



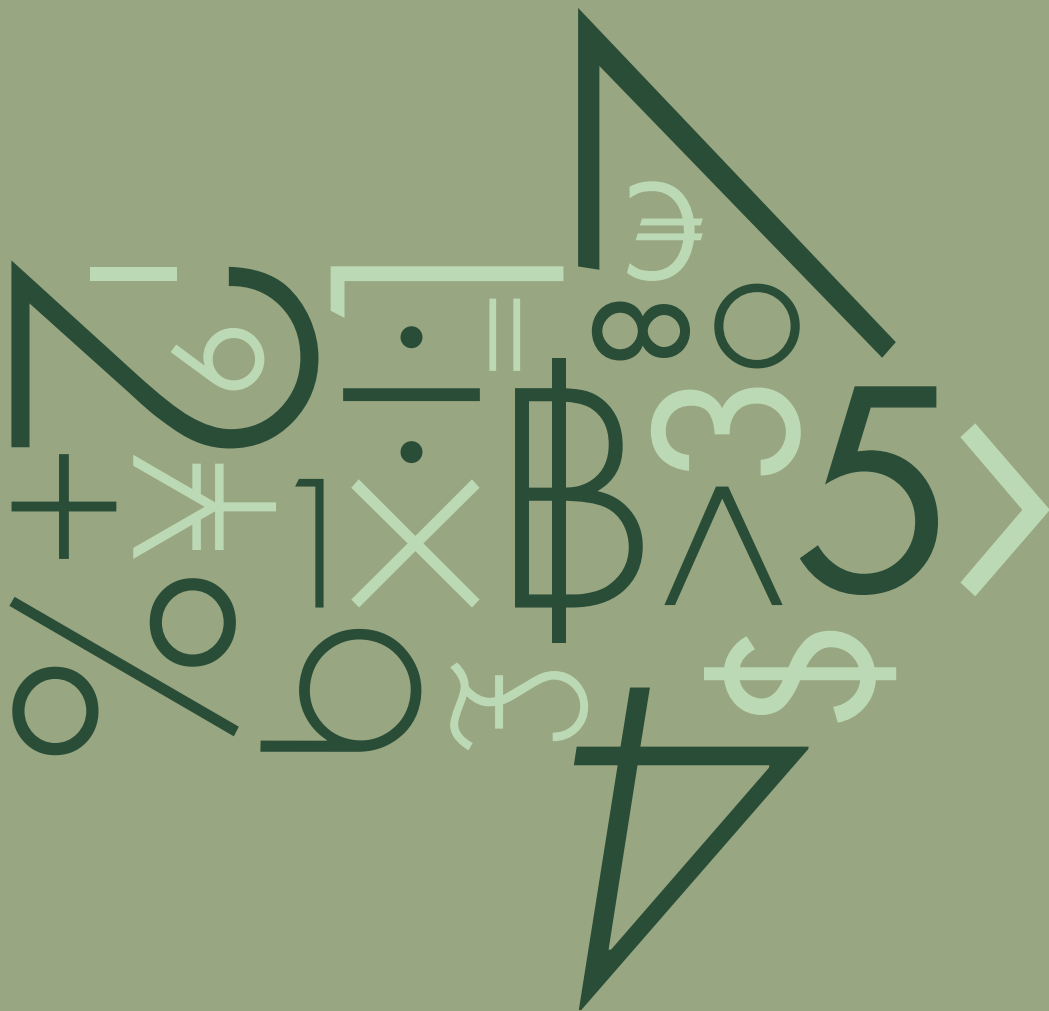
BANK OF THAILAND




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## Payment Systems Report 2014

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# Payment Systems Report

## 2 0 1 4





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

Last year, Thailand witnessed a major shift of the payment systems towards digitalization. Both bank and non-bank service providers introduced new payment innovations to the market through smartphone and tablet applications as well as other advanced technologies; for example, mutual funds trading with the call center via VDO calling, funds transfer using mobile phone number in place of account number, contactless technology, and two-dimensional barcode called QR (Quick Response) code. At the same time, users also stepped up adoption of electronic payment services and electronic commerce.

The aforementioned trend was in line with the government's policy on Digital Economy which aimed at applying information technology to everyday economic and social activities and processes of all sectors of the economy, including public private and individuals, to uplift Thailand's efficiency and competitiveness at the global stage.

The Bank of Thailand (BOT) and the Payment Systems Committee (PSC) appreciated the importance of the Digital Economy policy and recognized that advancement of the payment systems, which are the blood veins to nourish and connect the economy moving towards e-Payment, is among the key mechanisms to concretely drive the Digital Economy policy. With e-Payment, all economic sectors would be able to conduct a complete process of electronic transactions. For instance, e-Commerce businesses would be able to accept instant payment and the public

sector would be able to provide services and accept tax or other payment online without requiring individuals and businesses to commute to service points.

In recent periods, the PSC focused on promoting e-Payment usage among both the public and business sectors, an important task under the Payment Systems Roadmap 2012 – 2016. Thanks to great cooperation from the BOT's various strategic partner institutions in promoting e-Payment and developing related infrastructure, which were forged ahead as follows.

**Provision of support for e-Business** was a project to upgrade business processes electronically, for instance, product purchasing, payment and tax invoice submission to the authorities, towards full electronic adoption. The initiative would allow businesses to exchange information electronically with trading partners and banks in a straight-through-processing manner which would be quicker than paper transfer. Reconciliation of payment and sales information could also be achieved automatically, thereby minimizing errors and costs of document preparation, delivery and storage, along with costs of cash and cheque handling.

In this connection, the BOT worked with the Federation of Thai Industries and the Electronic Transactions Development Agency to develop a common standard to handle information exchange between different parties such as the business-to-business e-Invoicing standard and the business-to-bank National Payment Message Standard (NPMS). Coordination with the Revenue Department was also established to improve the preparation and delivery of e-Tax invoice and e-Receipt to foster information alignment across all processes.

**Promotion of e-Payment for the public sector** was another project which the PSC emphasized because the public sector has capacity to implement policies through their various agencies. The public sector's leadership in adoption of technology and e-Payment would widen considerably the digital adoption

by the business sector and individuals. In recent periods, the Comptroller General's Department made certain regulatory adjustments to allow government offices to accept payment via debit cards and credit cards more conveniently. As a result, management of government finance would become more flexible, verifiable and less susceptible to fraud. The improvement also led to greater convenience for businesses and individuals in making e-Payment.

The PSC also focused on **development of payment systems infrastructures and services** that would respond to users' needs more effectively. Effort was spent to establish a private industrial body, comprising payment service providers, to stimulate cooperation in development of payment systems infrastructures and new innovations. Recently, the Payment Systems Office (PSO), under the Thai Bankers' Association, and the Thailand Electronic Payment Association were set up. Furthermore, the BOT developed a process for key stakeholders to make recommendations on Thailand's payment systems policy through a Working Group consisting of representatives from banks, payment service providers, e-Commerce businesses, the government, and academia. Cooperation with all related parties was also enhanced to foster concrete policy implementation.

Notwithstanding steady progress on Thailand's payment systems owing to the joint effort by all sectors, ensuring that Thailand's payment systems would be responsive to even faster changes in the business environment, technology, and consumer behavior in the future, as well as supportive of a systematic move towards the Digital Economy, would command two vital infrastructural reforms.

The first is **reform and consolidation of payment systems laws and regulations**. Currently, there are numerous and overlapping laws and regulations on payment systems, posing compliance burden on payment service providers. Some key issues also lack of legal foundation. Thus, the BOT has proceeded to draft the Payment Systems Act with the aim to enhance the efficiency in the oversight of payment systems stability and lay down the necessary foundation for supervision according to international standards. Amongst key legal issues covered include payment finality

to prevent systemic risk in the payment systems and protection of float received by e-Money service providers which carry the same characteristics as deposit. The said draft Act would also foster flexibility in payment services improvement to meet users' requirements along with development of payment systems infrastructures to support interoperability of payment innovations and services.

The second is **collaboration in development of payment systems infrastructures**. Given that payment services business undergoes constant changes to keep up with advances in technology, consistent investment on technological upgrades would be required. Both bank and non-bank payment service providers, therefore, should cooperate to develop infrastructures to promote common usage of available resources and minimize duplicated efforts, which would help lower cost per transactions. Such benefits would reach to businesses and individuals in terms of new payment services and lower fees, which lead to improvement in the country's competitiveness, overall.

Apart from the two infrastructural reforms mentioned above, collaboration from all stakeholders would be a key ingredient in pushing forward future payment systems development towards its goals, as has always been the case with past achievements. On this occasion, as Chairman of the PSC, I would like to thank the PSC members and all parties involved, both public and private, for your ongoing collective efforts on achieving our shared vision. I sincerely look forward to seeing the PSC along with all stakeholders continue to journey ahead together in our endeavor to promote and develop Thailand's payment systems as a key propeller of the move towards the Digital Economy.



(Mr. Prasarn Trairatvorakul)

Chairman of the Payment Systems Committee

13 May 2015

## The Payment Systems Committee (PSC)



**Chairman**  
**Mr. Prasarn Trairatvorakul**  
Governor



**Vice Chairman**  
**Mrs. Tongurai Limpiti**  
Deputy Governor  
Financial Institutions Stability

### Responsibilities of the Payment Systems Committee

Section 17 of the Bank of Thailand Act mandates the establishment of a Payment Systems Committee for formulating the policies and monitoring the implementation of the policies on payment systems under the supervision of the BOT, and on interbank clearing and settlement systems.



