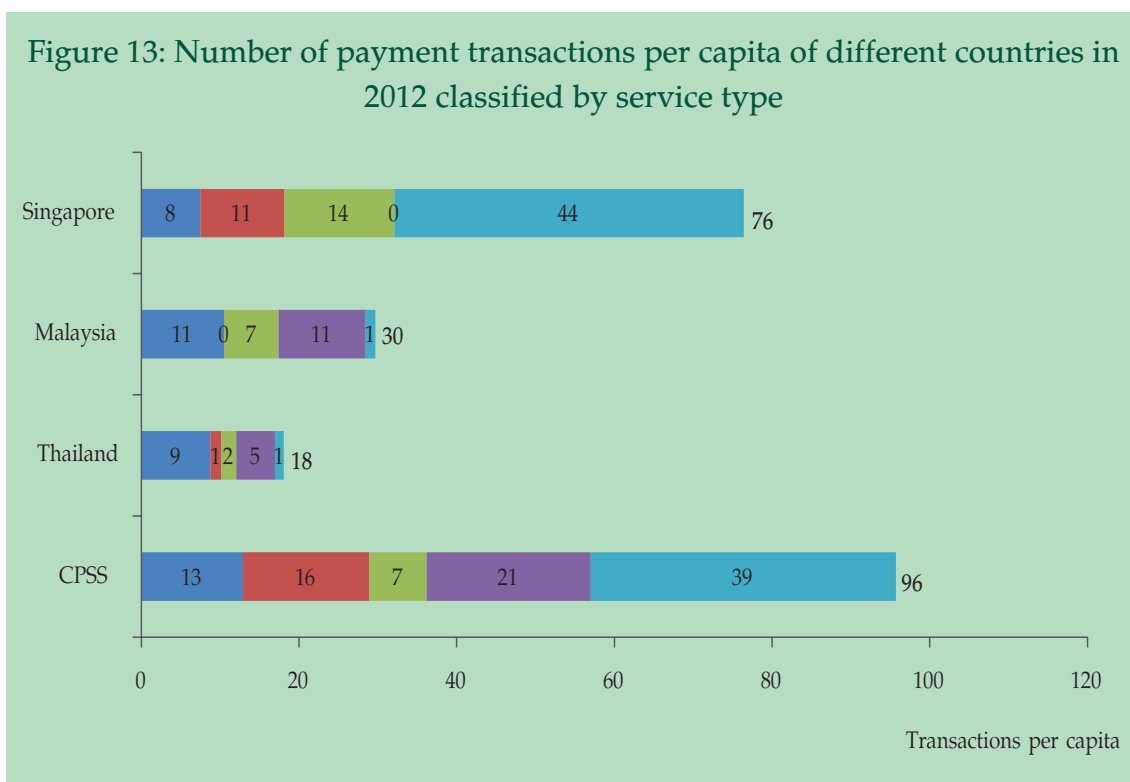
In terms of value, the proportion of cheque usage declined from 8.8 percent in 2012 to 8.4 percent this year. Meanwhile, the proportion of BAHTNET, ITMX bulk payment (interbank) and bulk payment (in-house) edged up slightly from 87.8, 0.2 and 2.1 percent in 2012 to 88.0, 0.3, and 2.2 percent this year, respectively.

Figure 12: Comparison of various payment instruments in value of transaction



Source: Bank of Thailand

Despite the rising trend in electronic transactions in Thailand, the ratio of transactions per person continued to be quite low. Only the ratio of credit transfers per person was comparable to other countries. Thus, a key objective of the Payment Systems Roadmap 2012 – 2016, was to promote electronic payments amongst the general public, public and private organizations, particularly the use of debit cards and direct debit.



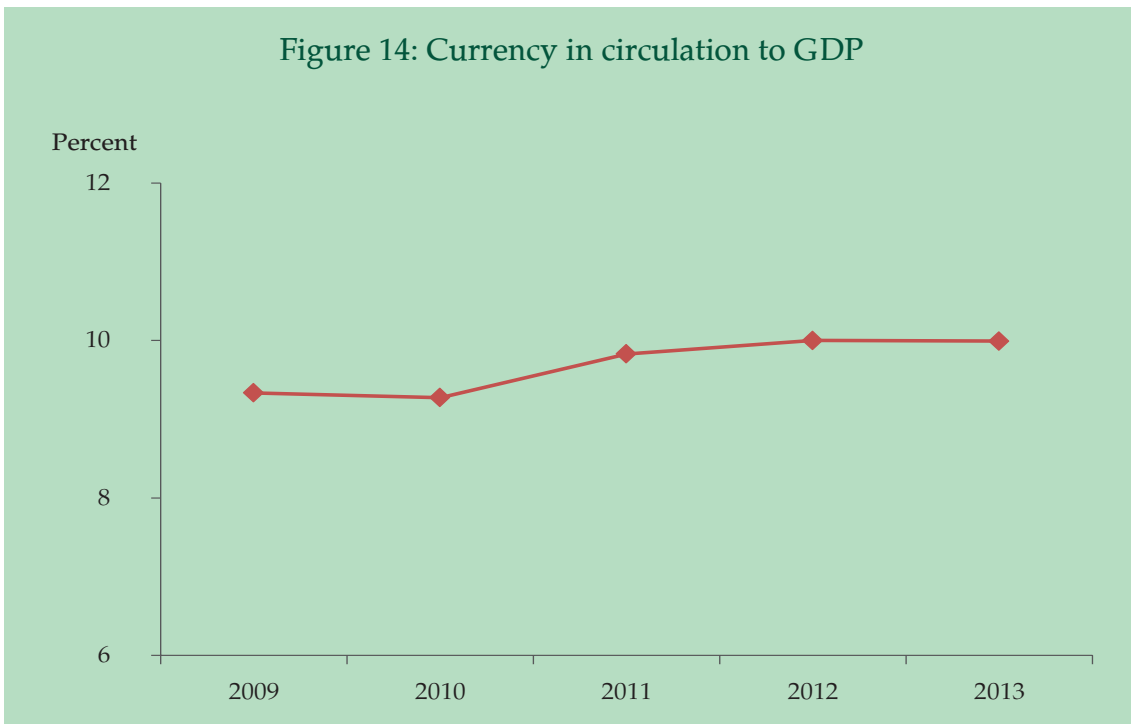
Source: BIS (2013) Statistics on payment and settlement systems in the CPSS countries, Bank of Negara Malaysia and Bank of Thailand

Note: Credit card data is unavailable for Singapore

2.1 Use of cash

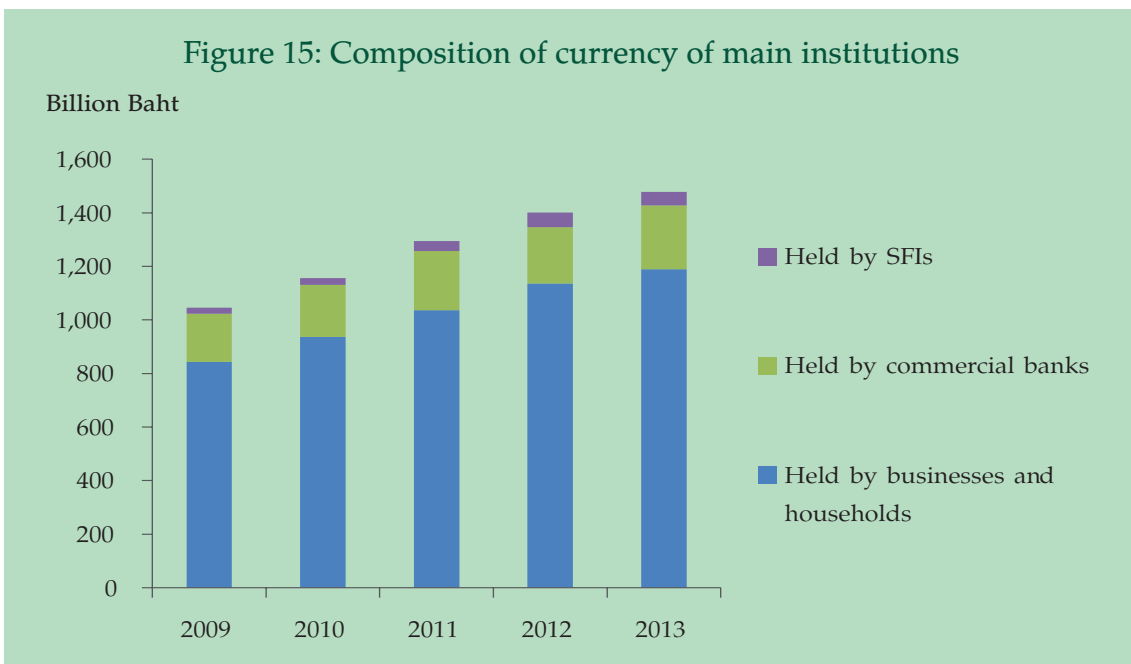
At the end of 2013, currency (notes and coins) in circulation to GDP stood at 10 percent, staying at the same level observed in the previous year. Compared to other countries, Thailand’s currency in circulation to GDP continued to be higher than South Korea, Malaysia and Singapore’s levels of 4.3, 6.1 and 8.4 percent, respectively. Nonetheless, Japan had a higher ratio of currency in circulation to GDP of 19.3 percent. In terms of component breakdown, the proportion of currency in the hands of households and businesses was the highest at 80.4 percent, followed by the proportion of currency held at commercial banks at 16.1 percent. Meanwhile, the proportion of currency held at SFIs stood at 3.4 percent and the rest were held in the hands of other institutions, including the government and cooperatives.

Figure 14: Currency in circulation to GDP



Source: Bank of Thailand

Figure 15: Composition of currency of main institutions



Source: Bank of Thailand

Meanwhile, currency held by households and businesses to narrow money¹⁴ edged up slightly from 71.1 percent the previous year to 71.6 percent this year.

¹⁴Narrow money includes 1) cash held by depository institutions and the government and 2) current deposits at depository institutions

Table 3: Comparison of currency in circulation

	2009	2010	2011	2012	2013
Currency in circulation per capita(Baht/person)	13,285	14,671	16,169	17,734	18,363
Currency held by households and businesses to narrow money (percent)	71.9	72.0	73.3	71.1	71.6

Source: Bank of Thailand

2.2 Cheque

In Thailand, cheque usage continued to be an indicator of economic conditions, particularly as the business sector mainly used cheques to make payment. In 2013, total cheque usage (including interbank and in-house cheques) was 118.4 million cheques, declining by 3.8 percent from the previous year. The total value of cheque usage was 64.6 trillion Baht, decreasing by 0.4 percent from the previous year. In this regard, the volume and value of cheque usage began to contract since the third quarter, with the maximum contraction being noted in the last quarter. This development partly owed to the domestic political uncertainty which affected business sentiment and subsequently economic conditions.

The average value per collected cheque edged up slightly from 520,000 Baht the previous year to 540,000 Baht this year. Meanwhile, the number of cheques per capita declined from 1.9 cheques per person in the previous year to 1.8 cheques per person this year. The number of returned cheques totaled at 1.6 million cheques, equivalent to 339.1 billion Baht. Of these, 1.1 million cheques were returned on the ground of insufficient funds, totalling 174.1 billion Baht. Moreover, the ratios of volume and value of dishonoured cheques were 0.9 and 0.3 percent, respectively, edging up from 0.8 and 0.2 percent in the previous year.

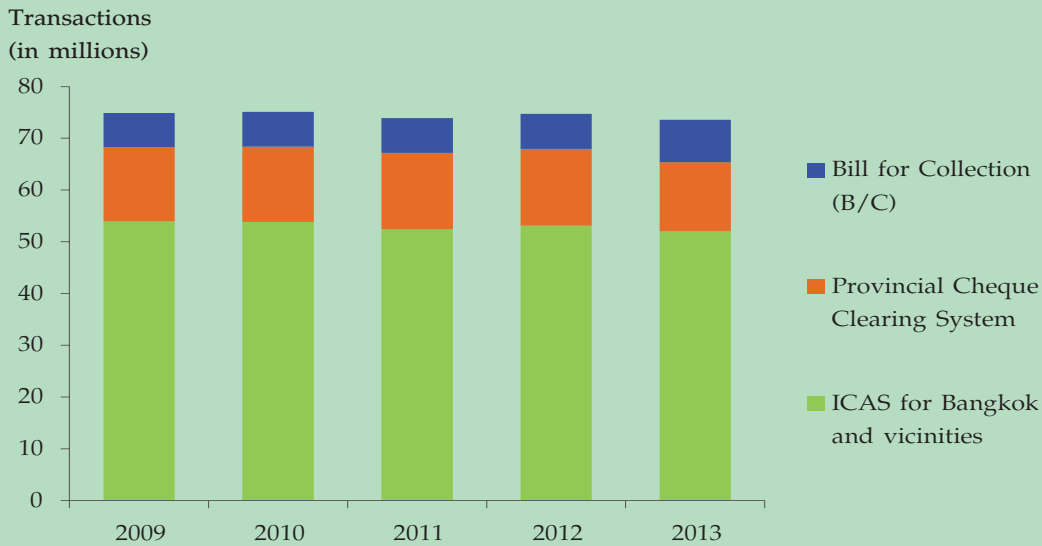
1) Interbank cheque clearing system¹⁵

In 2013, interbank cheques totaled at 73.5 million cheques, declining by 1.5 percent from the previous year. The total value of these interbank cheques stood at 40.3 trillion Baht, increasing by 3.8 percent from the previous year. In this regard, the ratios of the volume and value of interbank cheques in Bangkok and its vicinities were 70.7 and 89.0 percent, respectively, remaining approximately the same as the previous year. Meanwhile, the ratios of the volume and value of provincial interbank cheques followed at 18.1 and 9.8 percent, respectively. In addition, the ratios of the volume and value of B/C stood at only 11.2 and 1.2 percent, respectively.

¹⁵Interbank cheque clearing system comprises of the systems as follows

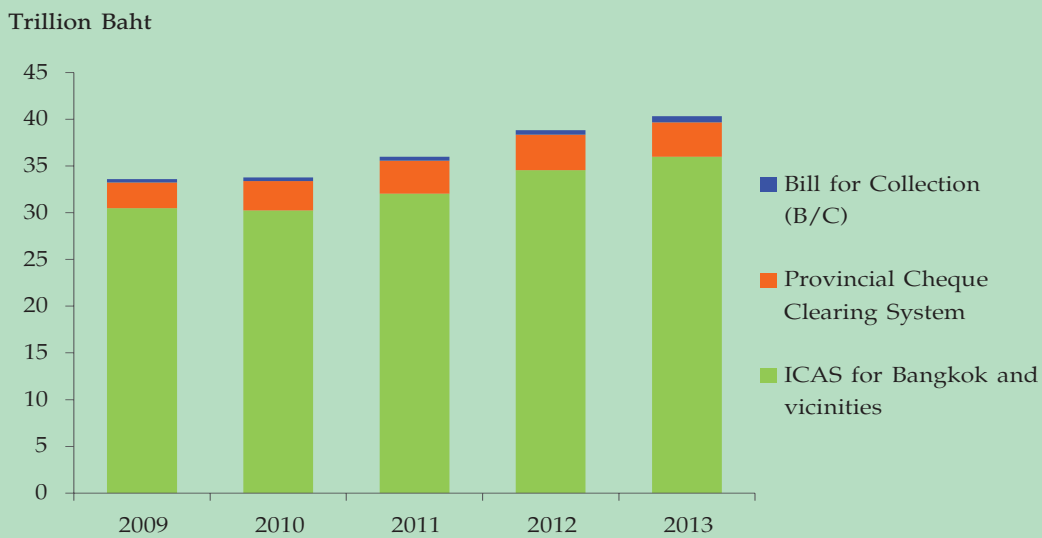
- 1) Imaged Cheque Clearing and Archive System (ICAS) in Bangkok and vicinities, which was launched on 3 February 2012 to replace the usage of the Electronic Cheque Clearing System (ECS)
- 2) Provincial Cheque Clearing System
- 3) Bill for Collection (B/C)

Figure 16: Volume of interbank cheques



Source: Bank of Thailand

Table 17: Value of interbank cheques

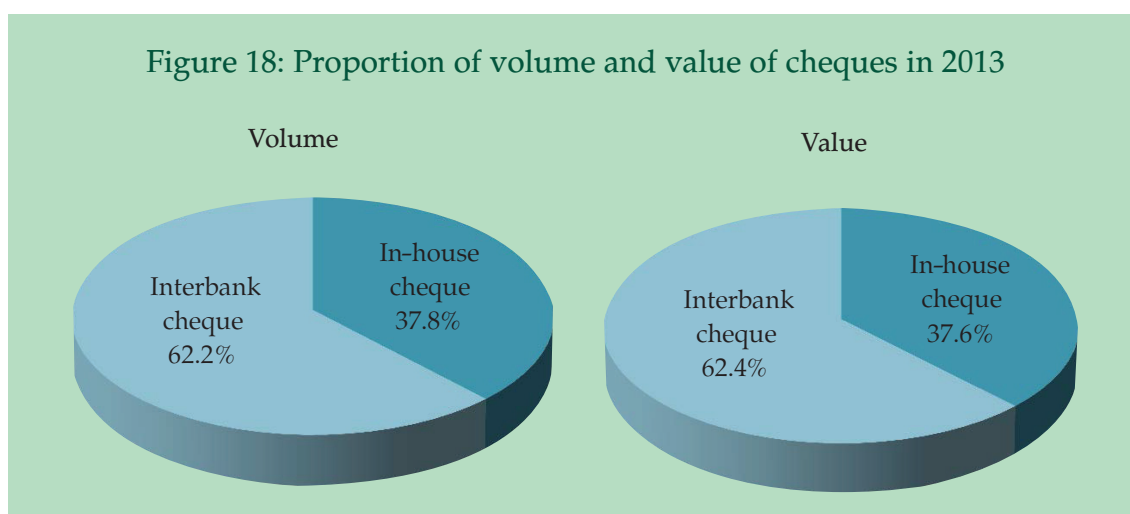


Source: Bank of Thailand

2) In-house cheque clearing system

In-house cheques that commercial banks reported to the BOT during 2013 totaled at 44.8 million cheques, equivalent to 24.3 trillion Baht. When compared to the previous year, the volume and value of in-house cheques declined by 7.4 and 6.9 percent, respectively. Such development could stem from the economic slowdown. Meanwhile, the ratios of the volume and value of in-house cheques to total collected cheques stood at 37.8 and 37.6 percent, respectively.