## Committee Members



**Mr. Paiboon Kittisrikangwan**  
Deputy Governor  
Corporate Support Services  
and Banknote Management



**Mr. Boontak Wangcharoen**  
Chairman, the Thai Bankers'  
Association



**Mr. Somkiat Anurath**  
Vice Chairman  
Thai Chamber  
of Commerce



**Miss Suthirat Ratanachote**  
Inspector  
Ministry of Finance



**Mr. Rom Hiranpruk**  
Expert in Information  
Technology



### Secretary

**Mrs. Ruchukorn Siriyodhin**  
Assistant Governor,  
Financial Institutions Policy Group







## Key payment statistics in 2013 - 2014

	2013	2014	
Total population	64.8	65.1	million
Nominal Gross Domestic Product (GDP)	11,897.4	12,141.1	Billion Baht
<b>Technological infrastructure</b>			
Number of fixed-line telephone subscribers	9.4	8.7	Numbers/100 persons
Number of mobile phone subscribers	142.7	150.0	Numbers/100 persons
<b>Payment statistics</b>			
Number of branches of 17 Thai commercial banks	6,601	6,986	Branches
Number of branches of 13 foreign commercial banks	19	19	Branches
Number of branches of 6 Specialized Financial Institutions	2,549	2,689	Branches
Number of post office branches	1,303	1,316	Branches
Number of automated machines (ATMs/CDMs) <sup>1</sup>	56,851	61,817	Terminals
Number of EFTPOS terminals <sup>2</sup>	311,289	338,485	Terminals
Number of credit cards	18,626,864	20,303,751	Cards
Number of debit cards	45,241,477	48,121,065	Cards
Number of ATM cards	24,101,957	24,401,333	Cards
Currency in circulation per capita	16,363	18,414	Baht per person
Average cheque usage per capita	1.9	1.8	Cheques/person/year
Monthly average value of credit card payments <sup>3</sup>	4,871	5,325	Baht per card
Monthly average value of cash withdrawals via ATM card	8,381	8,229	Baht per card
Monthly average value of debit card payments <sup>4</sup>	194	196	Baht per card
Monthly average value of cash withdrawals via debit card	10,579	10,979	Baht per card

<sup>1</sup> Includes both Automated Teller Machines (ATMs) and Cash Deposit Machines (CDM)

<sup>2</sup> 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

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

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



# PAYMENT IN THAILAND

## e-Payment



ATMs

**61,817**



EFTPOS terminals

**338,485**



Credit cards

**20.3**

ATM cards

**24.4**

Debit cards

**48.1**

Cards (in million)

**21%**

The proportion of spending through e-Payment

=Average annual growth rate  
of e-Payments from 2009- 2014

**50%**

e-Money

**12%**

ATM + Debit Card

**10%**

Credit Card



**32%**

Internet Banking

**59%**

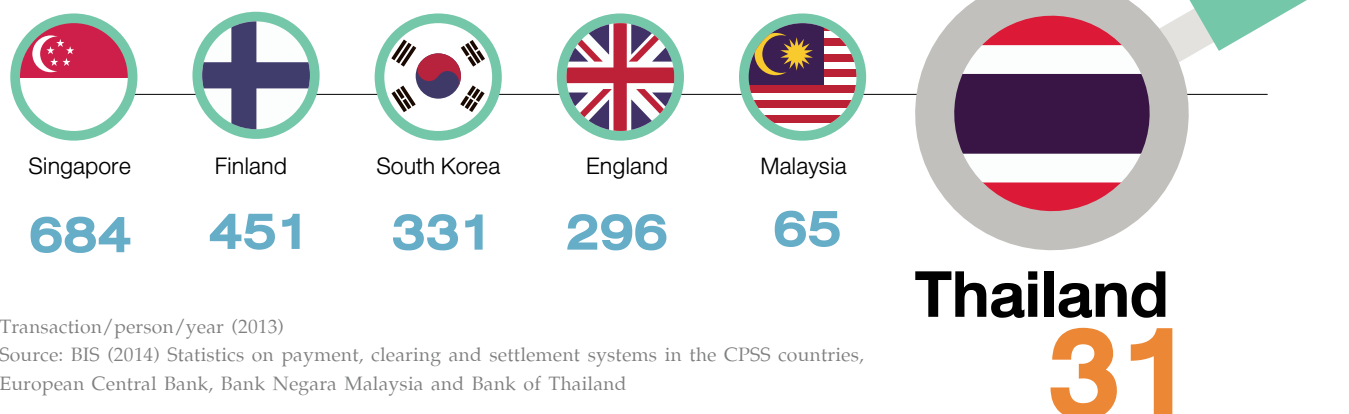
Mobile Banking

**9%**

Others

Note: 1) ATM and debit cards spending include payment at counter, funds transfer and payment made at ATMs  
2) Others include direct debit, direct credit, BAHTNET 3<sup>rd</sup> party and bulk payment

## Use of e-Payment



## THAILAND

## INTERNET / MOBILE USERS

	2013	2014
Internet users (Million)	26.1	27.7
Mobile phone subscribers		
Postpaid	9.8	11.7
Prepaid (Million)	75.2	80.8

Source: Office of The National Broadcasting and Telecommunications Commission

## Use of internet per week (hours)

2013	2014
32.3	50.4

Source: Thailand Internet User Profile 2014 by Electronic Transactions Development Agency (Public Organization) (2014)



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## 1. Payment systems policy

The Payment Systems Committee (PSC) approved the Payment Systems Roadmap 2012 – 2016, a framework for Thailand's payment systems policy implementation, on 4 November 2011. The Roadmap entails the objectives of efficiency enhancement, risk reduction in payment systems, and payment services consumer protection – all of which would ultimately lead to payment systems that are 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. Measures and goals of each objective were clearly set out and continuously implemented.

Figure 1: Payment Systems Roadmap 2012-2016

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

Objectives	Efficiency enhancement					Risk reduction				Consumer protection	
Projects	Promotion and development of electronic payment				Promotion of payment systems access	Preparation for the AEC	Payment systems risk reduction			Enhancement of secure electronic payment usage	Consumer protection and financial literacy
Plans	Promote the establishment of the Payment Systems Association	Promotion of e-Payment in place of cash	e-payment systems development	Standard setting			Reduction of risks associated with foreign exchange settlement	Reduction of risks associated with BAHTNET settlements	Alignment of systemically important payment systems with international standards		
Results	Establishment of the Payment Systems Association	- Promotion of e-payment among the public and private sectors - Promotion of debit card usage	Results and recommendations on infrastructural development e.g. - EBPP - POS Utility - Bulk Debit	Development and promotion of common standards e.g. - NPMS - e-Invoicing - e-Business/ - e-Documents	Payment infrastructures that support payment systems access e.g. - Revision of payment agent regulations - Financial literacy	Payment infrastructures that support financial systems connectivity and international trade	Risk management mechanism to handle foreign exchange settlements	- Development of the Securities Requirement Settlement (SRS) for BAHTNET - Development of the Collateral Management Facility (CMF) for transactions with BOT	Oversight of systemically important payment systems according to international standards	- Migration of ATM/debit cards to chip cards - Rules and guidelines on internet and mobile phone security	- Financial literacy to promote understanding and confidence in payment systems usage - Supervision to ensure confidence in payment systems usage

Source: Bank of Thailand

As of 6 May 2014

In 2014, implementation progresses under the Payment Systems Roadmap 2012 – 2016 were as follows.

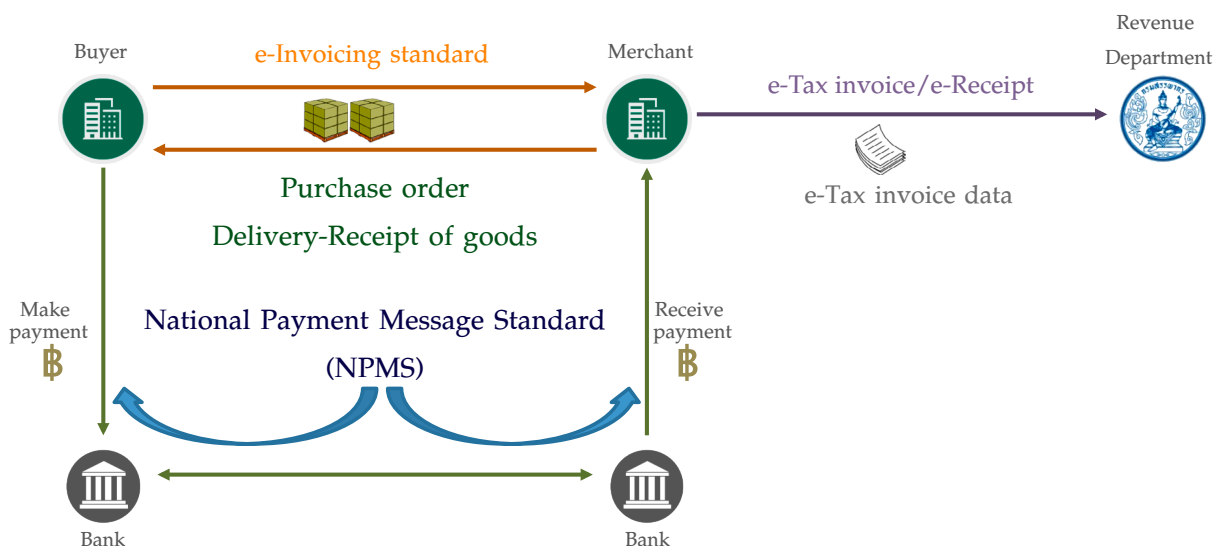


## 1.1 Promotion of the National Payment Message Standard (NPMS) and formulation of e-Invoicing standard

The BOT encouraged businesses to adopt e-Payment and to support other electronic transactions in order to improve commercial trade processes towards full e-Business, from trades, payments and information submission to related government authorities, including tax invoice. In this regard, e-Payment would be more convenient through a straight-through processing (STP) manner, allowing ease in reconciliation of payment against orders, reducing paper usage and storage, and lowering cash and cheque handling costs.

In 2014, the BOT coordinated with financial institutions, businesses and government agencies to develop and promote common standards to support electronic transactions for three major processing steps, namely business-to-business trades, business-to-bank exchange of payment data, and submission of e-Tax invoice and e-Receipt to the Revenue Department.

Figure 2: Commercial trade and related e-Payment and standards



Source: Bank of Thailand

To increase the efficiency of business trading among businesses through electronic channels, the BOT in association with the Federation of Thai Industries, retailers, and the Electronic Transactions Development Agency (ETDA), drafted the e-Invoicing standard, starting with that for retail businesses, to establish a common standard for the exchange of trade data among businesses. This first-mover choice was due to the retail sector's financial and technological readiness and uncomplicated data exchange along with the fact that once finalized, the standard could be applied to a great number of both large and small businesses. It was expected the nationwide e-Invoicing standard would be finalized and released in 2015. Developing the standard would subsequently expand to other important business sectors.

Concerning business-to-bank payment data exchange, the BOT, the ETDA, and Thailand Payment Market Practice Group (TH-PMPG)<sup>5</sup>, developed the NPMS to allow the business sector to exchange payment data with banks in the same format. In 2013, the NPMS was developed and announced for four types of message – Customer Credit Transfer Initiation, Customer Direct Debit Initiation, Customer Payment Status Report and Bank to Customer Debit Credit Notification. Then, in 2014, the NPMS was extended to another four types of messages namely Bank to Customer Account Report, Bank to Customer Statement, Customer Payment Reversal and Customer Payment Cancellation Request. The standard was announced in March 2015. Subsequently, payment data conforming to the NPMS could also be linked with trade information under the e-Invoicing standard, allowing ease of reconciliation.

Regarding the submission of businesses' tax information to the authorities, the Revenue Department is currently improving the system and processes for e-Tax invoice and e-Receipt preparation and delivery, together with related regulations, to enable businesses to submit such data more conveniently and flexibly.

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<sup>5</sup> Thailand Payment Market Practice Group (TH-PMPG) consists of NPMS users from various sectors, including academic bodies such as the BOT and the ETDA, bank payment service providers, non-bank payment service providers, government agencies, businesses, and Enterprise Resource Planning (ERP) software manufacturers. The group is a venue for discussion on application technicality and usability testing of the NPMS.

**Box 1: e-Invoicing standard**

**e-Invoicing standard** is a common standard for the electronic exchange of commercial trade information among businesses, including purchase orders, invoices, and debit/credit notes. The e-Invoicing standard is a key mechanism to facilitate e-Business transactions among buyers and suppliers, private and public alike.

Benefits of e-Invoicing standard to the business sector include convenient and fast exchange of commercial trade information among buyers and sellers via a single standardized electronic message format, ease of business data reconciliation, reduction of burden and costs associated with preparation and storage of paper document, and onwards transfers to other related parties, for example, submission of tax information to the Revenue Department.

Internationally, countries in many regions have been developing and introducing standards on this matter progressively. For instance, Finland implemented “Finvoice” – an e-Invoicing standard, developed through the banking sector, in 2003, with the goal to enable buyers and sellers, both large and small, to easily exchange business information using one standardized data format. Various programs have subsequently been developed to support application of Finvoice. At present, there are more than 200,000 SMEs users, leading to a total business operating cost reduction of approximately three billion Euro for the country.

Chile has been using a similar standard for tax collection since 2003. In this case, the government promoted electronic transfer of tax information using an e-Tax invoicing standard to achieve timely tax collection and reduce business cost. In addition, the government set a national policy for all government agencies to send documents electronically by 2009. As a result, the volume of e-Tax collection in Chile grew by 80 percent within eight years.

Singapore is another country that has been utilizing electronic transfer of commercial trade data for export-import businesses since 1989 as part of the national roadmap to upgrade the country’s IT infrastructure. A system called “TradeNet” was developed to cater for electronic exchange of commercial trade data through the Singapore Single Window, the first national single window system

in the world. As a result, Singapore was able to consolidate commercial trade data transfers between many economic sectors, successfully solving the problem of duplicated efforts. The system was subsequently renamed “TradeXchange” in 2007 and usage was promoted amongst SMEs and their trading partners. In this regard, the government also supplied SMEs with a low-cost system to handle trade and transportation, allowing data connectivity to be established between importers, exporters, banks, businesses, courier services, and key government agencies such as the Customs Department and the Port Authority, as well as international counterparties.

## 1.2 Promotion of e-Payment among the public and private sectors

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The BOT promoted and encouraged the public sector to increasingly accept and make payments electronically to enhance the efficiency of e-Payment services, reduce errors and fraud, and support the government’s digital economy policy. Collaboration was forged with various government agencies such as the Comptroller General’s Department, Office of the Public Sector Development Commission (OPDC), and the Electronic Transactions Commission (ETC), to continuously increase e-Payment.

The BOT joined efforts with the Comptroller General’s Department to improve the convenience for government agencies to accept and make e-Payment. On the receiving side, after the Comptroller General’s Department issued regulations on the acceptance of payment via electronic cards to improve the convenience by eliminating the need for case-by-case approval, it then promoted and gave advice to government agencies about such payments. Currently, it is in the process of introducing regulations for government agencies to deduct a service fee prior to submitting the income as fiscal revenue, thereby encouraging promoting greater acceptance of e-Payment. Education and training was also offered to management and staff. On the paying side, public agencies are also encouraged to make e-Payment to businesses and the general public.

Moreover, the BOT also collaborated with the OPDC which is developing a plan to increase efficiency of public sector management to facilitate reforms of public sector services. In this connection, the BOT proposed that the government improve the process for receiving and making payment to support e-Payment in order to reduce errors and fraud and increase the efficiency of the provision of public sector services to businesses and the general public.

### 1.3 BAHTNET and USD CHATS Link

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The BOT, upon approval of the PSC, considered settlement mechanisms in a form of Payment versus Payment (PvP) by linking the BAHTNET with international payment systems such as the US Dollar Clearing House Automated Transfer System (USD CHATS), operated by the Hong Kong Monetary Authority (HKMA), and the Continuous Linked Settlement (CLS), operated by CLS Bank in the U.S. The objective is to settle foreign exchange (FX) transactions of financial institutions at the same time to reduce FX settlement risk arising from settlements of FX transactions conducted through correspondent banks in different time zones.

The BOT had linked the BAHTNET with USD CHATS and launched a service on 28 July 2014 with 15 commercial banks<sup>6</sup> signing up as participants. The BOT has considered including some of the BOT's FX transactions to be settled in USD CHATS and it has been in the process of selecting correspondent banks, and improving internal procedures and systems to support straight-through processing (STP) for FX settlement transactions.

With regard to the linkage with CLS for THB to be settled in CLS system, the BOT has been proposing payment finality law which is the essential requirement for participating in CLS system. Other related preparatory steps are also being taken, for example, a study on reduction of operational risk which may arise from process modifications, a study on necessary infrastructural upgrades to facilitate linkage to the CLS, and consideration of relaxing related foreign exchange regulations.

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<sup>6</sup> Includes BBL, KTB, KBANK, Citibank, CIMB Thai, Sumitomo Mitsui, TMB, SCB, Mizuho Bank, Standard Chartered, RHB, ICBC, HSBC, UOB and Bank of America.

## 1.4 Payment systems development to support the ASEAN Economic Community

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The BOT in collaboration with ASEAN central banks established the Working Committee on Payment and Settlement Systems (WC-PSS) to study current payment systems environment and formulate a strategic framework for development and integration of payment systems in ASEAN. In 2014, the ASEAN WC-PSS designed the Principles for Product Transparency and Disclosure on Cross-border Trade Settlement (Principles) to ensure that customers have clear, timely, easily accessible and comparable key information to make an informed decision in performing cross-border trade settlement. In this regard, Thailand, Malaysia, Singapore and the Philippines took leadership in adopting the above Principles in February 2015 while others would follow within this year.

Moreover, the BOT, as a co-leader of the Task Force on Standardization, had coordinated with ASEAN Bankers Association (ABA) to organize the national workshops to promote the adoption of ISO 20022 in seven countries, namely Vietnam, Malaysia, the Philippines, Indonesia, Cambodia, Myanmar, and Laos during August – October 2014. The objectives of these workshops were to promote knowledge and understanding of ISO 20022 among financial institutions and other related parties; help the countries formulate plans to adopt ISO 20022; and support regional payment linkages in the future.



## 1.5 Security upgrade for electronic card usage

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The BOT, upon approval of the PSC, specified a timeframe in 2016 for financial institutions to replace magnetic stripe on debit cards and ATM cards with chip and upgrade ATMs to support chip cards. The effort would enhance the security and consumer confidence in using electronic cards and increase efficiency by expanding more service connectivity among service providers both domestically and internationally.

In recent periods, the BOT also supported the Thai Bankers' Association in formulating its own chip card standard as an alternative to the ones stipulated by overseas network operators for commercial banks to choose in introducing chip cards for ATM and debit cards.

## 1.6 Amendments to the drafted Payment Systems Act

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The payment systems are crucial mechanisms to funds flow and economic growth of a country as they facilitate and cater for financial transactions of financial institutions, the public sector, the private sector, retail businesses and the general population. Thus, it is important to regulate payment systems in order to ensure that they are well managed, safe, able to operate continuously without interruption, and equipped with suitable consumer protection guidelines to enhance users' confidence.

The BOT, as the main body tasked with the responsibility to maintain payment systems stability and oversee payment systems, carried out studies of international laws on payment systems oversight and supervision, and found that most countries, for example, Malaysia, Australia, Hong Kong and Singapore, centralize the such task at a single institution. Their laws entrust the central bank with oversight and supervisory function as it is deemed that key payment systems are handlers of financial institutions' transactions while financial institutions themselves are, in fact, main service providers of such payment services to businesses and the general public. Thus, the central bank, as supervisor of financial institutions, should also adopt a supervisory role of payment systems. Moreover, the laws empower the central bank to designate payment systems and payment services

under supervision in an effort to maintain stability of payment systems such that they are efficient, stable, safe, protected from systemic risk, and equipped with suitable consumer protection measures.

Meanwhile, there are presently many legislations concerning payment systems oversight and supervision in Thailand, for example, the Royal Decree on Regulating Electronic Payment Services B.E. 2551 (2008), the Notification of the Revolution Council No. 58 (e-Money businesses), and the Financial Institutions Business Act B.E. 2551 (2008), resulting in duplication and inadequate coverage that lead to an unlevel playing field and obstacles in promoting payment systems business and innovations, along with digital businesses that are undergoing fast developments. Furthermore, Thai laws have not yet include a number of supervision issues according to international standards, for example, payment finality, protection of collateral pledged to guarantee settlement in key payment systems, and protection of float received in advance from the public in relation to e-Money usage.

Figure 3: Current payment systems' related laws and parties

	1. BOT Act	2. Financial Institutions Business Act	3. Notification of the Revolution Council NO. 58	4. Electronic Transactions Act
System or payment services	BAHTNET ICAS	e-Banking Credit cards	e-Money Credit cards	Royal Decree on Regulating Electronic Payment Services Systems e.g. - Switching - Clearing - Settlement Services e.g. - e-Money - Money transfer - Bill payment
Service provider	Bank of Thailand	Financial institution	Non-bank	Financial institution Non-bank
Regulator	Bank of Thailand	Bank of Thailand	Ministry of Finance Bank of Thailand	Electronic Transactions Committee Bank of Thailand

Source: Bank of Thailand



To ensure standardized and consolidated payment systems supervision, improve the efficiency of payment systems oversight to align with international standards, and support the government's digital economy policy, the BOT thus proposed preliminary Payment Systems Act, which consolidates and codifies the essence of existing laws that govern payment systems oversight for achieving 4 main objectives.

1. Enhance the payment systems oversight to fully implement international standards for payment, clearing and settlement systems. The new act is designed to ensure safety, efficiency and resilience of payment systems, as well as to monitor and mitigate potential risks. The newly drafted Payment Systems Act provides a comprehensive legislative framework for the following issues:

1.1 Settlement finality protection, which ensures that a completed transaction via the Systemically Important Payment Systems (SIPS) will not be affected from the "zero hour rule" and is irrevocable, in the event of a participant's insolvency. This finality prevents systemic risk in the payment systems and financial systems.

1.2 Collateral asset protection, which guarantees collateral asset under settlement by the SIPS from the claims of other creditors, in case of participant default, to prevent systemic risk in payment systems.

1.3 Float protection for e-money business from the claims of other creditors in the event that an e-money issuer defaults. This protection safeguards customer funds and promotes customer confidence.