Figure 18: Proportion of volume and value of cheques in 2013



Source: Bank of Thailand

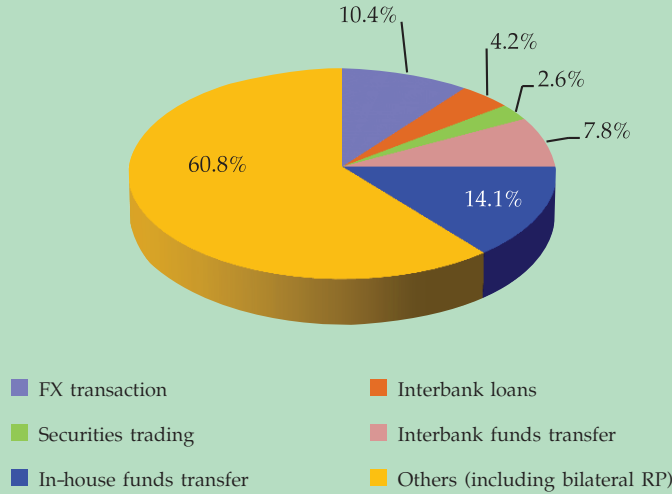
2.3 High-value funds transfer

The Bank of Thailand Automated High-Value Transfer Network (BAHTNET) was developed to offer fast and secured high-value funds transfer service to commercial banks and other institutions. Main services include interbank funds transfer, third-party funds transfer, securities settlement, multilateral net settlement and message broadcast. At the end of 2013, there were 64 BAHTNET users in total. Of these, there were 16 commercial banks, 14 foreign bank branches, 10 finance and securities companies, 14 SFIs, government and other agencies, and 10 BOT departments.

There were 3.2 million transactions through the BAHTNET in 2013, increasing by 10.4 percent from the previous year. The total value of these transactions stood at 679.7 trillion Baht, increasing by 4.7 percent from the previous year. The underlying reason for growth in BAHTNET transactions was the increase in third-party transfers for payment of government bond purchases.

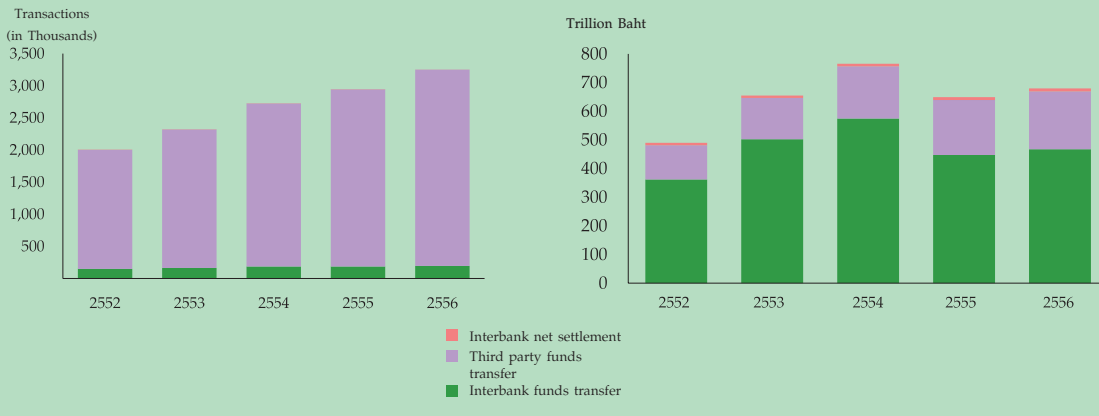
BAHTNET transactions can be categorized by business types, including interbank funds transfer, foreign exchange (FX), interbank loan, in-house funds transfer, securities trading and other transactions. In this regard, most transactions continued to be interbank funds transfer for bilateral repurchase operation (bilateral RP), equivalent to 320.8 trillion Baht in value and 60.8 percent of the total value of BAHTNET transactions.

Figure 19: Proportion of interbank funds transfer through the BAHTNET classified by business type in 2013



Source: Bank of Thailand

Figure 20: Volume and value of funds transfer and settlement between institutions through the BAHTNET in 2013



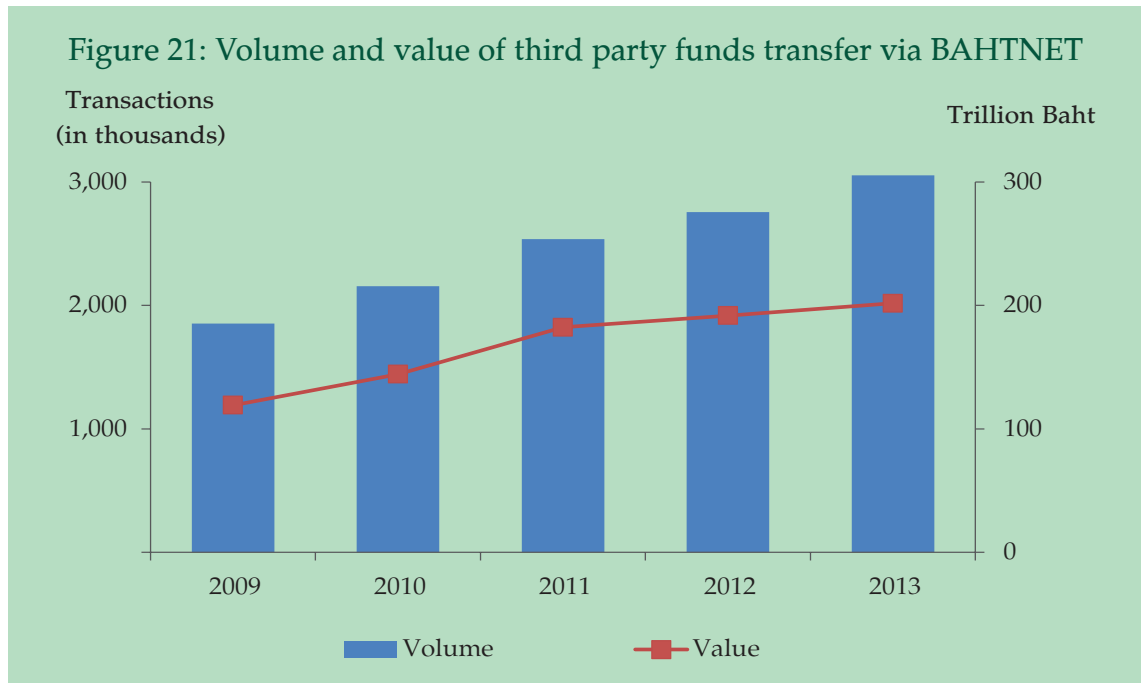
Source: Bank of Thailand

Overall, BAHTNET transactions in 2013 can be summarized as follows.

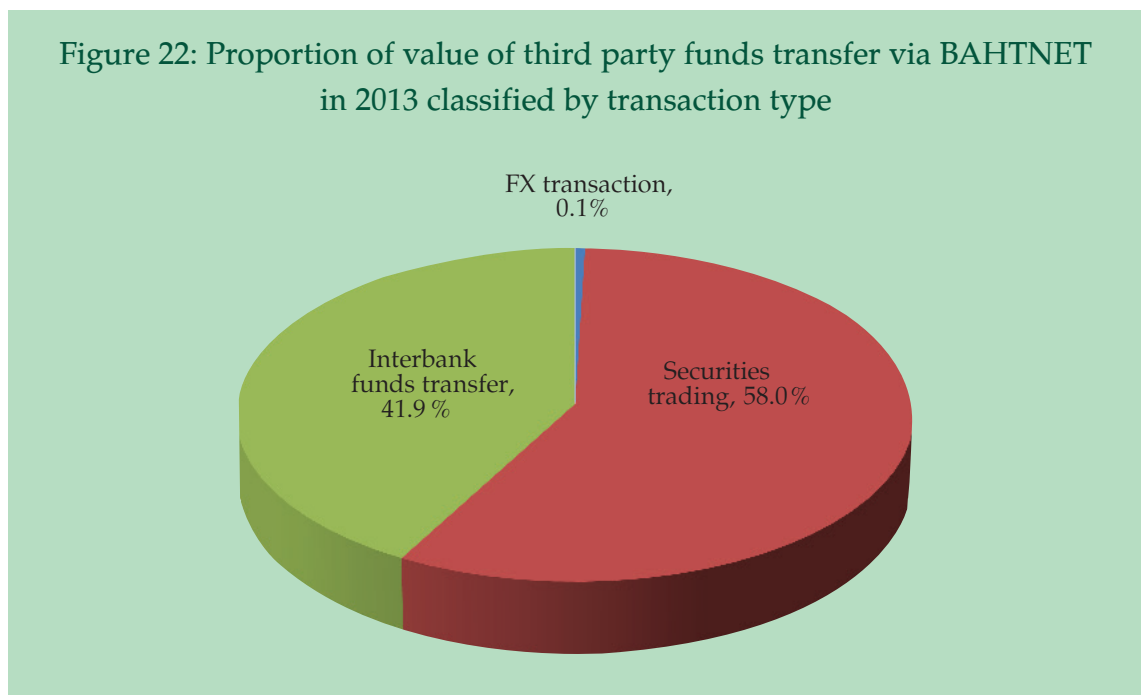
1) Interbank funds transfer amounted to 195,955 transactions, totally 467.4 trillion Baht. In this regard, both the volume and value of interbank funds transfer increased by 4.5 percent from the previous year.

2) Multilateral funds transfer (settlement and netting between institutions) amounted to 3,068 transactions, declining by 0.4 percent from the previous year. Nonetheless, the total amount of multilateral funds transfer totaled at 10.6 trillion Baht, increasing by 4.5 percent from the previous year.

3) Third-party funds transfer are nation-wide retail funds transfer at a customer's request to the account of designated beneficiaries. In 2013, the total number of third-party funds transfer transactions stood at 3.1 million transactions, increasing by 10.4 percent from the previous year. Meanwhile, the value of transactions totaled at 201.7 trillion Baht, also increasing by 4.7 percent from the previous year. Of these, the proportions of securities trading, interbank funds transfer and FX were 58.0, 41.9, and 0.1 percent, respectively.



Source: Bank of Thailand



Source: Bank of Thailand

2.4 Bulk payment

Bulk payment refers to a pre-authorized retail funds transfer that is conducted in bulk. In the past, bulk transfers increased continually both in terms of volume and value. In 2013, the volume of bulk transfers stood at 343.2 million transactions, increasing by 4.2 percent from the previous year. The value of these transactions amounted to 19.3 trillion Baht, increasing by 9.7 percent from the previous year.

Bulk payment can be categorized into two types.

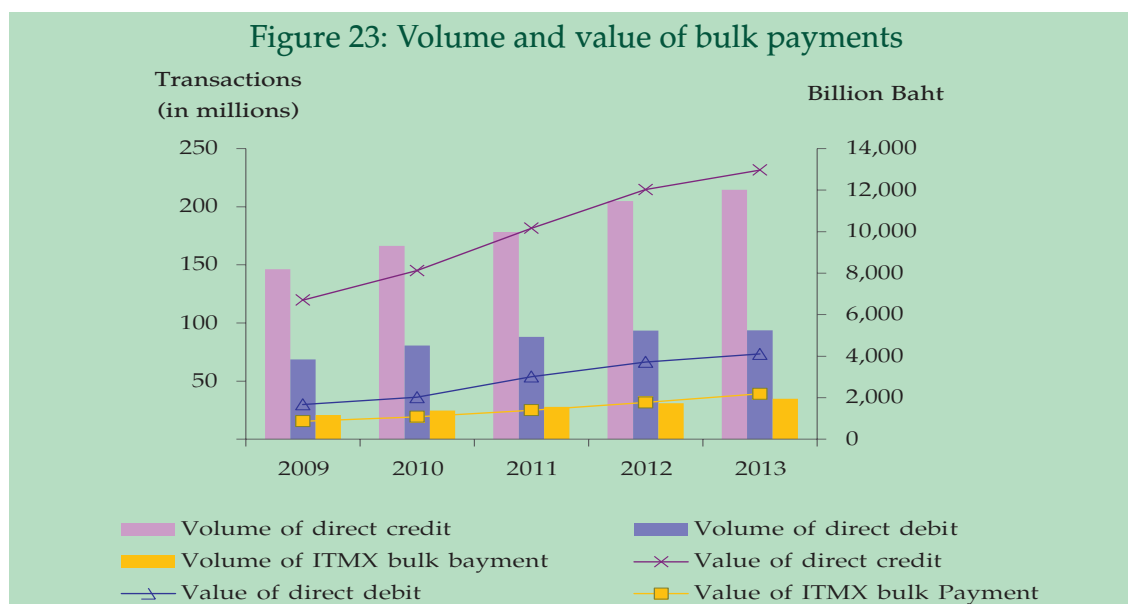
1) In-house pre-authorized transactions, which included

- Direct credit, for example, transfers of salaries, wages and dividends, which recorded a value of 13.0 trillion Baht this year, increasing by 7.8 percent from the previous year. The total number of transactions stood at 214.7 million transactions, increasing by 4.8 percent from the previous year.

- Direct debit, for example, payment of utility bills, insurance premiums, credit card payments and other payments, recorded a value of 4.1 trillion Baht this year, increasing by 10.3 percent from the previous year. The total number of transactions stood at 93.6 million transactions, increasing only slightly by 0.1 percent from the previous year.

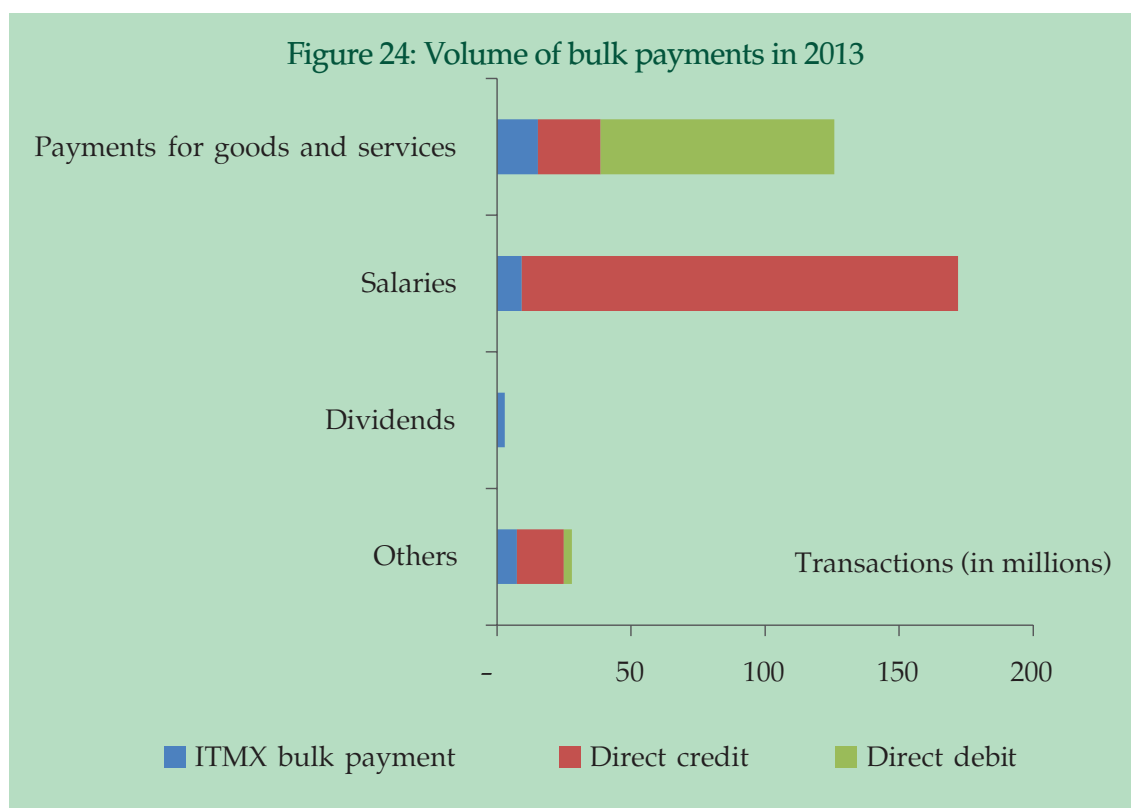
2) Interbank pre-authorized transfers

Interbank pre-authorized transfers were conducted through ITMX bulk payment, which currently only provided direct crediting services. The total value of transactions this year recorded at 2.2 trillion Baht, increasing by 23.5 percent from the previous year. The total number of transactions stood at 34.9 million transactions, also increasing by 12.4 percent from the previous year.