2. Improve efficiency of the payment systems oversight by having a single particular act for regulating payment systems and payment services. The act will support payment industry by reducing the administrative and compliance workloads caused by regulations dispersed across several acts.

3. Promote innovation and competitiveness in e-Payment businesses via more flexible regulatory framework. The oversight powers will focus on payment systems and payment services that have potential impact to payment system stability, financial stability or public interest. In addition, the oversight will be conducted according to the size, complexity, and risk of the businesses.

4. Support the growth of digital economy. The new Payment Systems Act provides appropriate measures of customer protection for payment services, as well as ensures safety and efficiency of payment systems. The Act will effectively promote confidence in e-Payment services to the public and promote business agility to payment service providers.

In this regard, the BOT proposed a drafted of Payment Systems Act to be considered by the Ministry of Finance on 27 March 2015 before subsequent enactment process would take place.

## Box 2: International payment systems laws

Country	Objectives	Examples of payment systems and services under supervisions
<b>1. Malaysia</b> Law: Financial Service Act 2013  Regulator: Bank Negara Malaysia	<ul style="list-style-type: none"> <li>- Safety</li> <li>- Efficiency</li> <li>- Reliability</li> <li>- Consumer protection</li> </ul>	<ul style="list-style-type: none"> <li>- Large value funds transfer: RENTAS</li> <li>- Retail payment systems: Cheque Clearing, Shared ATM Network, e-Debit, Interbank GIRO, Financial Process Exchange</li> <li>- Securities Settlement System</li> <li>- Payment services: credit cards, debit cards, e-Money, payment card acquirers</li> </ul>
<b>2. Singapore</b> Law: Payment Systems (Oversight) Act 2006  Regulator: Monetary Authority of Singapore	<ul style="list-style-type: none"> <li>- Safety</li> <li>- Efficiency</li> <li>- Systemic risk</li> <li>- Consumer protection</li> </ul>	<ul style="list-style-type: none"> <li>- Large value funds transfer: MEPS+</li> <li>- Retail payment systems: IBG, NETS</li> <li>- Clearing &amp; Settlement System</li> <li>- Securities Settlement System</li> <li>- Continuous Linked Settlement (CLS)</li> <li>- e-Money</li> </ul>

Country	Objectives	Examples of payment systems and services under supervisions
<b>3. Australia</b> Law: The Payment Systems (Regulation) Act 1998  Regulator: Reserve Bank of Australia	<ul style="list-style-type: none"> <li>- Safety</li> <li>- Efficiency</li> <li>- Competitiveness</li> <li>- Systemic risk</li> </ul>	<ul style="list-style-type: none"> <li>- Large value funds transfer: RITS</li> <li>- Retail payment system: VISA, MasterCard, ATM, EFTPOS</li> <li>- Securities Settlement System</li> <li>- Continuous Linked Settlement (CLS)</li> <li>- e-Money</li> </ul>
<b>4. Canada</b> Law: The Payment Clearing and Settlement Act 1996  Regulator: Bank of Canada	<ul style="list-style-type: none"> <li>- Efficiency</li> <li>- Systemic risk</li> </ul>	<ul style="list-style-type: none"> <li>- Large value funds transfer: LVTS</li> <li>- Canadian Clearing and Settlement for Securities &amp; Canadian Derivatives Clearing Service</li> <li>- Continuous Linked Settlement (CLS)</li> </ul>
<b>5. Hong Kong</b> Law: Clearing and Settlement Systems (Amendment) Bill 2015  Regulator: Hong Kong Monetary Authority	<ul style="list-style-type: none"> <li>- Safety</li> <li>- Efficiency</li> <li>- Consumer protection</li> </ul>	<ul style="list-style-type: none"> <li>- Large value funds transfer (HKD CHATS, USD CHATS, EUR CHATS, RMB CHATS, CMU)</li> <li>- Continuous Linked Settlement (CLS)</li> <li>- Retail payment systems</li> <li>- Payment services: credit cards, debit cards</li> <li>- e-Money</li> </ul>

## 1.7 Guidelines on e-Money consumer protection

Currently, e-Money services are growing significantly along with expansion in terms of service providers and usage. Therefore, it has become necessary to oversee the management of risks by service providers and take care of users with inadequate knowledge on payment systems services.

In this regard, the BOT issued an “*e-Money consumer protection*” guideline based on international practices from other countries, for example, in Singapore, Hong Kong and Malaysia, to be used as a reference in formulating regulations and standards of practices for service providers, thereby creating confidence among users and further promoting electronic transactions.

### Box 3: e-Money consumer protection guideline

The “*e-Money consumer protection*” guideline is a guideline for all e-Money service providers licensed under List C (6) of the Royal Decree on Regulating Electronic Payment Services to adhere to when providing services to users, subjected to users’ rights, particularly four basic rights, namely 1) right to be informed; 2) right to choose; 3) right to be heard; and 4) right to redress.

Key principles that e-Money service providers should follow include:

(1) Disclosure: Service providers must disclose important services information, details of services, agreements and conditions in the provision of e-Money, and updates, in writing to users. The information must be accurate, clear and adequate to facilitate users’ decision making.

(2) Fees: Service providers must disclose details of all fees or service charges that users are expected to pay along with conditions of payment to users.

(3) Terms and conditions: Service providers must explain these in a clear and easy to understand manner.

(4) View recent transactions: Service providers must provide channels or methods for users to examine outstanding balances, expiry date and previous transactions.

(5) Refund: Service providers must provide clear and justified refund conditions and request channels. Conditions and fees for various cases of refund must be disclosed to users before service is provided.

(6) Liability for loss: Service providers must clearly specify details of responsibilities between service providers and users, especially for losses arising from transactions that users do not personally conduct and wrongful transactions that are not the fault of users, for example, copying of e-Money data and operational errors on the part of service providers.

(7) Resolving dispute: Service providers must specify rules and guidelines on the filing of complaints or conflicts by users coupled with timeframe to resolve the problem. Progress, explanation of complaint resolution steps and timeframe to resolve the problem must also be notified to users.

(8) Customer data protection: Service providers should use users' information only for the purpose of providing e-Money services and must not disclose such information to a third party during and after the service period unless required by law.

Note: Details of e-Money Consumer Protection Guideline can be found at <https://www.bot.or.th/Thai/FIPCS/Documents/FPG/2557/ThaiPDF/25570182.pdf>

## 1.8 Collaboration among stakeholders regarding payment systems development

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The PSC realized the importance of engaging stakeholders from all related sectors, particularly financial institutions who are the key service providers, in the formulation and implementation of payment systems policies under the Payment Systems Roadmap 2012 – 2016. Thus, to ascertain that payment systems policies would be responsive to stakeholders' demands, leading to actual implementation, the PSC spearheaded the establishment of collaboration between related payment systems private sectors to be entrusted with making recommendations on the country's payment systems policies and development directions to the PSC, promoting development of payment systems services based on new technology and supporting infrastructures. Recently, the BOT upon approval of the PSC, proceeded to establish the following payment systems private institutions.

### 1. Payment Systems Office (PSO)

The BOT pushed for the establishment of the Payment Systems Office (PSO) to be a body of collaboration among payment service providers to develop services and infrastructures for mutual benefits and reduction of duplicated investments. The PSO is also tasked with monitoring payment systems trends and providing payment service literacy. In this connection, the PSO was established by the Thai Bankers' Association on 1 March 2015.

### 2. Thailand Electronic Payment Association (TEPA)

The BOT assisted non-bank e-Payment service providers and e-Money service providers to establish the TEPA on 18 February 2015 to be a platform for exchanging views, fostering collaboration among e-Payment service providers, as well as making proposals on development of services based on new technology.

Forging the above collaboration was in line with practices of other central banks, for example, in the U.S., Australia and the U.K. The action aimed at generating collective efforts from all sectors in developing payment systems services and infrastructures to support demands of users from the public sector, businesses and the general population, based on new technology. Examples included mobile and internet payment to facilitate funds transfer by individuals and e-Payment for businesses to support e-Commerce.



**Box 4: Examples of development of payment systems infrastructure in the U.K.****1) Faster Payments**

Faster Payments was introduced in 2008. It is a real-time payment transfer system comprising two types of services, namely 1) real-time bulk payment used by businesses and the public sector; and 2) real-time funds transfer used by individuals. There are currently 10 banks subscribing to the service.

Usage of Faster Payments in the U.K. has been growing continuously by 20 percent per year with increasing numbers of users switching from cash and cheque usage. Currently, a maximum volume of transactions reaches 16 million transactions per day and the systems could handle a maximum volume of 700 transactions per second.

**2) Peer to peer mobile payment (Paym)**

Paym was the enhancement of Faster Payments. Users could make in-house or inter-bank funds transfer using a mobile phone number in place of account number. The service began in 2014. Users could sign up for Paym and make transfers via mobile phone number through their banks' mobile banking applications. Thanks to the enhanced convenience, there are presently more than two million registered users in the U.K.

**3) Payment through e-Commerce (Zapp)**

Zapp is another service developed from Faster Payments, aiming to provide a channel to pay for goods and services by debiting the buyer's bank account. Various types of payments could be made such as bill payment, payment for goods and services at store fronts and websites, as well as payment via various technologies such as QR code, SMS or NFC. Service is expected to commence in 2015.







## 2. Payment Systems Oversight

Payment systems is the one type of Financial Market Infrastructures (FMI) that are crucial to the maintenance of economic and financial stability along with the conduct of economic and business activities of corporates and the general public. Thus, emphasis must be placed on oversight of Systemically Important Payment Systems (SIPS), Prominently Important Retail Payment Systems (PIRPS), and various e-Payment services. This requires assessment and monitoring of SIPS and PIRPS together with supervision of e-Payment services to ensure stability, safety and efficiency of Payment Systems in Thailand.

### 2.1 Oversight of Systemically Important Payment Systems

The BOT has responsibility to oversee important payment systems, which are classified into two categories according to international standards importance to overall financial stability, and appropriate level of oversight needed. The two categories of overseen important payment systems are as follows.

1) Systemically Important Payment System (SIPS) in Thailand – the BAHTNET which is under the operation of the BOT. The BAHTNET is an infrastructure for large value funds transfer between financial institutions in Thailand. In 2014, the total value of transfers through the BAHTNET reached 757.9 trillion Baht, equivalent to 62.43 times of GDP.

2) Prominently Important Retail Payment Systems (PIRPS) included the Imaged Cheque Clearing and Archive System (ICAS) operated by the BOT and the Interbank Transaction Management and Exchange (ITMX) operated by National ITMX Co., Ltd. (NITMX). The total value of transfers through ICAS and ITMX amounted to 37.9 trillion Baht and 5.6 trillion Baht, equivalent to 3.12 and 0.46 times of GDP, respectively.

To ensure that the SIPS and PIRPS are safe, reliable and equipped with appropriate risk management standards according to the Principles for Financial Market Infrastructures (PFMI), a Payment Systems Oversight Framework, developed by the BOT, was approved by the PSC in 2014. The framework provides guidelines for the BOT in overseeing stability of payment systems. The PSC also agreed to the publication of this framework on the BOT website.

The aforementioned framework stipulates oversight methods and scopes as well as reporting guidelines to ensure that payment systems are safe, able to operate continuously, operated with appropriate and efficient management framework, and able to prevent systemic risks. Key implementation areas include the followings.

- 1) Analyzing, monitoring and assessing risks in SIPS and PIRPS such as liquidity risk, operational risk and settlement risk, which could result in potential systemic risk in the payment systems;
- 2) Assigning payment systems operators to undertake self assessment exercises according to the PFMI; and
- 3) On-site assessment of service providers to assess potential risks which could arise during processing and provision of services.

The BOT would report findings of its supervision and oversight activities together with assessment of payment systems stability to the PSC every six months.

In 2014, the BOT arranged for on-site assessment of BAHTNET operations concerning management of operational risks. Cooperative oversight with other Financial Market Infrastructures (FMI) regulators including domestic authorities namely the Securities and Exchange Commission Thailand (SEC) and international authorities namely the Hong Kong Monetary Authority. The effort helped secure sharing of information on FMI oversight information such as international standards, key risks to monitor due to systems connectivity or common membership, and formulation of regulations, conditions and measures to address risks in a well-aligned manner. Moreover, the systems operator of ICAS and ITMX requested to conduct self assessment to comply with PFMI.

### **Box 5: Findings of oversight activities on Thailand's key payment systems according to the Principles for Financial Market Infrastructures (PFMI)**

In 2014, the BOT conducted the following oversight activities according to the PFMI.

#### **(1) On-site assessment of the BAHTNET**

The BOT carried out operational risk assessment of the BAHTNET according to the PFMI (Principle 17: Operational Risk) in two areas, as follows 1) Business Continuity Management (BCM) and 2) operational reliability and availability, to ascertain that the system operated with suitable operational risk management and is able to provide services smoothly during both normal times and emergency.

In summary, the BAHTNET was deemed to possess reliable business continuity management as well as appropriate measures and processes in dealing with operational risks. Furthermore, the BAHTNET could offer smooth services and efficiency in line with international standards. Average system availability in 2014 recorded at 99.74 percent and there was no problem requiring urgent attention.

In this connection, to further align monitoring and managing of operational risks to the PFMI, the BOT would arrange for reporting of BAHTNET business continuity management to the PSC every six months.

#### **(2) Preparation of the BAHTNET for external assessment**

The BOT made steady progress to ensure that the BAHTNET, Thailand's main infrastructure for financial transactions and Systemically Important Payment System, could operate according to 18 principles of the PFMI such that it would be ready for external assessment by the IMF and the World Bank who are tasked with assessment of payment systems according to the PFMI. This would ensure that the BAHTNET's operations are in line and accordance with international standards, stable, able to facilitate financial and money market transactions, and supportive of sustainable economic growth.

Important milestones that the BOT achieved in preparing the BAHTNET for external assessment included arranging for a self assessment for the BAHTNET according to the PFMI in 2013 and formulating a risk management process that better align with international standards, for example, reducing recovery time to two hours, updating various guidelines and documentation to be more current, and reporting work progress to the PSC every six months.

### **(3) Self assessment of the ICAS**

The BOT conducted a self assessment of the ICAS, a Prominently Important Retail Payment Systems, according to 14 principles adapted for PFMI for Prominently Important Retail Payment Systems. In short, the ICAS' overall operation and risk management was in line with the PFMI and there was no problem requiring urgent attention.

In this regard, the BOT would consider some additional steps to take in order to better align the ICAS to international standards, for example, arranging for a test of its Business Continuity Plan, including different scenarios, to enhance the efficiency of system management during emergency.

### **(4) Self assessment of the ITMX**

The BOT assigned the NITMX to conduct a self assessment of the ITMX which is one of Thailand's PIRPS according to 14 principles adapted for PFMI. The BOT, as oversight authority, would review the self assessment findings to be used during the on-site examination of the ITMX in the next periods.

## 2.2 Supervision of payment system service providers

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Recently, there was rapid expansion of e-Payment services along with new challenges associated with more complex and modern service types and technology. Moreover, e-Payment service providers became more diversified, including bank and non-bank service providers.

The BOT supervised service providers to ensure suitable risk management in the provision of financial transaction services and reliable and safe e-Payment services, as well as enhance the business sector's competitiveness and the public sector's services. In this regard, the BOT supervised key e-Payment service providers according to various legislations, including e-Money service providers according to the Notification of the Revolution Council No. 58 (e-Money businesses) and the the Royal Decree on Regulating Electronic Payment Services B.E. 2551 (2008).

### 2.2.1 Supervision according to the Notification of the Revolution Council No. 58 (e-Money businesses)

The BOT supervised eight non-bank e-Money service providers, authorized by the Notification of the Revolution Council No. 58 (e-Money businesses) dated 4 October, 2004.

In 2014, the BOT considered revisions to the regulations and conditions pertaining to e-Money business with the aim to better conform to the changing business environment and enhance businesses' financial soundness, reducing the risk and potential impact on users. These revisions included regulation on capital requirements for service providers, registration process for users, expansion of e-Money business scope to include foreign currency usage abroad, and allowance of other business activities relating or pertaining to e-Payment. Moreover, there were other administrative regulatory adjustments to allow more appropriate and flexible regulatory compliance by businesses. In this regard, feedback was received from service providers whereby the BOT would proceed to make formal announcements in the next periods.

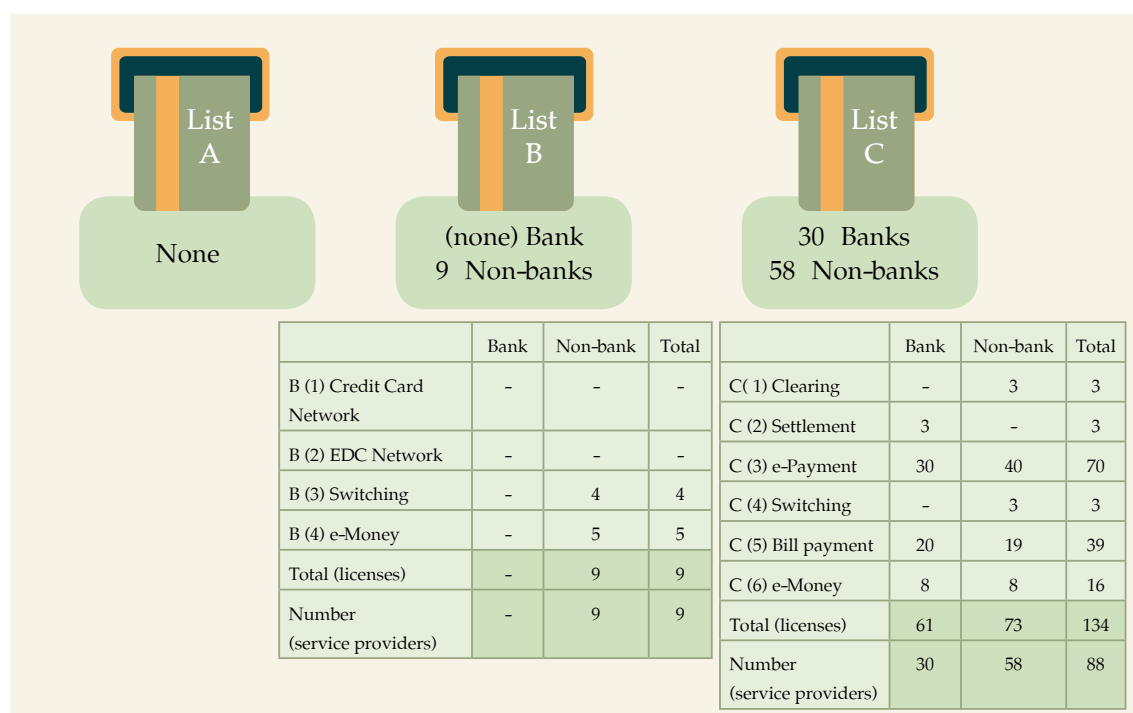


## 2.2.2 Supervision according to the Royal Decree on Regulating Electronic Payment Services B.E. 2551 (2008)

The BOT has a legal mandate to supervise 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 levels, 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 2014, the BOT conducted oversight activities of e-Payment service providers according to the Royal Decree as follows.

(1) Considered applications for List B licenses and submitted recommendations for List C licenses to the Electronic Transactions Commission (ETC) for approval. At the end of 2014, there were nine List B service providers and 88 List C service providers, including 30 banks and 58 non-banks. The total number of licenses issued was 134. Two List C service providers cancelled their licenses. There was still no List A service provider.

**Figure 4: Number of e-Payment service provider classified by business type**



Source: Bank of Thailand

Data as of 31 December 2014

Most service providers receiving their licenses in 2014 were e-Payment service providers through any device or network (payment gateway). Moreover, some service providers requested approval to offer rather interesting services such as automatic payment machines.

(2) Regulated and supervised e-Payment service providers in complying with relevant Royal Decrees and related Notifications and reported findings of misconduct or non-compliance to the ETC on a regular basis. In 2014, there were 23 cases of misconduct or non-compliance.

(3) Proceeded with revisions of rules, regulations and conditions in providing e-Payment services that would be better aligned with the current economic environment as well as changes in business models. Examples included allowing greater flexibility in the regulations and formulating clear and detailed payment agent supervisory standards. In this connection, the BOT proposed related Notifications for stakeholders' feedback on 14 August 2014 and is in the process of making adjustments according to the comments before submitting to the ETC for approval.

(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 effort aimed at strengthening confidence in IT, protecting consumers, enhancing the services' efficiency and competitiveness, as well as ensuring that SFIs that offer e-Payment services would be supervised by the ETC in the same manner and standard as other service providers, both bank and non-bank. The draft was approved by the Cabinet and is presently being considered by the Council of State.





### 3. Payment Systems Trend

#### 3.1 Overall payment systems usage in 2014

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Important considerations in payment systems users' choices among different types of usage and channels include efficiency, timeliness and security. In this regard, e-Payment has become increasingly popular with users because it could respond to the needs of the digital era which focuses on convenience and speed. Moreover, technological advancement, higher internet access, and multi-functional smartphone, have presented greater opportunity for users to conduct e-Payment transactions more conveniently. As a result, self-service transactions through mobile devices such as smartphones and tablets have become part of most people's daily life in this modern world.