Source: Bank of Thailand

Upon closer examination of the purpose of bulk payment, it was found that for in-house pre-authorized direct credit, salary and wages was the most popular type of transaction followed by payment for goods and services, and other transactions. For in-house pre-authorized direct debit, payment for goods and services such as payment of utility bills was the most popular type of transaction.

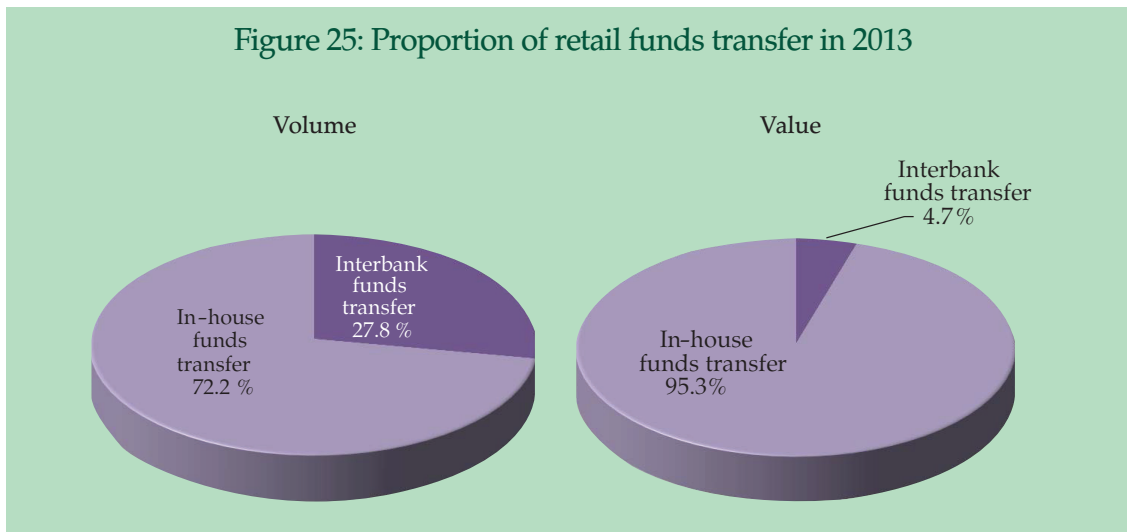


Source: Bank of Thailand

A comparison of average values of transactions revealed that for direct credit, payment for goods and services had the highest average value of transaction of 279,877 Baht per transaction. Meanwhile, the average values of ITMX bulk payment and direct debit transactions were 82,627 and 45,619 Baht per transaction, respectively. In this regard, payment of salary and wages through ITMX bulk payment was slightly higher than through direct credit.

2.5 Retail funds transfer

Figure 25: Proportion of retail funds transfer in 2013

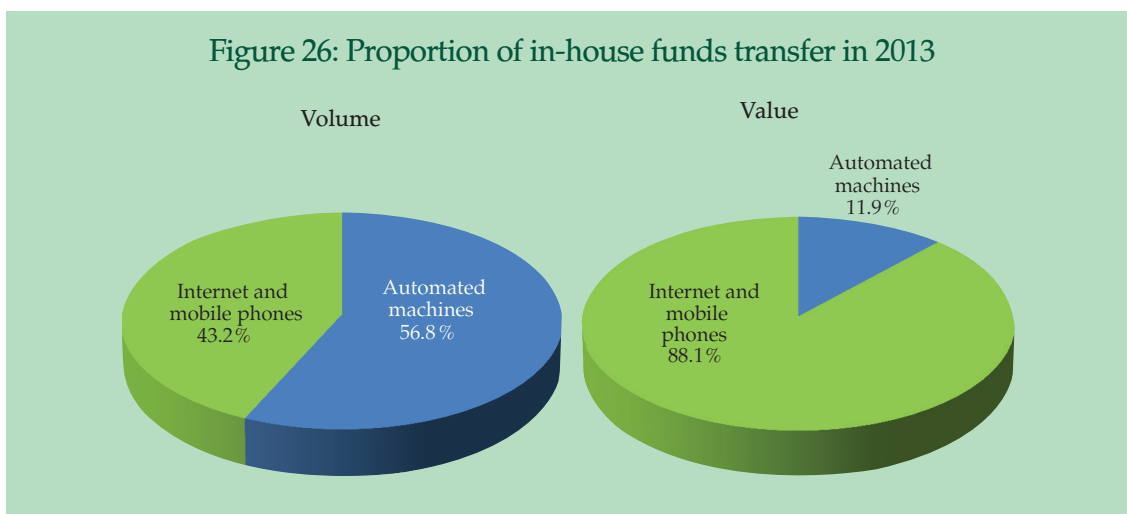


Source: Bank of Thailand

Retail funds transfer can be divided into in-house funds transfer and On-line Retail Funds Transfer (ORFT). In 2013, the value of retail funds transfer reached 30.0 trillion Baht, increasing by 22.5 percent from the previous year. The number of transactions amounted to 625.1 million transactions, increasing by 15.3 percent. In-house funds transfer continued to be the most popular type of retail funds transfer, amounting to 72.2 and 95.3 percent of the total volume and value, respectively.

1) In-house funds transfer¹⁶

Figure 26: Proportion of in-house funds transfer in 2013



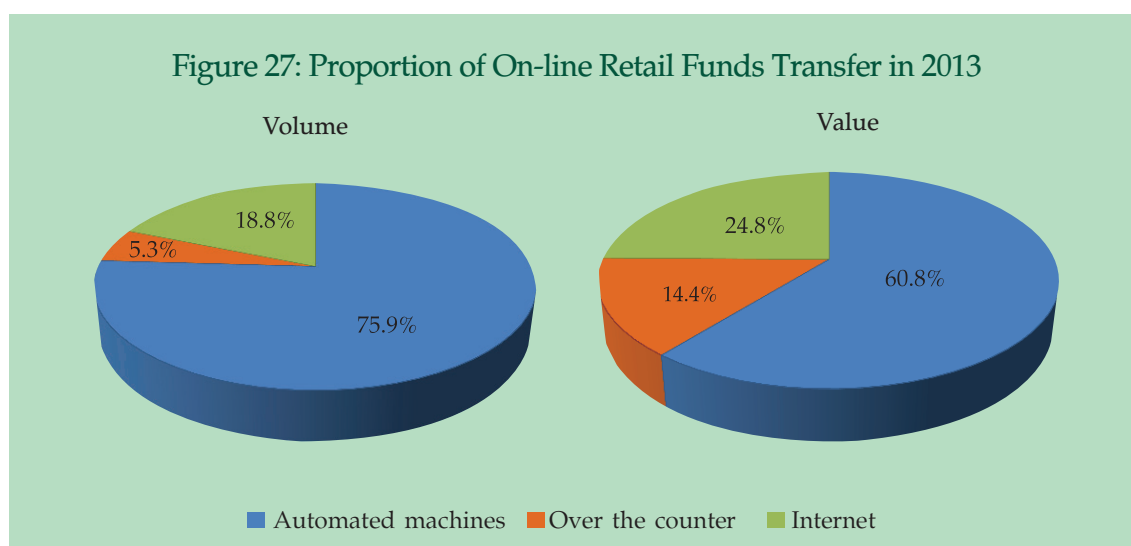
Source: Bank of Thailand

¹⁶Not including in-house funds transfer at the counter

In-house funds transfer, which included payment for goods and services via automated machines as well as transfers through the internet and mobile phone totaled at 451.2 million transactions and 28.6 trillion Baht, increasing by 15.3 and 23.1 percent from the previous year respectively. In terms of volume, most transfers, amounting to 56.8 percent of all transfers, were still conducted through automated machines. Meanwhile, transfers through the internet and mobile phones stood at 43.2 percent. Nonetheless, in terms of value, most transfers were Business to Business (B2B) transfers conducted through the internet. In this regard, the proportions of B2B transfers through the internet and mobile phone vis-à-vis transfers through automated machines were 88.1 and 11.9 percent, respectively.

2) On-line Retail Funds Transfer

There are many ways that a customer can transfer funds to other bank accounts. These include transfers through automated machines, at the counter, and through the internet and mobile phone.



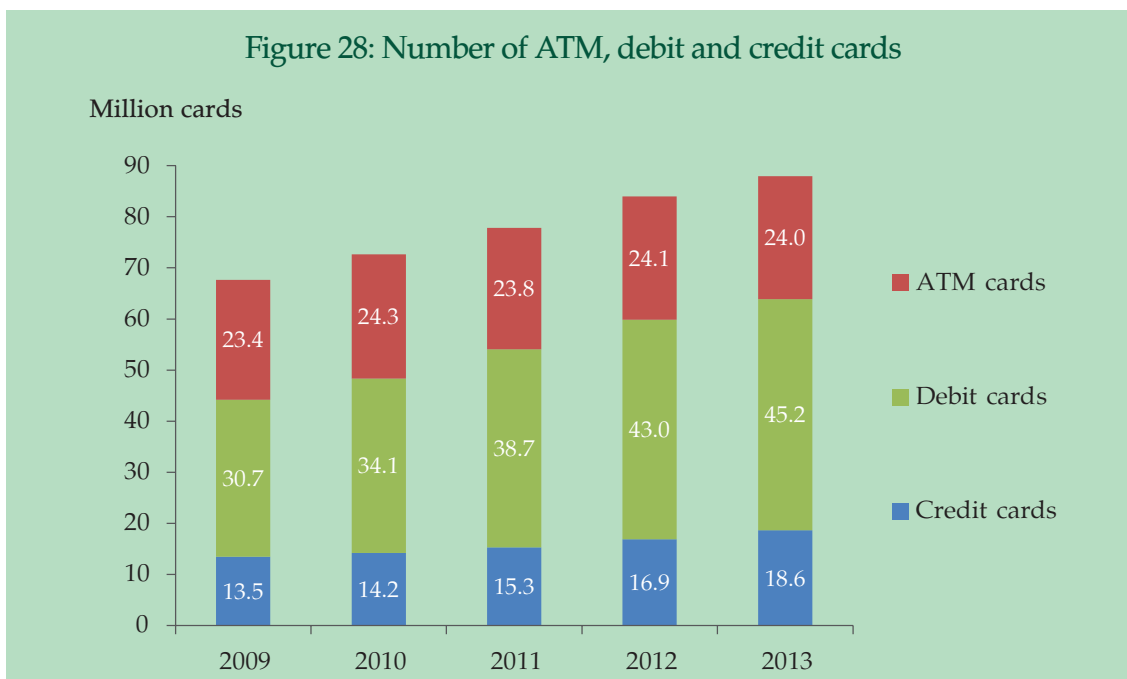
Source: Bank of Thailand

In 2013, On-line Retail Funds Transfer (ORFT) amounted to 173.9 million transactions, increasing by 15.6 percent from the previous year. The value of transactions totaled at 1.4 trillion Baht, increasing by 12.0 percent from the previous year. Most ORFT transfers were through automated machines whereby the proportions in terms of total volume and value were 75.9 and 60.8 percent, respectively.

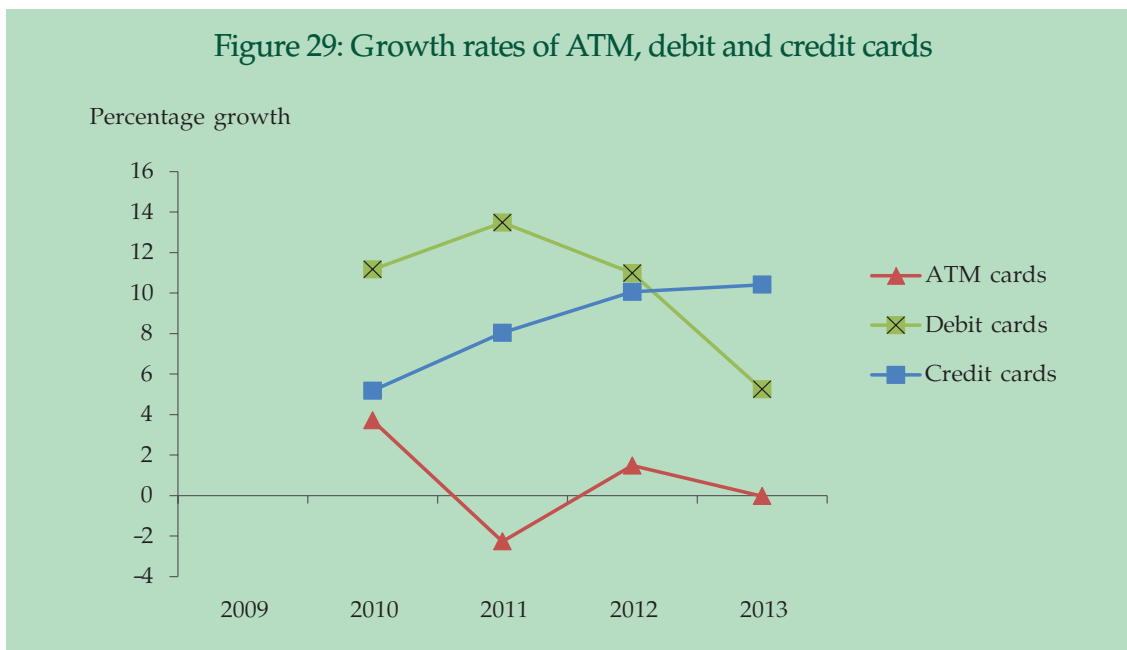
2.6 Electronic card

1) Number of electronic cards

In 2013, the number of electronic cards, including ATM, debit and credit cards continued to increase. At the end of the year, the number of debit cards reached 45.2 million, increasing by 5.2 percent from the previous year. Meanwhile, the number of credit cards stood at 18.6 million cards, increasing by 10.4 percent from the previous year. In contrast, the number of ATM cards totaled at 24.1 million cards, decreasing by 0.6 percent from the previous year.



Source: Bank of Thailand



Source: Bank of Thailand

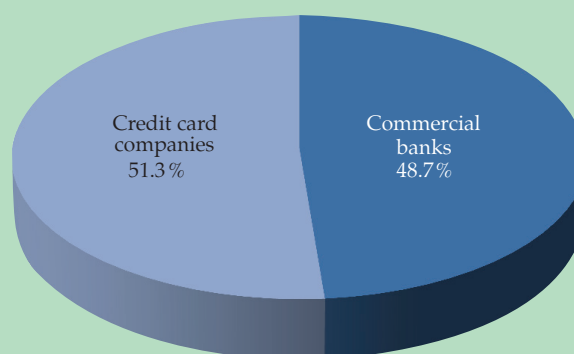
ATM and debit cards

ATM card was the first type of electronic cards that most commercial banks offered to customers for the purpose of account withdrawals from automated machines. Most recent data, however, revealed that the proportion of ATM cards to total number electronic cards decreased from 35 percent in 2009 to 27 percent in 2013. In contrast, the proportion of debit cards to total number of electronic cards was as high as 52 percent. An important reason in support of this development was that most commercial banks aimed to switch from issuing ATM card to debit card because the latter could be used to perform the same function as the former but could also be used to pay for goods and services at retailers via EFTPOS. In addition, some banks also allowed the use of debit cards for internet purchases.