The aforementioned e-Payment services trend was reflected by the volume and value of e-Payment transactions which expanded steadily. However, international statistics<sup>7</sup> gathered in 2013 showed that while many countries, including Singapore, Finland, South Korea, the U.K. and Malaysia, had a high e-Payment usage per capita, usage in Thailand stood at merely 31 transactions per person per year. In 2014, the figure rose to 35 transactions per person per year.

The PSC recognized the importance of promoting increasing usage of e-Payment. Thus, targets were set as a guidance to stimulate and promote various types of e-Payment services, including a targeted volume of e-Payment usage per capita<sup>8</sup> of 50 transactions per person per year and 150 transactions per person per year in 2016 and 2020, respectively.

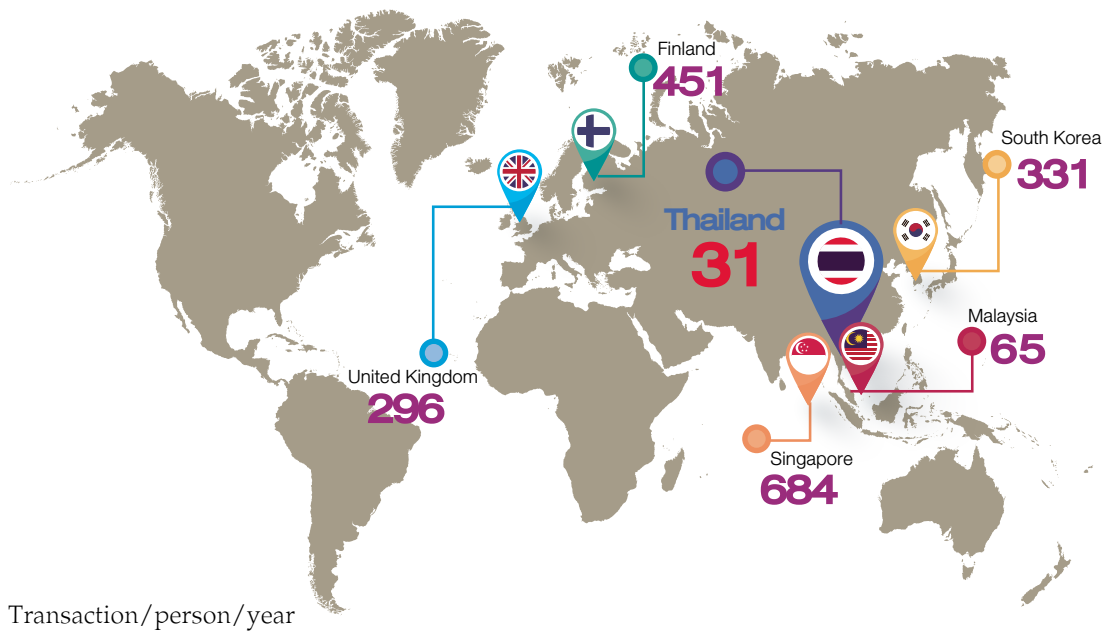
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<sup>7</sup> e-Payment usage for comparison included credit transfer, direct debit, credit card, debit card and other e-Payment

<sup>8</sup> e-Payment included direct debit, direct credit, interbank bulk payment (ITMX), credit card, debit card (Pay at POS), transfer at ATM, internet banking, mobile banking, e-Money, and BAHTNET (3<sup>rd</sup> party)

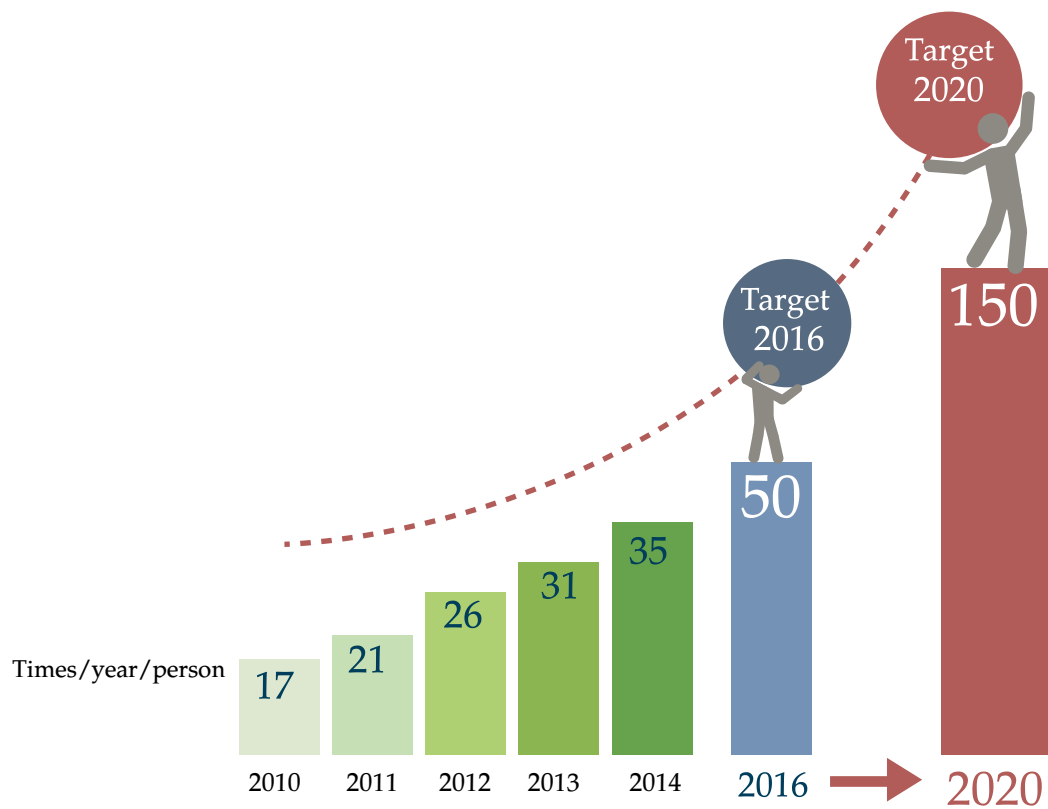


Figure 5: Volume of e-Payment usage per capita (2013)



Sources: BIS (2014) Statistics on payment and settlement in the CPSS countries, European Central Bank, Bank Negara Malaysia, and Bank of Thailand

Figure 6: Targets for e-Payment usage per capita in Thailand



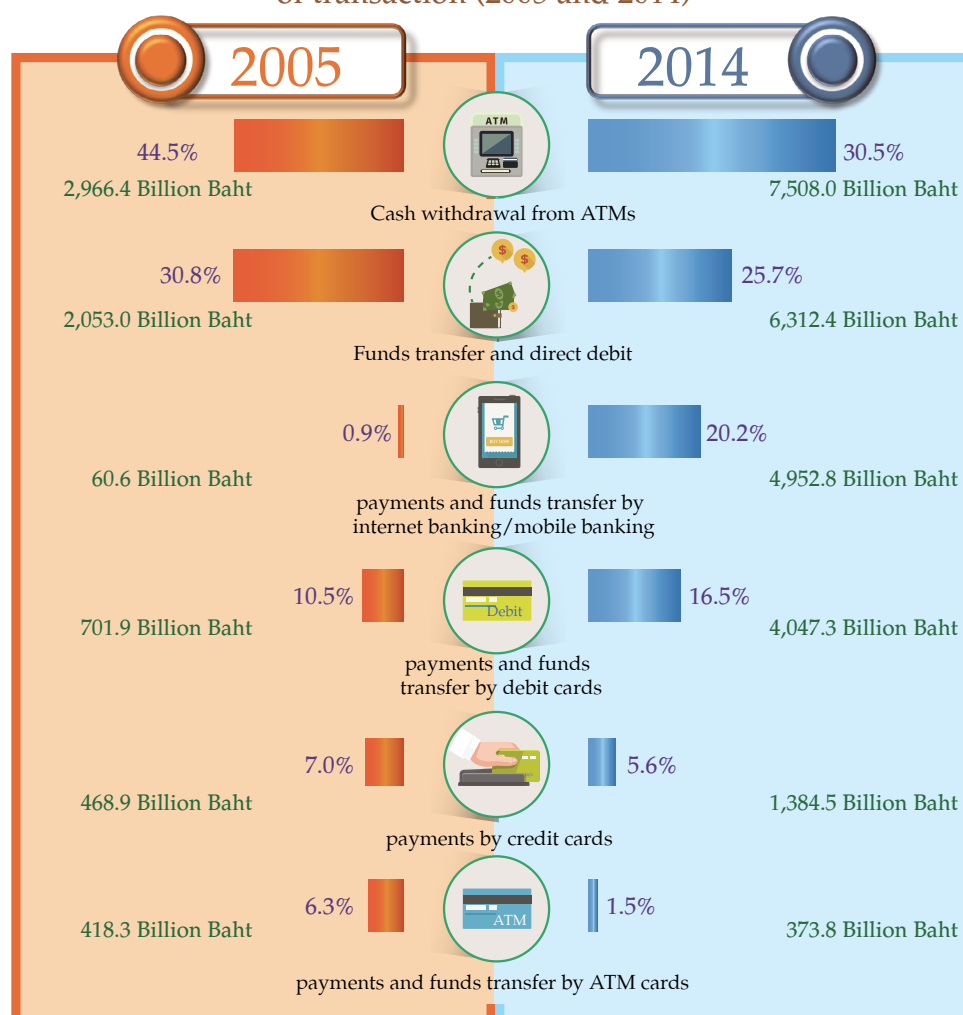
Source: Bank of Thailand

### 3.1.1 The Way We Pay

#### How We Spend

Cash continued to be the main medium of exchange for Thais, constituting the highest proportion of usage in terms of value. However, during the past 10 years, it could be observed that Thais began to decrease cash usage. Analysis of cash withdrawal from automated machines which reflected individuals' cash usage compared to other e-Payment mediums or channels showed that Thais' proportion of cash usage declined from 44.5 percent in 2005 to only 30.5 percent in 2014. Meanwhile, e-Payment usage grew continuously whereby the value of e-Payment through various channels by Thais expanded 19 percent on average over the past 10 years, higher than the average growth rate of cash usage which stood at 11 percent. This trend was in line with the changing payment systems environment, for example, technological advancement and consumer behavior which demanded greater convenience and speed.