Credit card

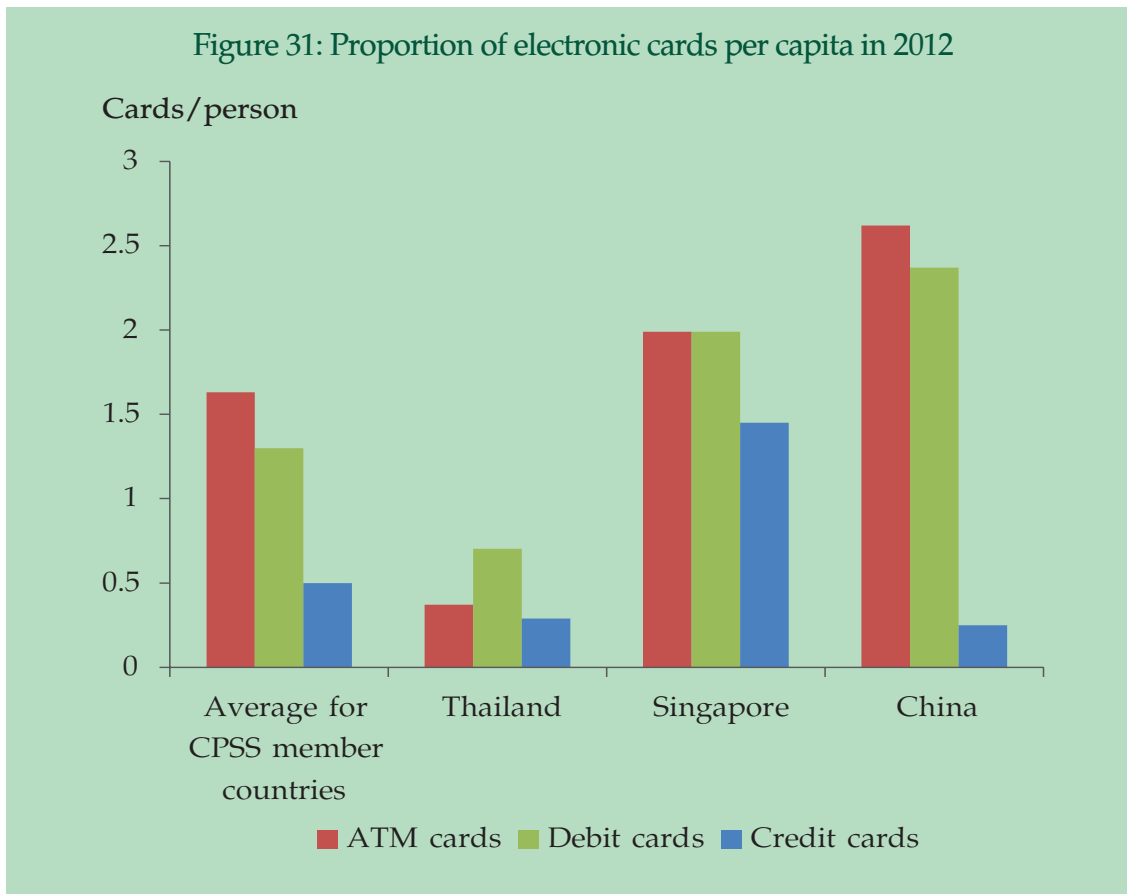
Like debit cards, the number of credit cards in Thailand also rose continually. At the end of 2013, growth rate of the number of credit cards reached 10 percent. Classified by issuer, the number of credit cards issued by commercial banks stood at 9 million cards while that issued by credit card companies stood at 9.5 million cards. Thus, the proportions of credit cards issued by commercial banks vis-à-vis credit card companies were 48.7 and 51.3 percent, respectively. One factor behind the increasing popularity of credit cards owed to the introduction of a variety of promotional campaigns by service providers in addition to existing discount promotion offered by retailers. These included monthly installment payment, redemption of reward points for goods and services including movie tickets, free gifts from participating stores, and exemption from foreign exchange fee. Subsequently, customers especially urban ones now preferred to have more than one card.

Figure 30: Proportion of credit cards issued by commercial banks and credit card companies in 2013



Source: Bank of Thailand

Despite the increase in electronic cards, the ratio of electronic cards per person in Thailand remained much lower than in other countries, for example, CPSS countries, Singapore and China.

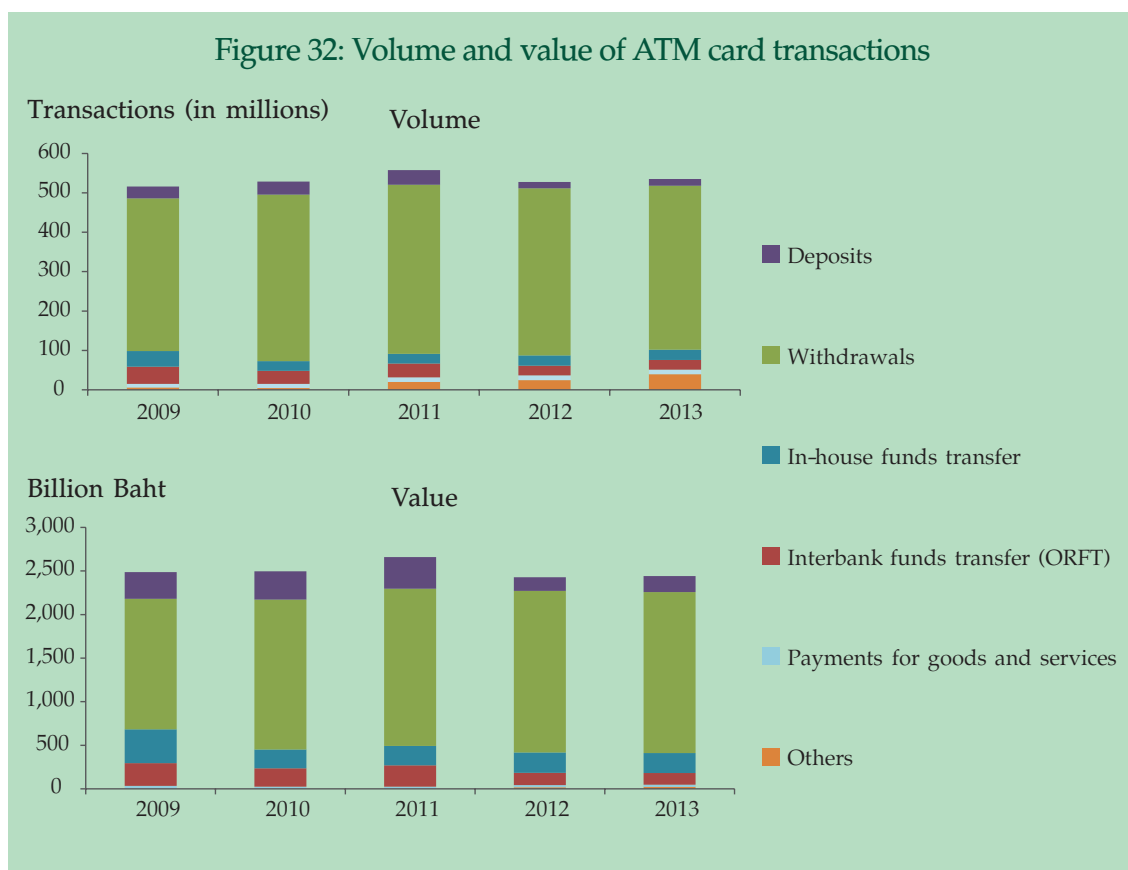


Source: BIS (2013) Statistics on payment, clearing and settlement systems in the CPSS countries figures for 2012 and Bank of Thailand

2) Electronic card usage

ATM card

In 2013, ATM card transactions in Thailand amounted to 535.3 million transactions, rising by 1.4 percent from the previous year. The total value of transactions reached 2,451.3 billion Baht, increasing by 0.8 percent from the previous year. The main usage of ATM cards was cash withdrawal which amounted to 1,845.6 billion Baht, declining by 0.4 percent from the previous year. Compared to other types of usage, cash withdrawal constituted 77.7 percent of the total volume of transactions and 75.3 percent of its value. The second most popular usage was funds transfer, which accounted for 4.9 percent of the total volume of transactions and 9.4 percent of its value. The trend in ATM usage was judged to be stable overall.



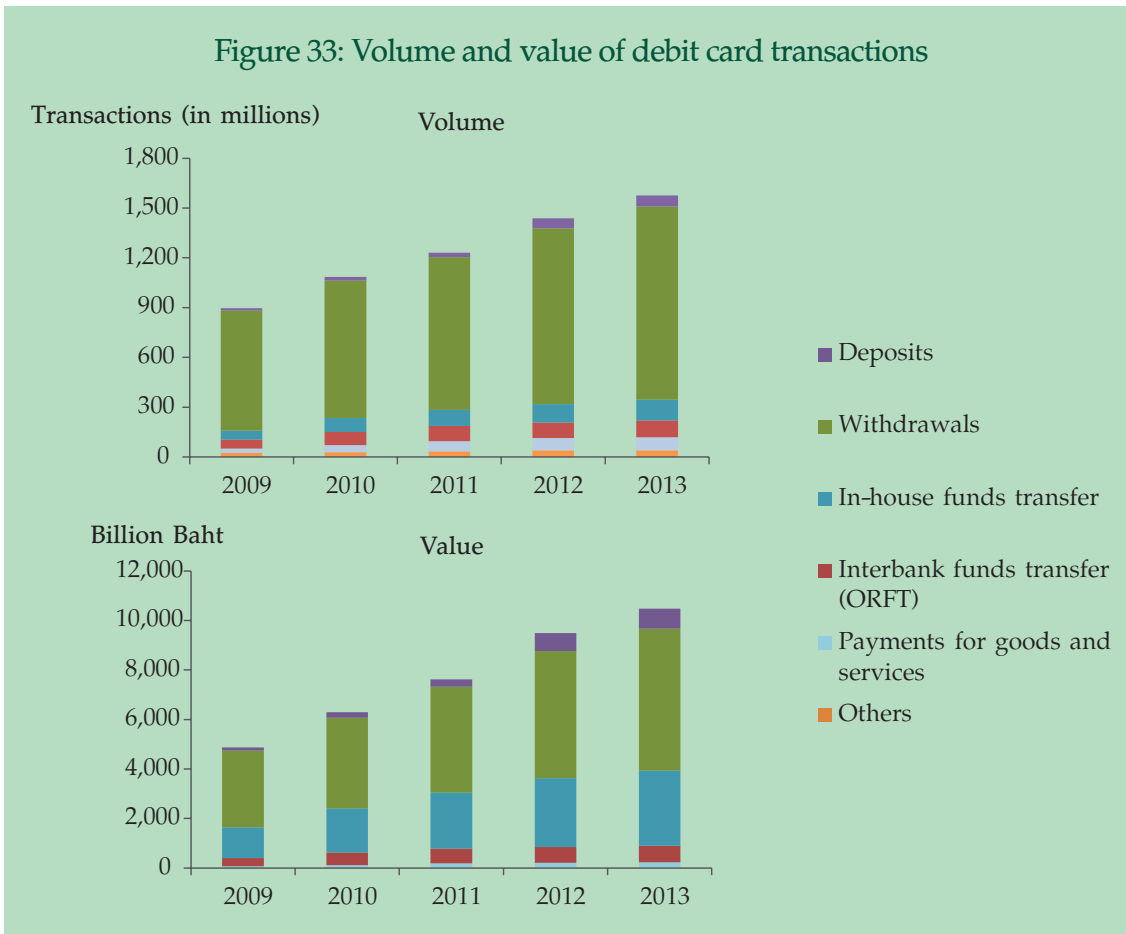
Source: Bank of Thailand

Debit card

In 2013, debit card transactions reached 1,576.5 million transactions, growing by 9.6 percent from the previous year. Like ATM cards, the main usage of debit cards continued to be cash withdrawal, which represented 73.9 percent of the total volume of transactions. This was followed by in-house funds transfer, interbank funds transfer and payment for goods and services, which accounted for 7.9, 6.4 and 5.1 percent of the total volume of transactions, respectively.

The value of overall debit card transactions stood at 10,475.2 billion Baht, increasing by 10.4 percent from the previous year. In this regard, usage trend in terms of value was similar to that in terms of volume. More specifically, payment for goods and services at retailers and over the internet amounted to 80.7 million transactions, increasing by 8.8 percent from the previous year. The value of these transactions recorded at 224.9 billion Baht, increasing by 8.4 percent from the previous year. Meanwhile, cash withdrawal through debit cards totaled at 1,165.1 million transactions, increasing by 10.0 percent from the previous year. The value of these transactions recorded at 5,743.1 billion Baht, increasing by 11.8 percent from the previous year.

Figure 33: Volume and value of debit card transactions



Source: Bank of Thailand

An important factor that led to the rise in debit card usage was the partnering of commercial banks and retailers in introducing a variety of attractive promotional campaigns, for example, special discount, accident insurance coverage, as well as promotions to encourage e-payment, particularly exemption of fees¹⁷ for debit card usage including interbank transfer, cash withdrawal, and bill payment at automated machines. Moreover, debit card usage was also widely promoted amongst non-users of credit cards such as university students.

A comparison between usage of ATM cards and debit cards in terms of average value per transaction revealed a higher preference for debit cards, especially for in-house funds transfer whereby debit card usage averaged at 24,400 Baht per transaction while ATM card usage averaged at only 8,700 Baht per transaction.

Even though increases in the volumes and values of ATM card and debit card transactions were noted, cash withdrawal still represented the main usage that also continued to be on the rise. This trend would be a challenge for the BOT to address, going forward, especially in formulating payment systems policy to promote electronic payments in place of cash.

¹⁷ Conditions of individual banks apply

Table 4: Commercial banks' ATM and debit card transactions in 2013

	Volume		Value		Average value (thousand Baht/transaction)
	Transactions (in Millions)	Percent	Transactions (in Billions)	Percent	
ATM cards					
Withdrawals	415.8	77.7	1,845.6	75.3	4.4
In-house transfers	26.4	4.9	230.6	9.4	8.7
Interbank transfers (ORFT)	24.3	4.5	133.1	5.4	5.5
Payments for goods and services	11.6	2.2	24.3	1.0	2.1
Deposits	17.3	3.2	183.3	7.5	10.6
Others	39.9	7.5	34.4	1.4	0.9
Total	535.3	100.0	2,451.3	100.0	4.6
Debit cards					
Withdrawals	1,165.1	73.9	5,743.1	54.8	4.9
In-house transfers	124.5	7.9	3,032.2	28.9	24.4
Interbank transfers (ORFT)	101.2	6.4	675.3	6.4	6.7
Payments for goods and services	80.8	5.1	224.9	2.1	2.8
Deposits	65.8	4.2	798.0	7.6	12.1
Others	39.1	2.5	1.7	0.0	0.0
Total	1,576.5	100.0	10,475.2	100.0	6.6

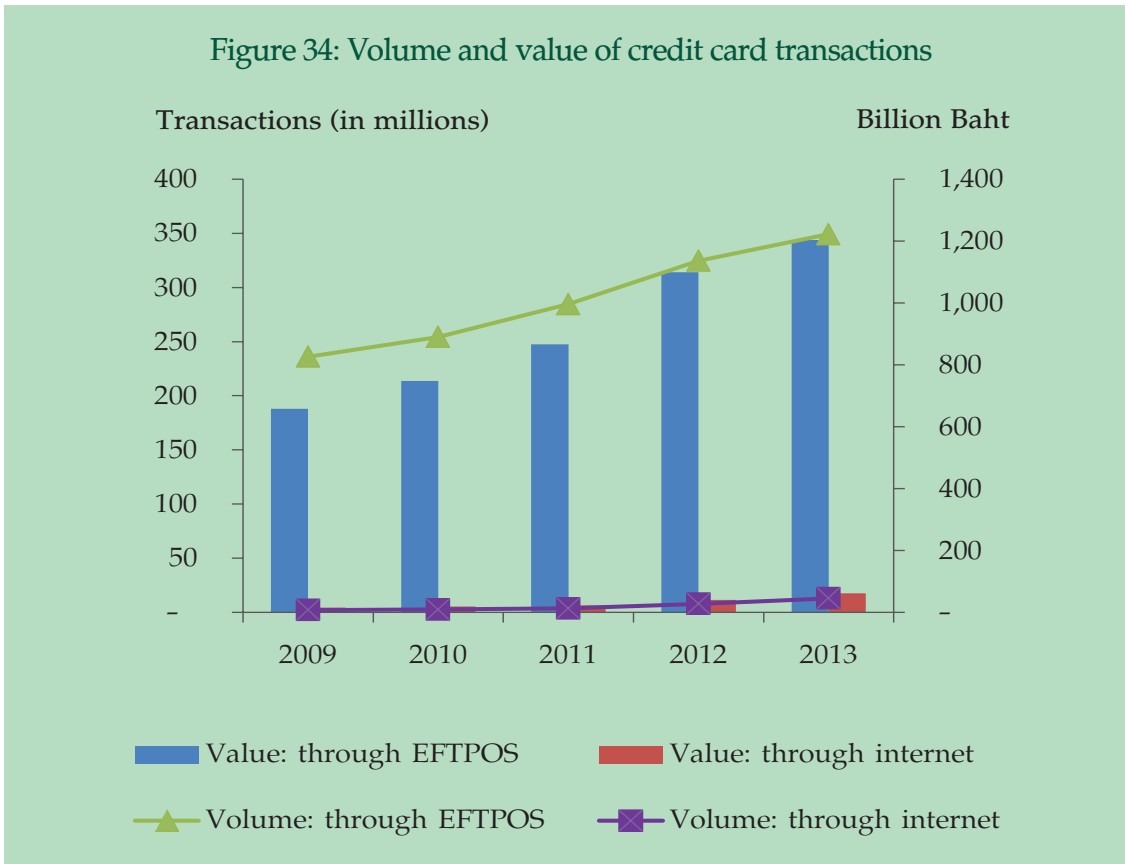
Source: Bank of Thailand

Credit card¹⁸

The total value of credit card transactions through EFTPOS in 2013 was 1,203.2 billion Baht, rising by 9.4 percent from the previous year and representing more than 95 percent of all credit card transactions in terms of value and volume. Nonetheless, credit card transactions for purchases over the internet also registered a steep growth, with 13 million transactions in total, rising by 64.4 percent from the previous year. The value of these transactions reached 61.1 billion Baht, increasing by 51.5 percent from the previous year.