Figure 7: Comparison of various payment instruments in value of transaction (2005 and 2014)



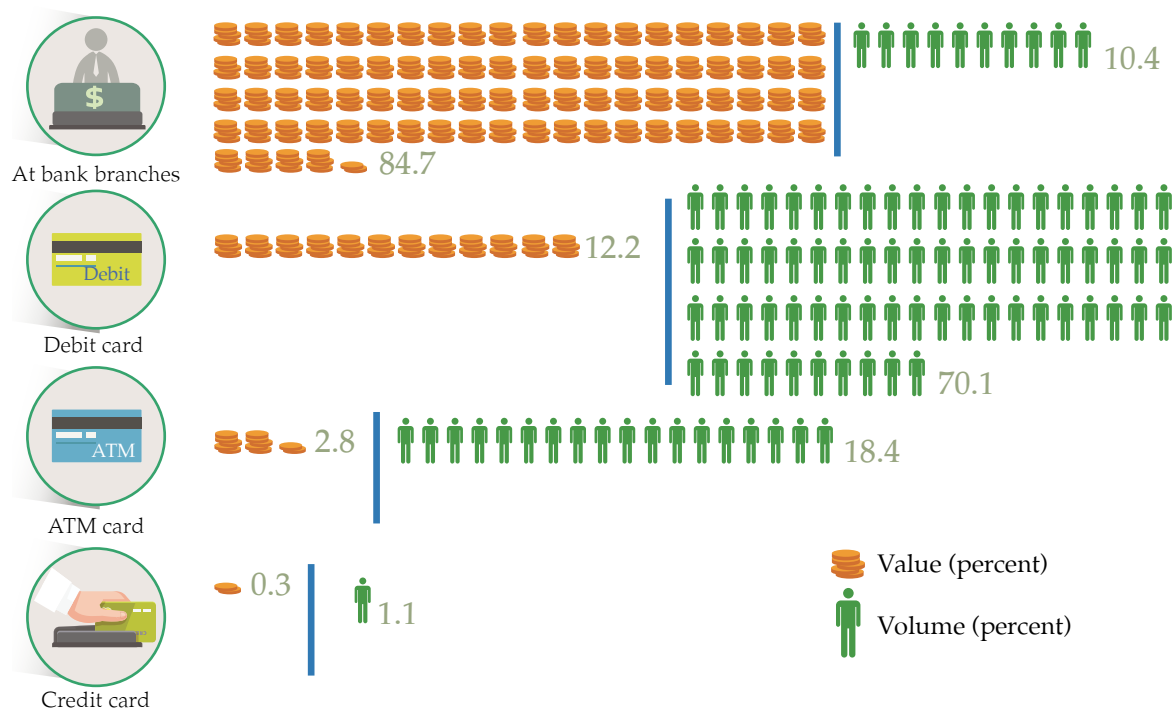
Source: Bank of Thailand



## How We Get Cash

Thais predominantly withdrew cash from automated machines more often than bank branches due to convenience as automated machines are abundantly located and can be accessed 24 hours a day. Debit cards were the most popular form of electronic cards used for cash withdrawal, constituting 70 percent of the volume of withdrawals. However, in terms of value, 84.7 percent came from withdrawal through bank branches, with an average value of 223,658 Baht per transaction while that from automated machines amounted to merely 4,709 Baht per transaction.

Figure 8: Proportion of cash withdrawals (The second half of 2014)



Source: Bank of Thailand

## How We Spend Face-to-Face

For point of sales purchases of goods and services, people generally preferred to pay in cash<sup>9</sup> or electronic cards, for example, debit cards, credit cards and e-Money cards. Cash continued to be the most popular payment instrument, averaging at 626 billion Baht per month or 84.0 percent of point of sales payment. Meanwhile, e-Payment for sales of goods and services amounted to 120 billion Baht per month or 16.0 percent, with credit card being the most popular card type used at point of sales.

Figure 9: Monthly average value of point of sales purchases of goods and services (The second half of 2014)



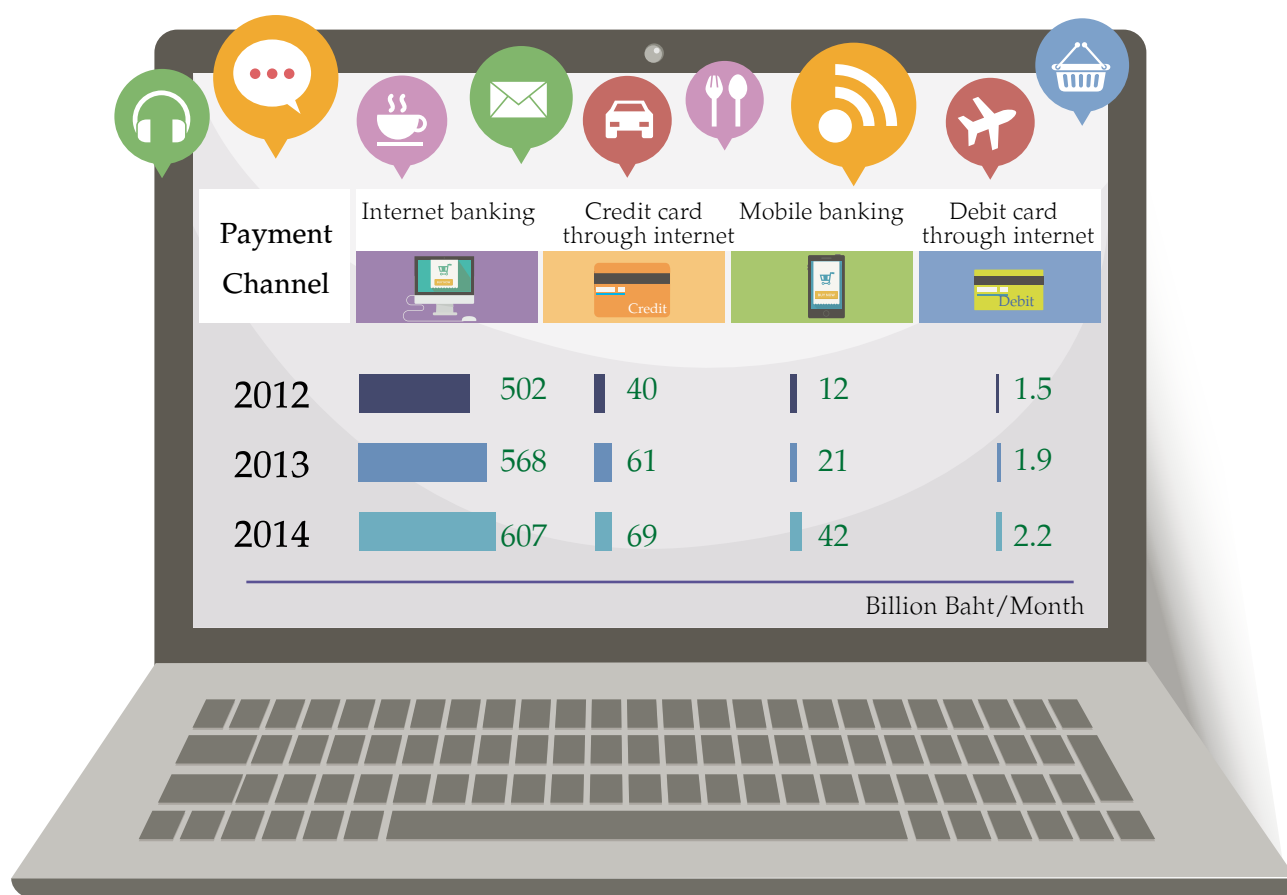
Source: Bank of Thailand

<sup>9</sup> Assuming that cash withdrawals from ATM reflect cash payment at point of sales

## How We Spend Online

Online shopping gained popularity among Thais steadily as reflected by the continuous growth of online transactions value generated by automatic account debit through internet banking and mobile banking, and payment via debit cards and credit cards. In 2014, usage of internet banking to pay for goods and services including bill payments was highest, reaching 607 billion Baht per month or 84.3 percent of total transaction value, followed by credit card payment, account debit via mobile banking, and debit card payment at 9.6, 5.9, and 0.3 percent, respectively.

Figure 10: Monthly average value of online payment for goods and services



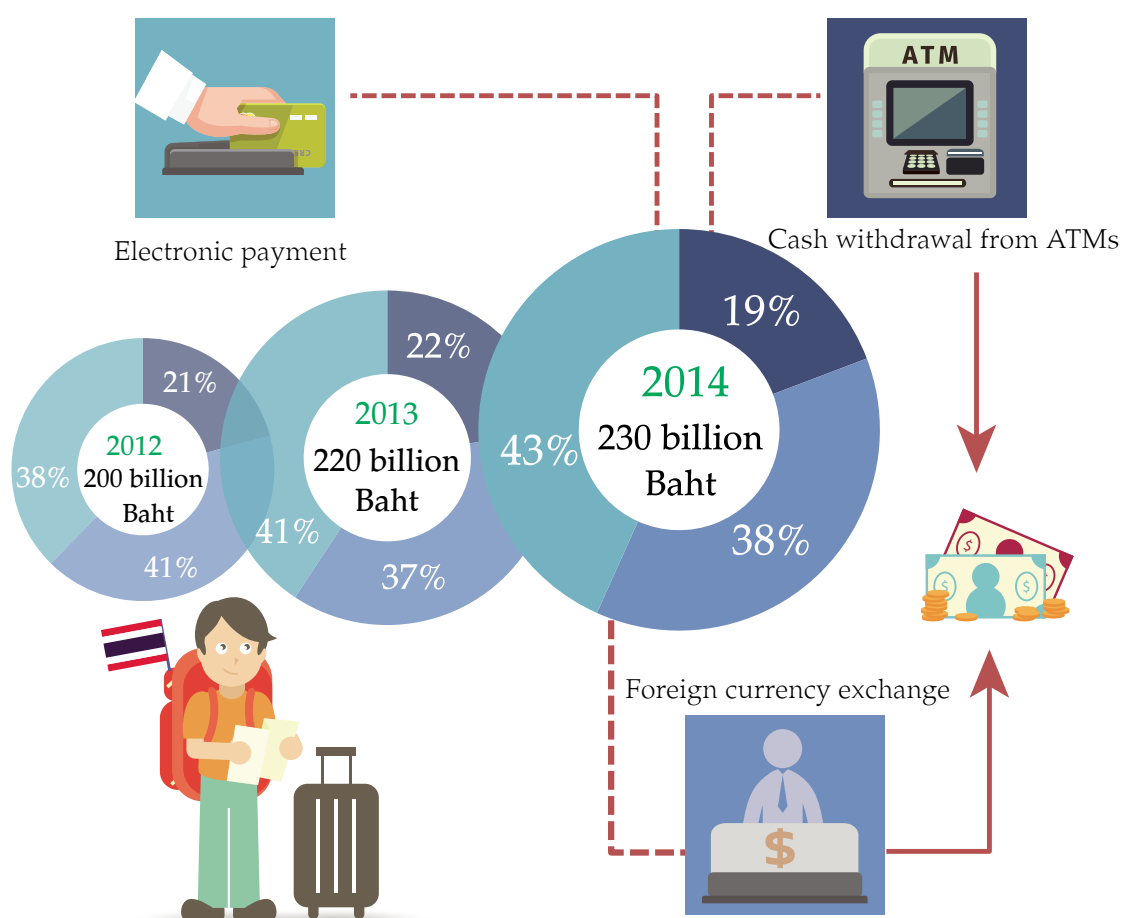
Source: Bank of Thailand

## How We Spend Abroad

Spending abroad, including foreign currency exchange for travelling, automated machine withdrawal when abroad, and card payment for goods and services when abroad, grew continuously in line with the recent growth of outbound tourists from 7.5 million persons in 2012 to 8.2 million persons in 2014.<sup>10</sup>

Data in 2014 revealed that the proportion of credit card and debit card usage abroad was the highest at 43.3 percent compared to that of cash (from foreign currency exchange) and automated machine withdrawal when abroad which recorded at approximately 37.5 and 19.2 percent, respectively. In this regard, the value of electronic card transactions for payment of goods and services abroad averaged at 12,328 Baht per person per year while that of cash (from foreign currency exchange and automated machine withdrawal abroad) averaged at 16,155 Baht per person per year, reflecting that Thais preferred to use cash when spending abroad.