¹⁸Excluding cash advances

Figure 34: Volume and value of credit card transactions



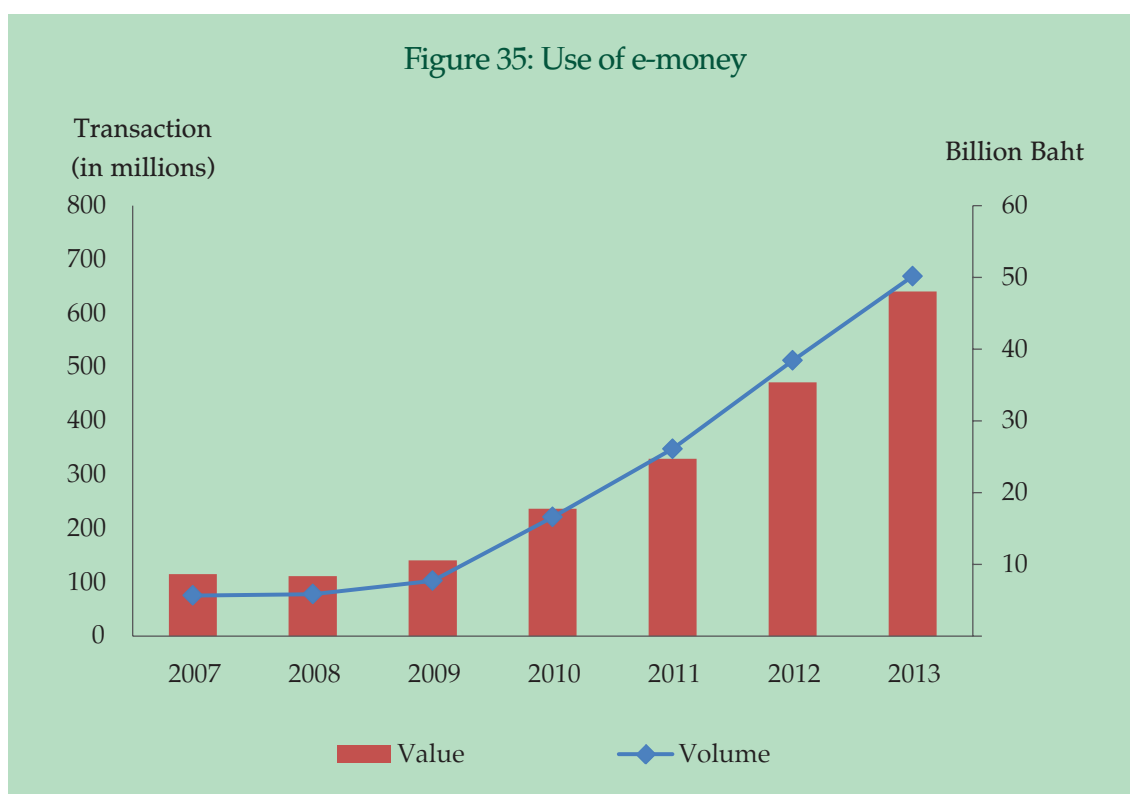
Source: Bank of Thailand

2.7 Electronic money (e-money)

E-money is governed by two pieces of regulations namely Section 5 of the Notification of the Revolution Council NO. 58 (e-Money operations) and the Royal Decree Regulating Electronic Payment Service Business B.E. 2551 (2008).

At the end of 2013, there were 21 e-money service providers, representing an increase of one service provider from the previous year. Of this total, 8 were banks and 13 were non-banks. Moreover, there were a total of 24.3 million e-money cards or accounts¹⁹ issued, increasing by 20.1 percent (4.1 million cards or accounts) from the previous year. The total volume of transactions recorded at 669.2 million transactions, increasing by 30.6 percent from the previous year. The total value of transactions was 48,031.9 million Baht, increasing by 35.8 percent from the previous year.

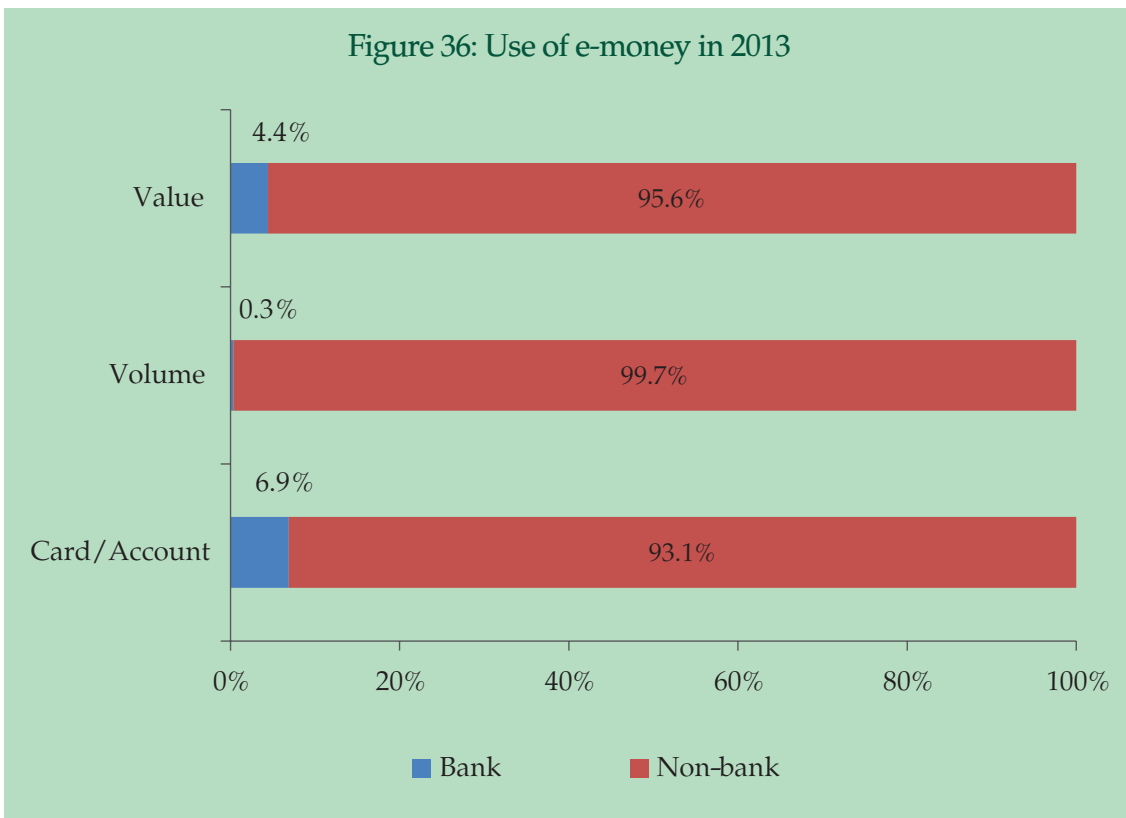
¹⁹Including e-Money that is used in place of cash to pay for goods and services and excluding pre-paid cards for mobile phones



Source: Bank of Thailand

A comparison between bank and non-bank service providers revealed that the latter continued to dominate the market for e-money with approximately 93.1 percent share of the total number of e-money cards or accounts. Meanwhile, the proportion of e-money cards or accounts issued by banks represented merely 6.9 percent. The volume and value of e-money transactions also came mostly from non-bank e-money cards or accounts (99.7 percent for volume and 95.6 percent for value). Nonetheless, in terms of spending amount, the average transaction value from bank e-money cards registered at 873.1 Baht per transaction while that from non-bank e-money cards was merely 67.6 Baht per transaction.

Figure 36: Use of e-money in 2013



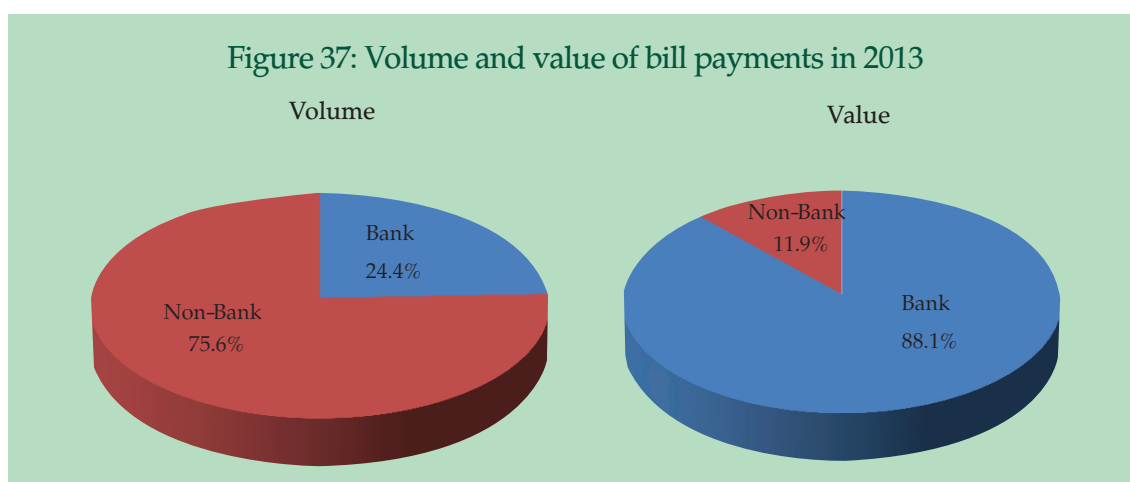
Source: Bank of Thailand

3. Other services

3.1 Bill payment

There are various channels that bill payment can be made including 1) at the counter of commercial banks or non-bank service providers such as convenient stores or retail shops; 2) electronic payment channels, for example, through automated machines, internet and smart phone; and 3) direct debit.

Nonetheless, bill payment at the counter continued to be the most popular channel due to the large number of payment points and availability of 24 hour service. In addition, the number of authorized service providers according to the Royal Decree Regulating Electronic Payment Service Business B.E. 2551 (2008) was also on the rise.

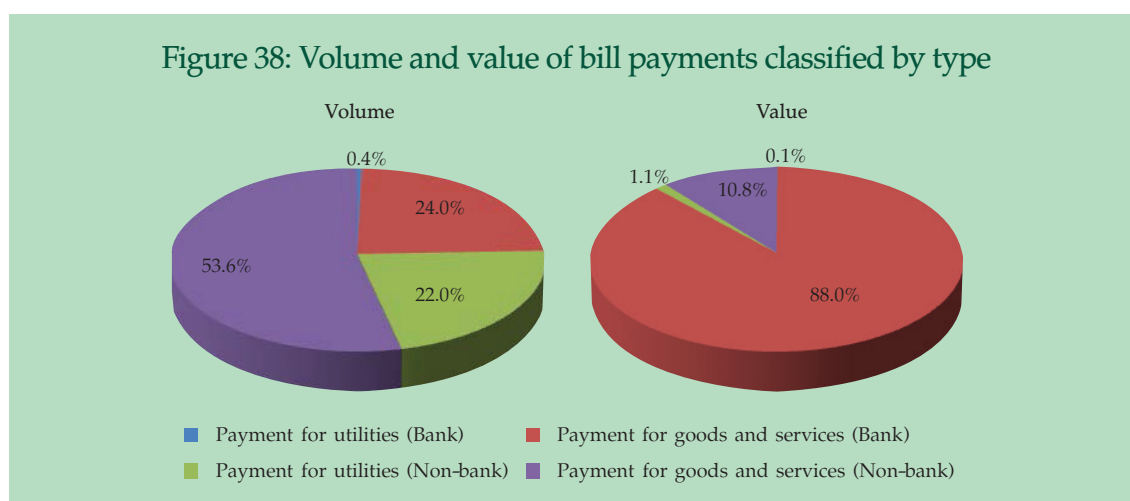


Source: Bank of Thailand

In 2013, the volume of bill payment at the counter totaled at 359.4 million transactions, increasing by 11.2 percent from the previous years. Of this, as much as 75.6 percent represented bill payment at the counter of non-bank service providers thanks to their large network coverage and availability of 24 hour service.

The total value of transactions stood at 5.97 trillion Baht, declining by 7.4 percent from the previous year. Most of this (88.1 percent) represented bill payment at bank counters. The average transaction value was 59,936.7 Baht for payment at bank counters and 2,613.7 Baht for payment at non-bank service providers. These statistics reflected both the behavior and confidence of users who preferred to make high-value payment at bank counters. It should be noted that bill payment at the counter of both bank and non-bank service providers did not include transfers for payment of goods and services to a retailer or merchant who did not have prior agreement with the service providers to act as a payment agent.

Figure 38: Volume and value of bill payments classified by type



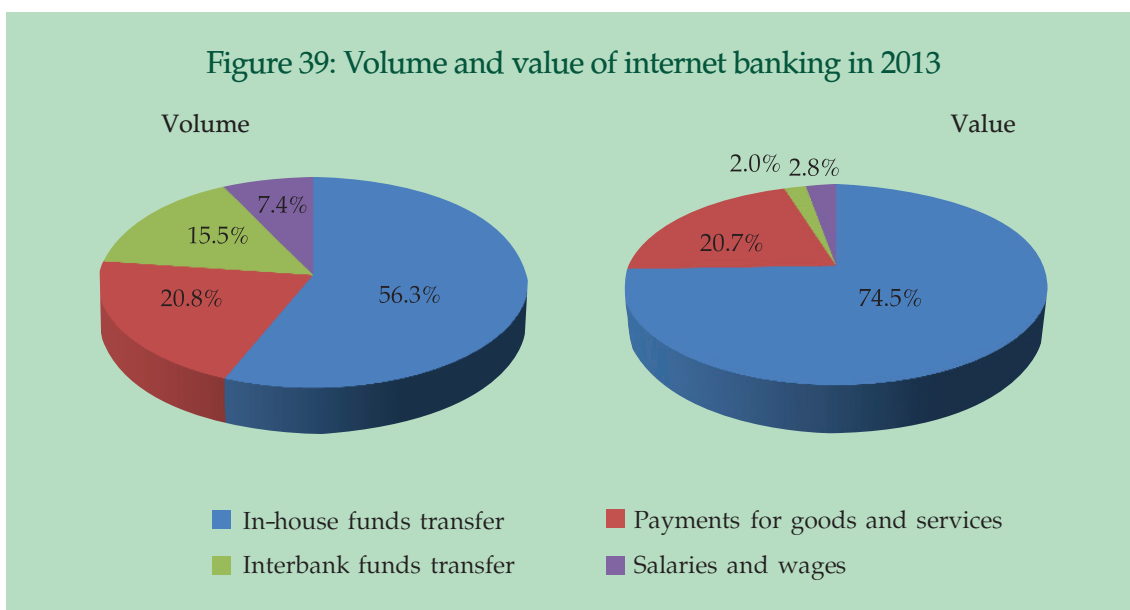
Source: Bank of Thailand

Bill payment at the counter could be categorized into payment for utilities (electricity, water and telephone services) and payment for purchases of goods and services (credit card, mobile phone, internet, insurance premium, air ticket, and lay-by installment). In 2013, the volume and value of payment for goods and services registered at 77.6 and 98.8 percent, respectively, exceeding those of payment for utilities. Part of the reasons for the aforementioned trend was that some customers chose to pay for utilities by other means, including direct payment at service providers' branches, direct debit and credit card. Moreover, some retailers also offered an option for payment through both bank and non-bank agents to provide more convenience for customers.

3.2 Internet banking and mobile banking

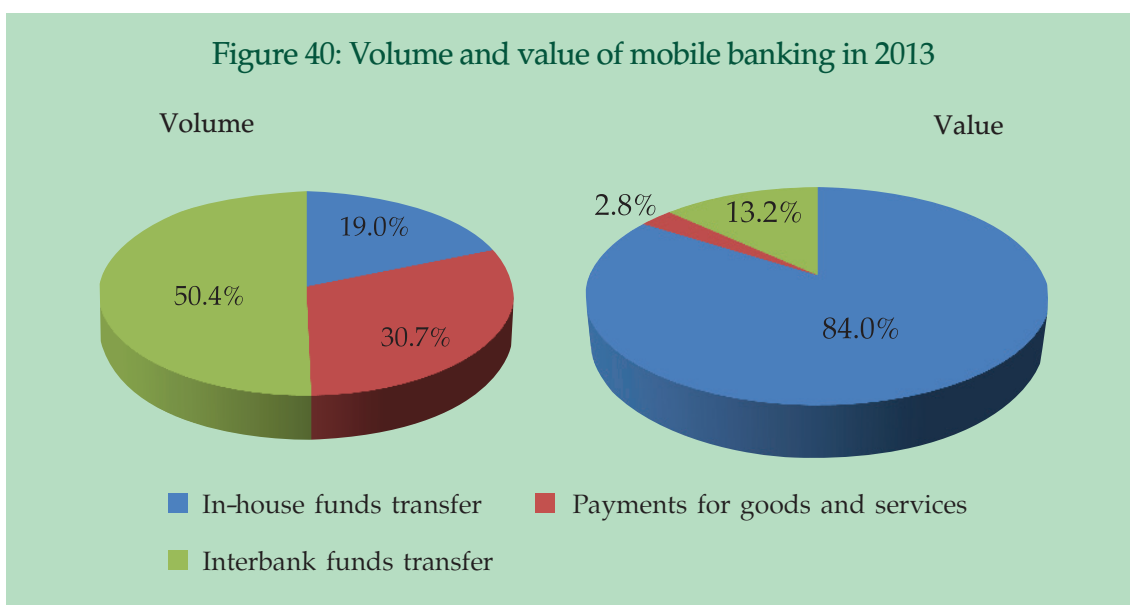
Recently, commercial banks started to become more active in promoting the use of electronic banking, name internet banking and mobile banking, given the rapid technological development and strengthened consumer confidence. Growth was registered in terms of both volume and value. In 2013, there were 18 commercial banks that offered internet banking service. The total number of transactions increased from 125.3 million transactions in the previous year to 161.8 million transactions this year, equivalent to a 29.1 percent growth. The total value of transactions also increased from 14.1 trillion Baht in the previous year to 19.5 trillion Baht this year, equivalent to a 38.5 percent growth. For mobile banking, there were 4 commercial banks²⁰ that offered the service. The total number of transactions increased from 36.3 million transactions in the previous year to 57.2 million transactions this year, equivalent to a 57.6 percent growth. The total value of transactions also increased from 440.1 billion Baht in the previous year to 751.6 billion Baht this year, equivalent to a 70.8 percent growth. In this regard, the continual growth in mobile banking owed primarily to the availability of a range of functions and services from mobile phones and tablets, including payment transaction. Prices also fell significantly over the years, making it more affordable and practical for customers to use these portable devices to make payment transactions.

²⁰ Mobile banking data reported by commercial banks to BOT



Source: Bank of Thailand

The volume and value of internet banking mostly represented in-house funds transfer, constituting 56.3 and 74.5 percent of the total volume and value of transactions, respectively. Payment for goods and services followed at 20.8 and 20.7 percent of the total volume and value of transactions, respectively. Interbank funds transfer represented 15.5 and 2.0 percent of the total volume and value of transactions, respectively. Finally, payment of salary and wages represented 7.4 and 2.8 percent of the total volume and value of transactions, respectively.

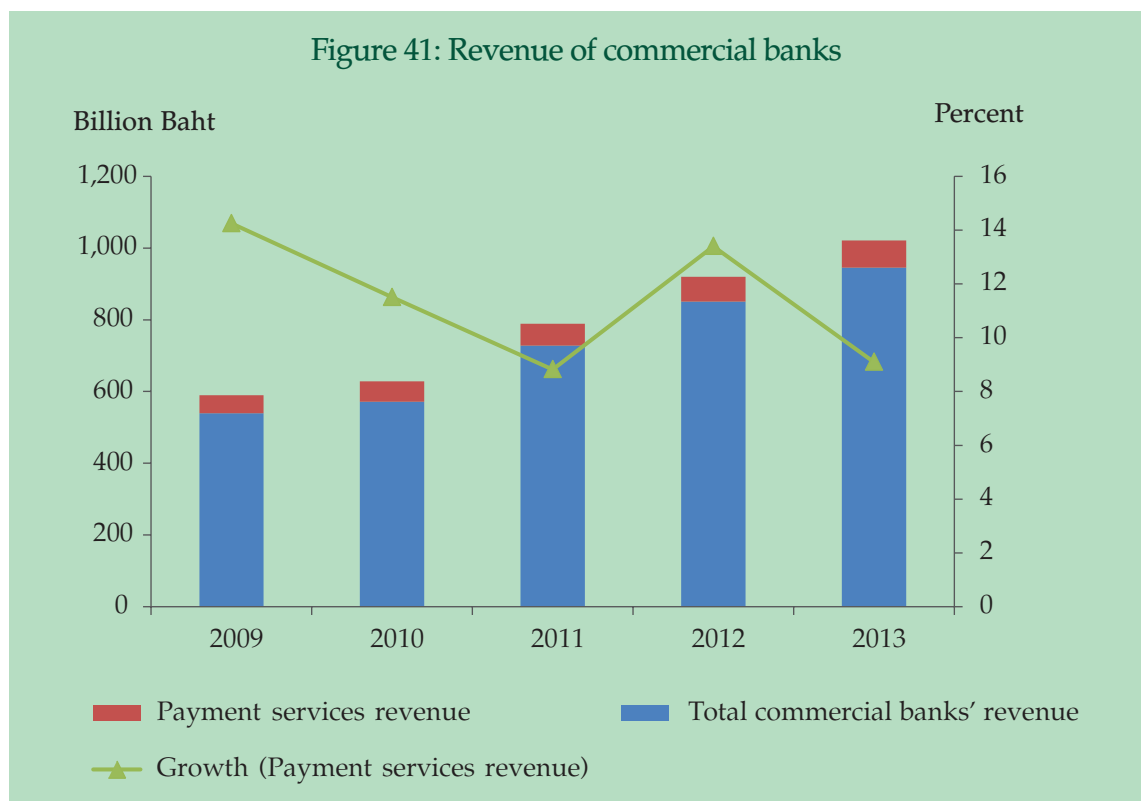


Source: Bank of Thailand

Meanwhile, the volume of mobile banking was mostly constituted by interbank funds transfer at 50.4 percent of the total volume of transactions. Payment for goods and services and in-house funds transfer then followed at 30.7 and 19.0 percent of the total volume of transactions, respectively. The value of mobile banking transactions, however, was mostly represented by in-house funds transfer at 84.0 percent of the total value of transactions. Interbank funds transfer and payment for goods and services then followed at 13.2 and 2.8 percent of the total value of transactions, respectively.

4. Revenue from payment services

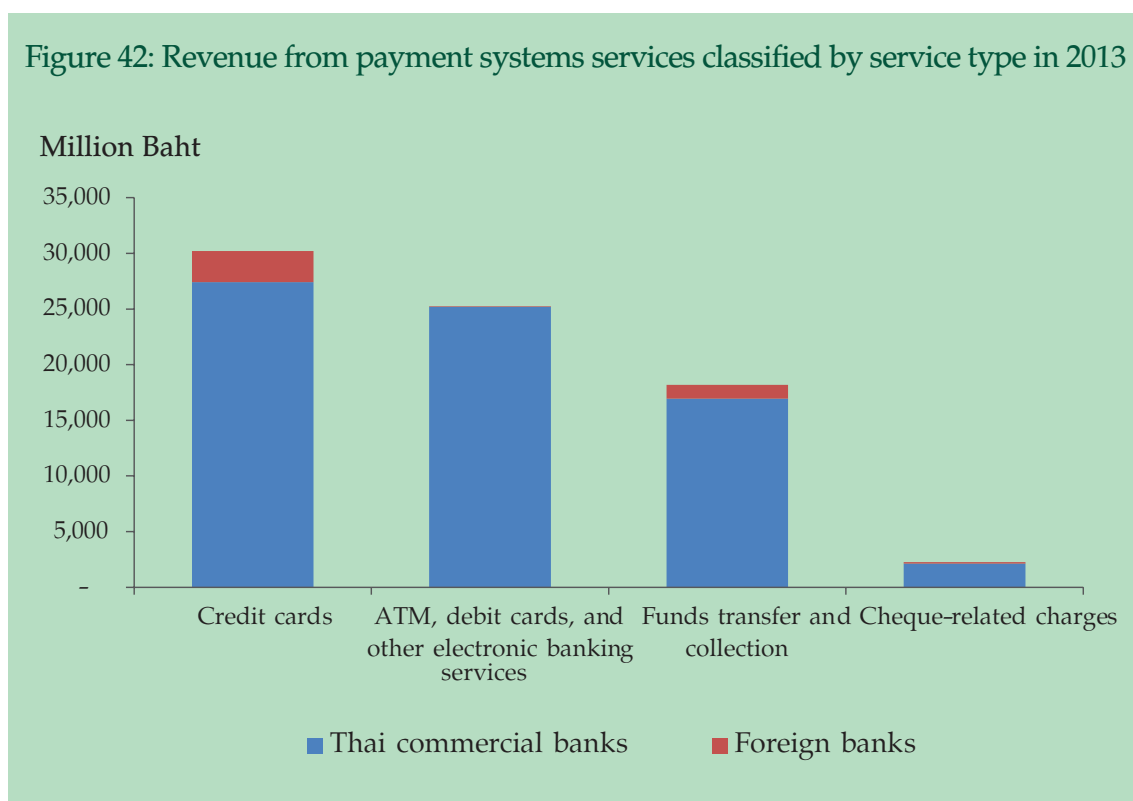
Commercial banks' revenue from payment systems services come from 4 sources of income, namely credit cards usage fee, ATM cards, debit cards and other e-banking services fees, transfer and collection fees, and cheque-related charges.



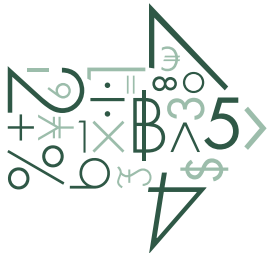
Source: Bank of Thailand

In 2013, commercial banks' revenue from payment systems services totaled at 75.9 billion Baht or 8.0 percent of the total revenue of 945.4 billion Baht.

The above represented an increase of 6.3 billion Baht or 9.1 percent growth, slowing down from the previous year. Credit card usage continued to provide the main source of revenue, representing 39.8 percent of total revenue. ATM card, debit card and other e-banking services fees, transfer and collection fees (including cheque collection), and cheque-related charges (e.g. cost of a cheque and returned cheque fee), then followed at 33.3, 23.9 and 3.0 percent of total revenue, respectively. It should also be noted that commercial banks' cheque-related charges dropped from the previous year due to the decrease in cheque volume.



Source: Bank of Thailand



IV Glossary and abbreviation

ABA	ASEAN Bankers Association
ABS	Association of Banks in Singapore
AEC	ASEAN Economic Community
APC	Australian Payments Council
APN	Asian Payment Network
ASEAN5	Indonesia, Malaysia, Philippines, Singapore and Thailand
ATM	Automated Teller Machine
BAAC	Bank of Agriculture and Agricultural Cooperatives
BAHTNET	Bank of Thailand Automated High-Value Transfer Network
BCBS	Basel Committee on Banking Supervision
BCLMV	Brunei, Cambodia, Laos, Myanmar and Vietnam
BCM	Business Continuity Management
BIS	Bank for International Settlements
BNM	Bank Negara Malaysia
BOT	Bank of Thailand
BSA	Bilateral Swap Arrangement
BSP	Bangko Sentral ng Pilipinas
B2B	Business-to-Business
CAGR	Compound Annual Growth Rate
CAT	CAT Telecom Co. Ltd.
CCP	Central Counterparties
CDM	Cash Deposit Machine
CGI	Common Global Implementation
CLM	Cambodia Laos Myanmar
CLS	Continuous Linked Settlement
CMF	Collateral Management Facility
CP	Collateral Provider
CPSS	The Committee on Payment and Settlement System
EBPP	Electronic Bill Presentment and Payment
e-business	Electronic Business
ebXML	Electronic Business Extensible Markup Language

e-cheque	Electronic Cheque
EDC	Electronic Data Capture
EDIFACT	Electronic Data Interchange For Administration, Commerce and Transport
e-document	Electronic Document
EFT	Electronic Funds Transfer
EFTPOS	Electronic Funds Transfer at Point Of Sale
eGP	Electronic Government Procurement system
e-guarantee	Electronic tax guarantee
e-invoicing	Electronic Invoicing
e-money	Electronic Money
EMV	Europay, MasterCard and Visa
e-payment	Electronic Payment
ERP	Enterprise Resource Planning
e-tax Invoice	Electronic Tax Invoice
ETC	Electronic Transactions Commission
ETDA	Electronic Transactions Development Agency (Public Organization)
FMI	Financial Market Infrastructures
FX	Foreign Exchange
GDP	Gross Domestic Product
HKICL	Hong Kong Interbank Clearing Limited
HKMA	Hong Kong Monetary Authority
ICAS	Imaged Cheque Clearing and Archive System
IEC	The International Electrotechnical Commission
ILF	Intraday Liquidity Facility
IPFA	International Payment Framework Association
ISO	International Organization for Standardization
ITMX	Interbank Transaction Management and Exchange
LSW	Local Switching
MEPS	Malaysian Electronic Payment System
MPOS	Mobile Point of Sale
MPU	Myanmar Payment Union
NBTC	Office of the National Broadcasting and Telecommunications Commission
NFC	Near Field Communication
NITMX	National ITMX

NPMS	National Payment Message Standard
Non-bank	Non-bank financial institutions
NSTDA	National Science and Technology Development Agency
NSW	National Single Window
ORFT	Online Retail Funds Transfer
OTP	Office of Transport and Traffic Policy and Planning
OTP	One Time Password
PFMI	Principles for Financial Market Infrastructures
PIRPS	Prominently Important Retail Payment Systems
PSA	Payment Systems Association
PSC	Payment Systems Committee
P/O	Purchasing order
PvP	Payment versus Payment
RBA	Reserve Bank of Australia
RMB	Renminbi (the official currency of the People's Republic of China)
RP	Repurchase
RTGS	Real Time Gross Settlement
SEC	Securities and Exchange Commission Thailand
SFIs	Specialized Financial Institutions
SIPS	Systemically Important Payment Systems
SMEs	Small and Medium Enterprises
SRS	Securities Requirement for Settlement
TH-PMPG	Thailand Payment Market Practice Group
U.S.	United States
USD	U.S. Dollar
USD CHATS	US Dollar Clearing House Automated Transfer System
WG-EPD	Working Group on Electronic Payments Promotion and Development
WC-PSS	Working Committee on Payment and Settlement Systems
XML	eXtensible Markup Language



Allied Market Research. Mobile Wallet (NFC, Digital Wallet) Market (Applications, Mode of Payment, Stakeholders and Geography) - Global Share, Size, Industry Analysis, Trends, Opportunities, Growth and Forecast, 2012 – 2020. Retrieved in January 2014. From <http://www.alliedmarketresearch.com/mobile-wallet-market>

Bank for International Settlements January 2013. Statistics on payment, clearing and settlement systems in the CPSS countries - Figures for 2011. Retrieved in January 2014. From <http://www.bis.org/publ/cpss107.htm>

Bank Negara Malaysia. Malaysia's Payment Statistics. Retrieved in January 2014. From http://www.bnm.gov.my/index.php?ch=ps&pg=ps_stats&eId=box1

Bank Negara Malaysia. Migration from Paper to Electronic Payments. Retrieved in January 2014 From http://www.bnm.gov.my/index.php?ch=ps_mep&pg=ps_mep_migration&lang=en

Banking Automation Bulletin, 2012. Over half of all new cards carry the Union Pay logo. Retrieved in January 2014. From http://www.rbrlondon.com/reports/b303_cards.pdf

Boston Consulting Group. 2011 global payments report: Winning After the Storm, February 8 2011

Brett King. Bank 3.0: Why Banking Is No Longer Somewhere You Go But Something You Do., November 2012.

Comscore. Digital Wallet Roadmap 2013: The Fast Lane to Driving Consumer Adoption. Retrieved in January 2014. From http://www.comscore.com/Insights/Presentations_and_Whitepapers/2013/Digital_Wallet_Road_Map_2013

Department of Revenue. e-tax Invoice / e-receipt. Retrieved in January 2014. From <http://rdetax.rd.go.th/BOETAX/jsp/eTaxInvoice/index.jsp> (in Thai)

European Banking Authority. EBA warns consumers on virtual currencies, 13 December 2013. Retrieved in January 2014. From <http://www.eba.europa.eu/-/eba-warns-consumers-on-virtual-currencies>

European Central Bank. RECOMMENDATIONS FOR THE SECURITY OF MOBILE PAYMENTS DRAFT DOCUMENT FOR PUBLIC CONSULTATION, 20 November 2013. Retrieved in January 2014. From <https://www.ecb.europa.eu/paym/cons/pdf/131120/recommendationsforthesecurityofmobilepaymentsdraftpc201311en.pdf?7f9004f1cbbec932447c1db2c84fc4e9>

Hong Kong Monetary Authority. Electronic Bill Presentment and Payment Service Jointly Launched by Banking Sector, 11 December 2013. Retrieved in January 2014. From <http://www.hkma.gov.hk/eng/key-information/press-releases/2013/20131211-3.shtml>

Office of Transport and Traffic Policy and Planning. Common Tickets Data. Retrieved in January 2014. From <http://www.thaicommonticket.com/index.php/th/> (in Thai)

PTT Public Company Limited. Direct Approve: A new financial innovation towards “Regional Top Brand”. Retrieved in January 2013. From <http://www.pttplc.com/th/Media-Center/PTTNewsLetterLibrary/วารสารพลังไทย/วารสารพลังไทย%20-%20ปีที่%2021%20ฉบับที่%201/4-8%20ptt-M11.p1.pdf> (in Thai)

Payments Source. Mobile Point of Sale Projected to Reach 46% Market Share in 2017. Retrieved January 2014. From <http://www.paymentsource.com/news/mobile-point-of-sale-projected-to-reach-46-percent-market-share-in-2017-3016146-1.html>

The GSMA. Mobile Money for the Unbanked, 23 May 2013. Retrieved in January 2014. From <http://www.gsma.com/mobilefordevelopment/in-indonesia-operators-choose-interoperability-and-collaboration>

The Hong Kong Association of Banks. Best Practice on NFC Mobile Payment in Hong Kong, 25 November 2013. Retrieved in January 2014. From <http://www.hkab.org.hk/DisplayArticleAction.do?sid=28&ss=2>

The Malaysian Electronic Payment System Sdn Bhd (MEPS). MEPS ATM. Retrieved in January 2014. From <http://www.meps.com.my/meps/services/meps-atm>



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Table 1: Basic statistical data						
	2008	2009	2010	2011	2012	2013
Population (millions)	63.39	63.53	63.88	64.08	64.46	64.79
GDP current price (billion Baht)	9,080.4	9,041.5	10,104.8	10,539.4	11,363.0	11,897.4
GDP per capita (Baht)	143,247.18	142,329.65	158,184.10	164,482.80	176,279.86	183,630.95
Exchange rate vis-à-vis US\$ (at year-end)	34.93	33.36	30.15	31.70	30.63	32.82

Sources: Bank of Thailand, Department of Provincial Administration, National Economic & Social Development Board

Table 2: Technological infrastructure ¹						
	2008	2009	2010	2011	2012	2013
Total fixed network telephone subscribers (millions)	7.39	7.20	6.92	6.66	6.38	6.06
Total mobile telephone subscribers (millions)	61.84	65.95	71.62	77.60	85.01	92.46
Postpaid	6.48	7.05	7.29	7.97	9.78	11.65
Prepaid	55.36	58.90	64.33	69.64	75.23	80.81
Total Internet users (millions)	16.10	18.30	19.79	25.09	25.15	26.14
Penetration rates						
Fixed network telephone (%)	11.66	11.34	10.84	10.40	9.89	9.35
Mobile telephone (%)	97.55	103.82	112.12	121.11	131.88	142.71

Sources: National Broadcasting and Telecommunication Commission and National Electronics and Computer Technology Center

¹ Data source was changed since 2013 and all data was reviewed.

Table 3: Narrow money (at year-end , million Baht)						
	2008	2009	2010	2011	2012	2013
Narrow money (1+2)	1,041,224	1,174,551	1,302,442	1,414,297	1,598,261	1,661,304
1. Currency outside Depository Corp. & Central Gov.	752,325	843,958	937,201	1,036,015	1,136,302	1,188,888
Banknotes in circulation	923,967	1,005,884	1,114,518	1,248,569	1,350,932	1,425,282
Coins in circulation	38,664	40,675	43,348	46,953	50,864	54,322
Less: currency held by Central Gov.	1,170	1,300	1,256	986	854	1,115
Less: currency held by Depository Corp.	209,136	201,301	219,409	258,521	264,640	289,602
Held by commercial banks	184,762	178,970	193,495	221,289	210,596	238,668
Held by finance companies	0	0	0	0	0	0
Held by Specialized Financial Institutions	24,227	22,183	25,737	36,905	53,602	50,538
Held by savings cooperatives	147	148	177	326	441	395
Held by money market mutual funds	0	0	0	0	0	0
2. Transferable deposits at Depository Corp.	288,899	330,593	365,241	378,282	461,959	472,416
Transferable deposits at Bank of Thailand	15,107	3,131	2,943	3,053	4,554	3,225
Transferable deposits at commercial banks	269,770	321,325	357,378	368,192	451,295	464,220
Transferable deposit at Specialized Financial Institutions	4,022	6,137	4,920	7,037	6,110	4,970

Source: Bank of Thailand

Table 4: Settlement media used by non-banks (at year-end, billion Baht)						
	2008	2009	2010	2011	2012	2013
Currency outside Depository Corp. & Central Gov. ¹	752	844	937	1,036	1,136	1,189
Transferable deposits at Depository Corp.	289	331	365	378	462	472
Narrow money	1,041	1,175	1,302	1,414	1,598	1,661
Broad money ²	9,944	10,617	11,779	13,560	14,967	16,062

Source: Bank of Thailand

¹ Banknotes outside depository corporations and coins issued by central government

² Narrow money and quasi money (other deposits at Depository Corp.+securities other than shares)

Table 5: Settlement media used by banks (at year-end, billion Baht)

	2008	2009	2010	2011	2012	2013
Balances held at central bank	58.5	48.2	78.2	59.3	88.7	89.8
Required reserves	426.7	425.9	457.8	488.5	655.6	668.2
Free reserves	1,382.2	1,908.3	2,110.7	2,004.5	2,489.4	2,575.2
Transferable deposits at other banks	5.0	3.7	6.7	7.9	6.5	3.7
Memorandum item:						
Institutions borrowing from central bank	19.2	14.9	10.0	0.0	124.7	119.4

Source: Bank of Thailand

Table 6: Indicators of the use of various cashless payment instruments

Volume of transactions (in thousands)	2008	2009	2010	2011	2012	2013
Paper-based:	129,126	123,202	114,558	115,761	123,110	118,365
In-house cheque ¹	49,900	48,310	39,435	41,833	48,398	44,793
Interbank cheque	79,227	74,892	75,123	73,928	74,711	73,572
Electronic payment cards:	1,679,227	1,850,327	2,164,395	2,480,439	2,827,638	3,182,137
ATM card	555,826	556,613	542,707	561,136	539,056	535,350
for cash withdrawal via ATM	419,610	387,175	422,546	429,288	424,354	415,872
for other purposes ²	136,216	169,438	120,161	131,848	114,702	119,478
Debit card	761,142	895,708	1,085,356	1,231,241	1,406,350	1,576,484
for cash withdrawal via ATM	617,729	724,622	828,607	920,029	1,059,075	1,165,118
for purchasing purpose via EFTPOS	11,496	11,913	13,802	25,057	30,748	37,221
for other purposes ³	131,918	159,172	242,948	286,155	316,527	374,144
Credit card ⁴	284,305	294,999	314,873	339,865	369,920	401,093
for purchasing purpose	251,128	263,424	282,597	308,212	343,346	373,046
for other purposes ⁵	33,177	31,575	32,276	31,653	26,574	28,047
e-Money ⁶	77,954	103,007	221,459	348,198	512,311	669,210
Automated:	220,128	237,630	274,019	296,861	332,324	346,410
Direct credit ⁷	134,010	146,151	166,372	178,147	204,829	214,657
Direct debit ⁸	64,985	68,583	80,621	88,086	93,531	93,636
ITMX Bulk Payment	19,205	20,891	24,702	27,901	31,018	34,864
BAHTNET ⁹	1,929	2,005	2,323	2,728	2,946	3,253

Source: Bank of Thailand

¹ Some banks do not report in-house provincial cheques and inter-provincial cheques.

² Data include purchasing goods and services deposit and funds transfer.

³ Data include purchasing goods and services via other channels deposit and funds transfer.

⁴ Data include bank cards/affinity cards, non-bank cards/affinity cards and foreign credit cards used in Thailand

⁵ Data include cash withdrawal cash advance, deposit and funds transfer.

⁶ Data exclude top-up cards.

⁷ Intra-bank pre-authorized direct credit

⁸ Intra-bank pre-authorized direct debit

⁹ Data include funds transfer, third party funds transfer and Multilateral Funds Transfer

Table 7: Indicators of the use of various cashless payment instruments						
Value of transactions (billion Baht)						
	2008	2009	2010	2011	2012	2013
Paper-based:	62,147	56,066	51,698	56,361	64,908	64,581
In-house cheque ¹	25,061	22,473	17,918	20,363	26,072	24,262
Interbank cheque	37,086	33,593	33,780	35,998	38,837	40,319
Payment cards:	7,928	8,467	9,871	11,496	13,350	14,498
ATM card	2,645	2,643	2,508	2,677	2,437	2,451
for cash withdrawal via ATM	1,634	1,498	1,721	1,804	1,852	1,846
for other purposes ²	1,011	1,145	787	873	584	606
Debit card	4,354	4,876	6,294	7,620	9,489	10,475
for cash withdrawal via ATM	2,738	3,095	3,670	4,275	5,136	5,743
for purchasing purpose via EFTPOS	24	24	30	81	94	100
for other purposes ³	1,592	1,757	2,593	3,264	4,259	4,633
Credit card ⁴	921	937	1,052	1,174	1,389	1,524
for purchasing purpose	711	737	845	964	1,157	1,282
for other purposes ⁵	210	200	207	211	232	241
e-Money ⁶	8.4	10.5	17.7	24.7	35.4	48.0
Automated :	286,191	498,861	665,846	780,284	666,637	698,976
Direct credit ⁷	6,044	6,698	8,121	10,163	12,028	12,964
Direct debit ⁸	1,847	1,676	2,021	3,014	3,719	4,102
ITMX Bulk Payment	828	868	1,081	1,393	1,771	2,187
BAHTNET ⁹	277,472	489,619	654,623	765,714	649,119	679,723

Source: Bank of Thailand

¹ Some banks do not report in-house provincial cheques and inter-provincial cheques.

² Data include purchasing goods and services deposit and funds transfer.

³ Data include purchasing goods and services via other channels deposit and funds transfer.

⁴ Data include bank cards/affinity cards, non-bank cards/affinity cards and foreign credit cards used in Thailand

⁵ Data include cash withdrawal cash advance, deposit and funds transfer.

⁶ Data exclude top-up cards.

⁷ Intra-bank pre-authorized direct credit

⁸ Intra-bank pre-authorized direct debit

⁹ Data include funds transfer, third party funds transfer and Multilateral Funds Transfer.

Table 8: Use of credit cards and debit cards via EFTPOS¹ (monthly average per card, Baht)						
	2008	2009	2010	2011	2012	2013
Credit card	3,395	3,462	3,766	4,022	4,611	4,594
Debit card	75	65	74	174	181	194

Source: Bank of Thailand

¹ Domestic and oversea spending of Thai credit cards and Thai debit cards via EFTPOS

Table 9: Cash withdrawal via ATM (monthly average per card, Baht)

	2008	2009	2010	2011	2012	2013
ATM card	6,036	5,327	5,901	6,328	6,403	6,381
Debit card	8,686	8,402	8,961	9,198	9,956	10,579

Source: Bank of Thailand

Table 10: Notes and coins (at year-end, million Baht)

	2008	2009	2010	2011	2012	2013
Notes and coins	993,148	1,095,159	1,187,828	1,346,438	1,401,796	1,480,427
Notes:	954,484	1,054,484	1,144,480	1,299,485	1,350,932	1,425,282
500000 Baht	117	117	116	117	118	118
1000 Baht	701,711	774,058	889,617	1,028,838	1,102,770	1,202,441
500 Baht	119,283	140,972	113,746	119,826	128,217	138,695
100 Baht	97,484	98,605	98,235	108,220	121,358	129,095
60 Baht	1,161	1,163	1,166	1,173	1,175	150
80 Baht	0	0	0	0	149	1,178
50 Baht	9,377	13,062	12,799	9,599	13,194	13,347
20 Baht	21,674	22,835	25,134	28,045	28,840	30,801
10 Baht	3,351	3,346	3,342	3,340	3,336	3,334
5 Baht	196	196	195	196	196	196
1 Baht	121	121	121	121	121	121
50 Satang	9	9	9	9	9	9
Coins:	38,664	40,675	43,348	46,953	50,864	55,145

Source: Bank of Thailand

Table 11: Institutional infrastructure	2008	2009	2010	2011	2012	2013
Central Bank						
Number of Institutions	1	1	1	1	1	1
Number of Branches	3	3	3	3	3	3
Number of Accounts ¹	260	226	231	231	241	182
Value of Accounts (million Baht) ¹	159,678	250,262	422,059	353,916	381,223	439,175
Thai Commercial Banks						
Number of Institutions	18	17	17	16	16	16
Number of Branches	5,477	5,791	5,961	6,183	6,391	6,601
Number of Accounts	75,259,745	76,078,336	79,073,950	77,588,699	81,344,121	84,433,032
Value of Accounts (million Baht)	6,535,094	6,557,653	6,886,058	7,367,485	9,540,114	10,350,543
Specialized Financial Institutions						
Number of Institutions	6	6	6	6	6	6
Number of Branches	1,796	1,853	2,002	2,240	2,348	2,549
Number of Accounts	42,713,869	41,618,537	37,838,856	37,366,503	48,233,488	54,377,970
Value of Accounts (million Baht)	1,809,653	2,175,906	2,435,471	2,249,904	3,199,296	3,604,591
Government Savings Bank						
Number of Institutions	1	1	1	1	1	1
Number of Branches	596	622	721	864	932	1,001
Number of Accounts ⁴	20,883,860	20,064,408	15,416,349	17,583,643	25,514,556	29,583,606
Value of Accounts (million Baht)	702,479	921,541	1,180,248	909,226	1,594,206	1,876,975
Government Housing Bank						
Number of Institutions	1	1	1	1	1	1
Number of Branches	112	125	94	100	136	161
Number of Accounts	849,405	657,055	726,782	751,718	772,753	875,748
Value of Accounts (million Baht)	515,149	548,032	425,868	445,988	453,195	482,970
Bank for Agriculture and Agricultural Cooperatives						
Number of Institutions	1	1	1	1	1	1
Number of Branches ⁵	953	967	1,020	1,075	1,071	1,173
Number of Accounts	20,860,275	20,751,677	21,453,534	18,642,662	21,258,090	23,185,277
Value of Accounts (million Baht)	542,751	622,757	675,123	677,356	932,498	1,050,156
Export-Import Bank of Thailand						
Number of Institutions	1	1	1	1	1	1
Number of Branches	10	16	18	14	9	9
Number of Accounts	4,879	6,516	2,715	2,960	2,214	2,208
Value of Accounts (million Baht)	6,095	8,089	7,844	7,818	7,103	6,923
Small and Medium Enterprise Development Bank of Thailand						
Number of Institutions	1	1	1	1	1	1
Number of Branches	99	95	95	95	94	95
Number of Accounts	77	195	666	425	179	285
Value of Accounts (million Baht)	23,106	34,173	60,050	91,933	89,823	75,854
Islamic Bank of Thailand						
Number of Institutions	1	1	1	1	1	1
Number of Branches	26	28	54	92	106	110
Number of Accounts	115,373	138,686	238,810	385,095	685,696	730,846
Value of Accounts (million Baht)	20,073	41,314	86,338	117,583	122,471	111,713
Foreign Bank Branches						
Number of Institutions	16	15	15	15	15	15
Number of Branches	16	15	15	18	19	19
Number of Accounts	90,115	89,866	92,402	96,165	86,556	89,607
Value of Accounts (million Baht)	507,009	466,418	511,604	623,338	679,790	699,573
Post Office						
Number of Institutions	1	1	1	1	1	1
Number of Branches	1,188	1,254	1,281	1,295	1,298	1,303
Number of Accounts	-	-	-	-	-	-
Value of Accounts (million baht)	-	-	-	-	-	-

Sources: Bank of Thailand and Thailand Post Co., Ltd.

¹ Data exclude regional offices.

Table 12: Payment instructions handled by selected interbank settlement systems
Volume of transactions (in thousands)

	2008	2009	2010	2011	2012	2013
Paper-based:	79,227	74,892	75,123	73,928	74,711	73,572
Intra-provincial Cheque in Bangkok and vicinity ¹	57,833	53,926	53,864	52,432	53,144	52,051
Intra-provincial Cheque in Regional Area ²	14,666	14,353	14,533	14,775	14,800	13,312
Inter-provincial Cheque ³	6,728	6,613	6,726	6,720	6,768	8,209
Automated:	100,181	99,110	116,482	130,554	150,962	170,153
BAHTNET ⁴	1,929	2,005	2,323	2,728	2,946	3,253
ITMX Bulk Payment	19,205	20,891	24,702	27,901	31,018	34,864
ORFT-ATM (Online Retail Funds Transfer)	79,047	76,214	89,456	99,926	116,997	132,035

Sources: Bank of Thailand and National ITMX Co., Ltd.

¹ ICAS was implemented to replaced ECS on 4 February 2012.

² Provincial Cheque Clearing migrated to ICAS since 15 November 2012 and implemented nationwide in December 2013.

³ Inter-provincial Cheques cleared via ICAS since 16 May 2013.

⁴ Data include funds transfer, third party funds transfer and Multilateral Funds Transfer.

Table 13: Payment instructions handled by selected interbank settlement systems
Value of transactions (billion Baht)

	2008	2009	2010	2011	2012	2013
Paper-based:	37,086	33,593	33,780	35,998	38,837	40,319
Intra-provincial Cheque in Bangkok and vicinity ¹	33,912	30,473	30,247	32,053	34,542	35,980
Intra-provincial Cheque in Regional Area ²	2,798	2,761	3,137	3,508	3,811	3,684
Inter-provincial Cheque ³	376	359	396	438	484	655
Automated:	278,778	490,940	656,253	767,749	651,660	682,762
BAHTNET ⁴	277,472	489,619	654,623	765,714	649,119	679,723
ITMX Bulk Payment	828	868	1,081	1,393	1,771	2,187
ORFT-ATM (Online Retail Funds Transfer)	478	453	549	642	771	852

Sources: Bank of Thailand and National ITMX Co., Ltd.

¹ ICAS was implemented to replaced ECS on 4 February 2012.

² Provincial Cheque Clearing migrated to ICAS since 15 November 2012 and implemented nationwide in December 2013.

³ Inter-provincial Cheques cleared via ICAS since 16 May 2013.

⁴ Data include funds transfer, third party funds transfer and Multilateral Funds Transfer.

Table 14: Securities transfer instructions handled by securities settlement systems
Volume of transactions

	2008	2009	2010	2011	2012	2013
Bond registry system:						
Government securities	5,564	5,153	6,665	7,204	7,979	4,222
Book-entry system:						
Equity securities (in millions)	2.41	2.46	2.83	2.66	3.09	3.72
Government securities (in millions)	0.09	0.09	0.13	0.14	0.18	0.19

Sources: Bank of Thailand and Thailand Securities Depository Co., Ltd.

Table 15: Securities transfer instructions handled by securities settlement systems
Value of transactions (billion Baht)

	2008	2009	2010	2011	2012	2013
Bond registry system:						
Government securities	33.00	42.00	20.00	22.08	28.05	50.00
Book-entry system:						
Equity securities	625.75	539.00	816.31	1,028.71	839.00	1,220.00
Government securities	58,647.47	51,070.85	66,816.66	80,468.68	82,954.00	81,839.00

Sources: Bank of Thailand and Thailand Securities Depository Co., Ltd.

Table 16: Number of participants in selected payment and settlement systems						
	2008	2009	2010	2011	2012	2013
BAHTNET ¹	69	65	66	64	65	64
Intra-provincial Cheque in Bangkok and vicinity ²	40	38	38	38	36	36
Intra-provincial Cheque in Regional Area ³	23	21	22	22	21	23
Inter-provincial Cheque ⁴	39	37	37	37	35	36
ITMX Bulk Payment	33	33	33	32	32	31
Bond registry system:						
Government securities	308,188	633,708	529,237	341,968	283,597	211,631
Book-entry system:						
Equity securities and Government securities	91	88	89	89	86	86

Sources: Bank of Thailand and Thailand Securities Depository Co., Ltd.

¹ Data include funds transfer; third party funds transfer and Multilateral Funds Transfer

² ICAS was implemented to replaced ECS on 4 February 2012.

³ Provincial Cheque Clearing migrated to ICAS since 15 November 2012 and implemented nationwide in December 2013.

⁴ Inter-provincial Cheques cleared via ICAS since 16 May 2013.

Table 17: Number of Automated machines¹ and EFTPOS terminals²						
	2008	2009	2010	2011	2012	2013
Total of Automated machines	34,796	39,454	44,468	47,759	52,242	56,851
Bangkok	12,624	13,586	14,639	15,099	15,802	16,304
Central	11,871	13,951	15,669	16,658	18,036	19,640
Northeast	3,673	4,370	5,314	6,091	7,128	7,270
North	3,230	3,707	4,304	4,760	5,474	6,110
South	3,398	3,840	4,542	5,151	5,802	7,527
Total of EFTPOS terminals	246,563	227,283	258,248	267,168	264,236	311,289
Bangkok	134,202	120,786	133,353	133,712	129,777	146,012
Central	51,377	48,962	56,468	61,134	61,898	76,939
Northeast	13,554	13,558	16,387	17,751	18,926	23,937
North	22,858	21,596	24,697	25,966	24,432	30,296
South	24,572	22,381	27,343	28,605	29,203	34,105

Source: Bank of Thailand

¹ Automated Teller Machines (ATM) and Cash Deposit Machines (CDM)

² Data include commercial banks and some credit card companies.

Table 18: Number of electronic payment cards¹						
	2008	2009	2010	2011	2012	2013
Total	61,798,358	67,631,419	72,627,280	77,818,347	83,966,632	87,970,298
Credit card ²	12,971,694	13,489,422	14,187,815	15,328,291	16,870,025	18,626,864
ATM card	22,560,305	23,438,658	24,308,945	23,756,810	24,108,467	24,101,957
Debit card	26,266,359	30,703,339	34,130,520	38,733,246	42,988,140	45,241,477

Source: Bank of Thailand

¹ Data exclude e-Money.

² Data include non-bank.

Table 19: Sources of payment revenues of Thai commercial banks (million Baht)¹

	2008	2009	2010	2011	2012	2013
Total	44,720	49,568	55,324	60,217	68,670	71,680
Credit card	12,934	13,451	15,562	19,867	24,049	27,419
ATM card and e-banking	12,430	16,539	18,477	19,288	22,475	25,194
Money transfer and collection	14,310	15,148	16,516	15,937	16,875	16,944
Cheque-related fee	2,365	2,128	2,164	2,098	2,172	2,123

Source: Bank of Thailand

¹ From 2013, data exclude securities custodian and letter of credit.

Table 20: Sources of payment revenues of foreign bank branches (million Baht)¹

	2008	2009	2010	2011	2012	2013
Total	2,990	3,977	4,425	5,050	4,876	4,208
Credit card	1,218	2,356	2,564	2,945	2,653	2,794
ATM card and e-banking	57	46	47	49	50	51
Money transfer and collection	919	874	913	1,029	1,162	1,230
Cheque-related fee	19	15	129	130	126	133

Source: Bank of Thailand

¹ From 2013, data exclude securities custodian and letter of credit.

Table 21: Daily averages of BOT payment services. Volume of transactions

	2008	2009	2010	2011	2012	2013
BAHTNET ¹	7,716	8,251	9,600	11,180	12,025	13,278
Intra-provincial Cheque in Bangkok and vicinity ²	231,334	221,919	222,578	214,886	216,912	212,453
Intra-provincial Cheque in Regional Area ³	58,663	59,065	60,053	60,553	60,406	54,336
Inter-provincial Cheque ⁴	26,911	27,216	27,795	27,543	27,625	33,505
ITMX Bulk Payment	76,819	85,972	102,074	114,346	126,606	142,304

Source: Bank of Thailand

¹ Data include funds transfer, third party funds transfer and Multilateral Funds Transfer.

² ICAS was implemented to replaced ECS on 4 February 2012.

³ Provincial Cheque Clearing migrated to ICAS since 15 November 2012 and implemented nationwide in December 2013.

⁴ Inter-provincial Cheques cleared via ICAS since 16 May 2013.

Table 22: Daily averages of BOT payment services. Value of transactions (billion Baht)

	2008	2009	2010	2011	2012	2013
BAHTNET ¹	1,110	2,015	2,705	3,138	2,649	2,774
Intra-provincial Cheque in Bangkok and vicinity ²	136	125	125	131	141	147
Intra-provincial Cheque in Regional Area ³	11.2	11.4	13.0	14.4	15.6	15.0
Inter-provincial Cheque ⁴	1.5	1.5	1.6	1.8	2.0	2.7
ITMX Bulk Payment	3.3	3.6	4.5	5.7	7.2	8.9

Source: Bank of Thailand

¹ Data include funds transfer, third party funds transfer and Multilateral Funds Transfer.

² ICAS was implemented to replaced ECS on 4 February 2012.

³ Provincial Cheque Clearing migrated to ICAS since 15 November 2012 and implemented nationwide in December 2013.

⁴ Inter-provincial Cheques cleared via ICAS since 16 May 2013.

Table 23: Peak day figures of BOT payment services. Volume of transactions						
	2008	2009	2010	2011	2012	2013
BAHTNET ¹	11,969	12,898	18,542	18,581	19,303	22,190
Intra-provincial Cheque in Bangkok and vicinity ²	495,463	473,362	547,686	515,908	477,396	547,406
Intra-provincial Cheque in Regional Area ³	115,119	111,561	131,468	127,070	125,127	114,492
Inter-provincial Cheque ⁴	125,038	122,138	122,979	125,934	125,189	172,463
ITMX Bulk Payment	361,746	314,828	350,156	359,198	417,015	508,748

Source: Bank of Thailand

¹ Data include funds transfer; third party funds transfer and Multilateral Funds Transfer.

² ICAS was implemented to replaced ECS on 4 February 2012.

³ Provincial Cheque Clearing migrated to ICAS since 15 November 2012 and implemented nationwide in December 2013.

⁴ Inter-provincial Cheques cleared via ICAS since 16 May 2013.

Table 24: Peak day figures of BOT payment services. Value of transactions (billion Baht)						
	2008	2009	2010	2011	2012	2013
BAHTNET ¹	1,820.6	2,829.3	4,193.3	5,002.9	3,597.3	8,384.9
Intra-provincial Cheque in Bangkok and vicinity ²	296.3	252.4	292.8	259.1	268.2	283.4
Intra-provincial Cheque in Regional Area ³	20.9	19.1	22.6	23.3	25.7	26.8
Inter-provincial Cheque ⁴	5.7	5.3	5.9	6.5	6.8	11.0
ITMX Bulk Payment	15.0	16.8	15.7	19.2	28.8	44.3

Source: Bank of Thailand

¹ Data include funds transfer; third party funds transfer and Multilateral Funds Transfer.

² ICAS was implemented to replaced ECS on 4 February 2012.

³ Provincial Cheque Clearing migrated to ICAS since 15 November 2012 and implemented nationwide in December 2013.

⁴ Inter-provincial Cheques cleared via ICAS since 16 May 2013.

Table 25: Use of mobile banking						
	2008	2009	2010	2011	2012	2013
No. of agreements	232,758	257,677	519,450	706,439	864,312	1,164,796
Volume of transactions	4,670,377	11,107,223	15,884,571	19,941,530	36,285,076	57,198,604
Value of transactions (million Baht)	25,218	63,363	109,816	186,511	439,960	751,558

Source: Bank of Thailand

Table 26: Use of internet banking						
	2008	2009	2010	2011	2012	2013
No. of agreements	4,009,907	3,165,663	4,822,947	5,626,233	6,645,161	8,033,061
Volume of transactions ¹	31,375,931	49,368,820	60,793,740	83,841,394	125,276,726	161,784,249
Value of transactions (billion Baht)	5,073.0	5,692.6	7,891.7	8,779.7	14,112.1	19,548.0

Source: Bank of Thailand

¹ Enquiry transactions were excluded.

Table 27: Use of ORFT (Online Retail Funds Transfer)						
Volume of transactions (in thousands)						
	2008	2009	2010	2011	2012	2013
Total	87,225	90,920	109,559	124,832	150,440	173,949
ATM	79,047	76,214	89,456	99,926	116,997	132,035
Counter	8,177	8,051	9,162	10,010	10,273	9,200
Internet banking ¹	nav.	6,656	10,941	14,896	23,169	32,714

Source: Bank of Thailand

¹ Data collected since 2009.

Table 28: Use of ORFT (Online Retail Funds Transfer)						
Value of Transactions (billion Baht)						
	2008	2009	2010	2011	2012	2013
Total	606	648	832	1,014	1,250	1,399
ATM	478	453	549	642	771	852
Counter	128	130	172	213	227	201
Internet banking ¹	nav.	64	111	159	252	347

Source: Bank of Thailand

¹ Data collected since 2009.

Table 29: Bill payment at counters. Volume of transactions (in thousands)						
	2008	2009	2010	2011	2012	2013
Total	77,309	84,352	264,156	283,653	323,151	359,422
Total bill payment at bank counters	77,309	84,352	81,802	83,201	87,257	87,801
Cash	74,011	80,884	77,953	79,419	83,165	84,120
Cheque	1,829	1,564	1,629	1,646	1,650	1,546
Others	1,468	1,905	2,220	2,136	2,442	2,135
Total bill payment at non-bank counters	nav.	nav.	182,354	200,452	235,894	271,621
Cash	nav.	nav.	179,088	196,846	231,597	267,015
Cheque	nav.	nav.	277	298	351	346
Others	nav.	nav.	2,989	3,308	3,946	4,260

Source: Bank of Thailand

Table 30: Bill payment at counters. Value of transactions (billion Baht)						
	2008	2009	2010	2011	2012	2013
Total	5,093	4,714	5,733	6,104	6,450	5,972
Total bill payment at bank counters	5,093	4,714	5,285	5,593	5,843	5,263
Cash	1,586	1,688	1,848	2,049	2,124	1,922
Cheque	2,584	1,934	2,110	2,616	2,610	2,502
Others	923	1,092	1,326	928	1,109	838
Total bill payment at non-bank counters	nav.	nav.	448	511	607	710
Cash	nav.	nav.	444	507	600	702
Cheque	nav.	nav.	2	2	2	3
Others	nav.	nav.	3	3	4	5

Source: Bank of Thailand

Table 31: Use of e-Money ¹						
	2008	2009	2010	2011	2012	2013
No. of cards/accounts	5,477,324	7,667,215	11,483,751	13,804,253	20,220,438	24,286,746
Volume of transactions	77,953,841	103,007,328	221,458,769	348,197,980	512,331,773	669,210,802
Value of transactions (million Baht)	8,383.1	10,549.0	17,142.9	24,732.8	35,375.8	48,031.9

Source: Bank of Thailand

¹ Data exclude top-up cards.

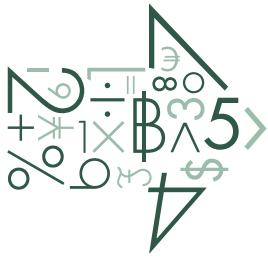
Table 32: Fraud through specific payment channels and payment instruments¹ (million Baht)						
	2008	2009	2010	2011	2012	2013
Total fraud	519	793	186	150	179	205
Payment channels ²	315	561	44	34	51	71
Payment instruments ³	204	232	142	116	128	134

Source: Bank of Thailand

¹ Data collect from banks, some special financial institutions and some credit card companies.

² Banks report only final result. Fraud through specific payment channels include phone banking, mobile banking, internet banking, pass book and other channels.

³ Banks report only final result. Fraud via specific payment instruments include cheque, credit card ATM card, debit card, prepaid card and other cards.



VII Notes of statistical tables

Symbols used in tables	Explanation
"-"	No data
"nav."	Data not available
"neg."	Negligible in value compared to all other
"0"	data in the same table

Table 1 - Gross Domestic Product expressed in current prices
 - Using the average foreign exchange rate

Tables 6-7 - Data on cheque transactions since 2006 includes both in-house and interbank cheques and is compiled from all commercial banks as well as Specialized Financial Institutions.
 - Data on volume of credit card transactions includes bank card, affinity cards, non-bank cards/affinity cards, and foreign credit cards used in Thailand.
 - Data on credit card spending includes information on non-bank credit cards.
 - Data on e-Money excludes pre-paid card for mobile phones.
 - Direct credit refers to pre-authorized in-house direct credit funds transfer.
 - Direct debit refers to pre-authorized in-house direct debit funds transfer.
 - BAHTNET data consists of data relating to interbank funds transfer, third-party funds transfer and multilateral funds transfer.

Table 8 - Average value of monthly transactions by debit cards and debit cards vis EFTPOS terminals within and outside the country

Table 9 - Excludes data on the number of accounts and outstanding amounts held by Bank of Thailand's regional offices

Tables 12-13 - BAHTNET data includes data relating to interbank funds transfer, third-party funds transfer and multilateral funds transfer

- Tables 14-15 - Equity securities settlements are processed via scripless book-entry system only
- Table 17 - Include ATMs and CDMs
- Data on the number of EFTPOS terminals since 2006 represents information consolidated from commercial banks and some credit card companies
- Table 18 - Data on the number of credit cards includes non-bank credit cards
- Tables 21-24 - BAHTNET data includes data relating to interbank funds transfers, third-party funds transfer and multilateral funds transfer
- Table 26 - Excluding enquiry transactions
- Table 31 - Electronic money data does not include data on top up of mobile cards

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The Financial Institutions Policy Group of the Bank of Thailand is responsible for the explanations and comments expressed in this report. Due acknowledgement is appreciated for the use of text or figures in any topic or section of the report, in other publications.

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