**Figure 11: Value of spending abroad by Thais**



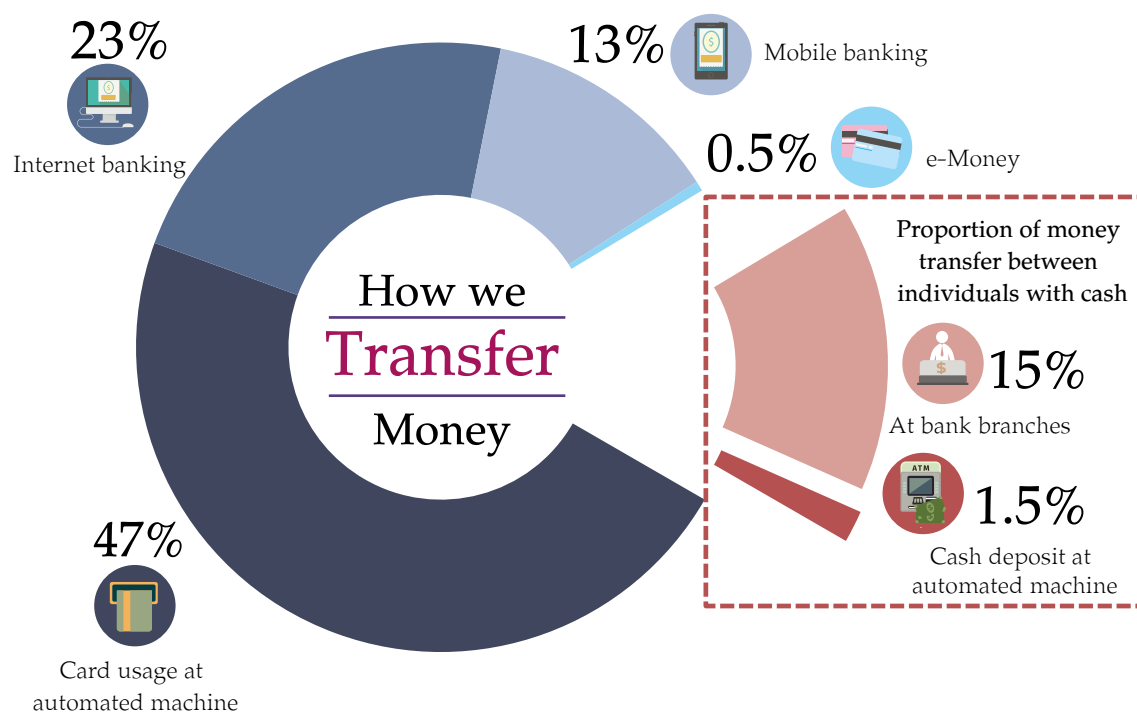
Source: Bank of Thailand

<sup>10</sup> Source: Summary of Tourism Conditions December 2014, Department of Tourism, Ministry of Tourism and Sport

## How We Transfer Money

Most Thais preferred to make electronic funds transfer via automated machines followed by internet banking and mobile banking, and e-Money, with the combined total of transactions, constituting 83 percent of all funds transfer or about 6 times higher than the traditional over the counter transfer at bank branches. In this regard, the aforementioned electronic funds transfer was not high in amount, averaging at 7,262 Baht per transaction per month. For high value funds transfer, Thais were more confident to conduct over the counter at bank branches. Thus, in terms of value, the proportion of funds transfer at bank branches was the highest at 85 percent, averaging at 229,131 Baht per transaction per month.

Figure 12: Proportion of retail funds transfer



Source: Bank of Thailand

### 3.1.2 Payment behavior

The above payment trends clearly reflected that Thais continued to prefer cash as an instrument to pay for goods and services, making up a high proportion compared to e-Payment which continued to be rather low. A survey of payment behavior in 2013<sup>11</sup> revealed that the main reasons for not using e-Payment were lack of knowledge/familiarity followed by complicated process and security concerns.

However, regarding the overall landscape of payment transactions, it was found that e-Payment usage increased continuously owing to the higher popularity of online transactions as well as transfers and automatic account debit via internet banking and mobile banking that grew significantly. In this connection, reasons for future switching to e-Payment included uncomplicated payment process, reduction of fees and service charges, and availability of bank staffs and consultants on product knowledge and usage.

**Figure 13: Reasons for non-usage of e-Payment and switching to e-Payment in the future**



Source: Bank of Thailand

<sup>11</sup> Conducted by the Banknote Management Group, Bank of Thailand

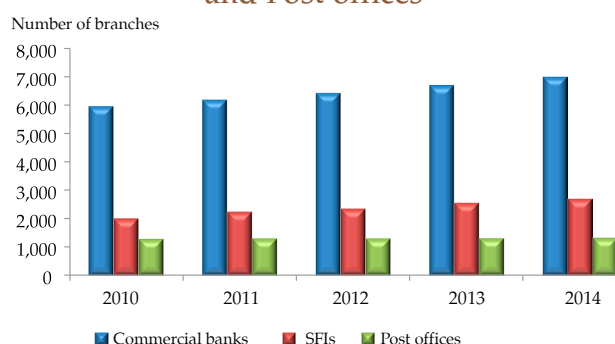


## 3.2 Payment infrastructure development

### 3.2.1 Branches of commercial banks, Specialized Financial Institutions (SFIs), and Post offices

In 2014, 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.

**Figure 14: Number of branches of commercial banks, Specialized Financial Institutions and Post offices**

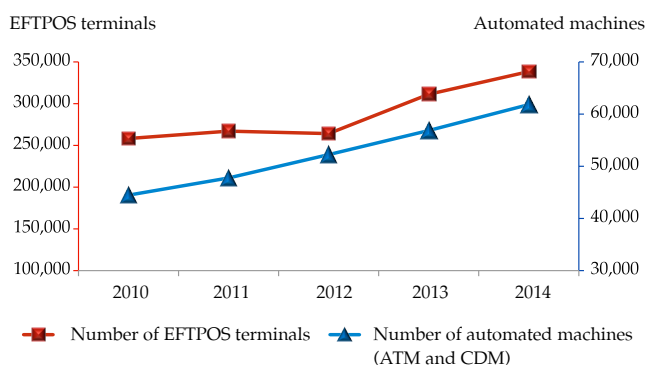


Source: Bank of Thailand

- Branches of commercial banks stood at 7,005 branches, increasing by 290 branches from the previous year. Of these, there were 6,986 Thai commercial bank branches and 19 foreign bank branches. All of the increase owed to Thai commercial bank branches.
- Branches of SFIs stood at 2,689 branches, increasing by 140 branches from the previous year.
- Branches of post office stood at 1,316 branches, increasing by 13 branches from the previous year.

### 3.2.2 Automated machines and EFTPOS terminals

**Figure 15: Number of automated machines and EFTPOS terminals**



Source: Bank of Thailand

At the end of 2014, the total number of automated machines (ATM & CDM) stood at 61,817 terminals, increasing by 8.7 percent. The total number of Electronic Funds Transfer at Point of Sales (EFTPOS)<sup>12</sup> stood at 338,485 terminals, increasing by 8.7 percent, mostly owing to chip card terminals and Mobile Point of Sale (MPOS) terminals.<sup>13</sup> Meanwhile,

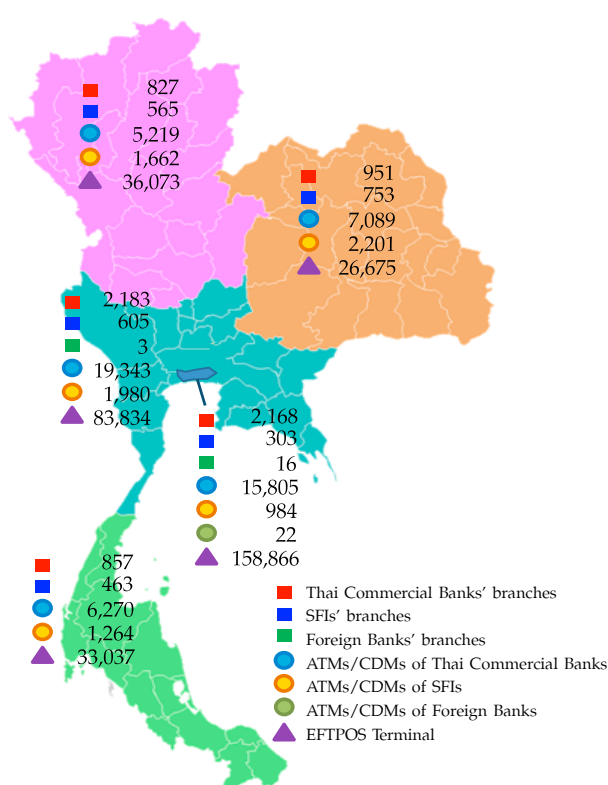
the total number of magnetic strip only terminals declined from 7,441 terminals to 4,667 terminals due to obsolescence.

<sup>12</sup> EFTPOS may also be called EDC (Electronic Data Capture)

<sup>13</sup> Mobile Point of Sale (MPOS) is a portable device that has been developed for usage with smart phones or tablets to process debit card and credit card transactions anywhere with the internet.

In 2014, in terms of regional distribution, the number of branches of financial institutions in Bangkok, the central, and the north-eastern parts of the country increased significantly while those in the northern and southern parts of the country rose only marginally. Bangkok and the central part of the country had similar numbers of branches, totaling at 5,278 branches or 54 percent of the total number of 9,694 branches. The north-eastern, northern and southern parts each had 1,704, 1,392, and 1,320 branches, respectively.

**Figure 16: Distribution of financial institutions' branches, automated machines and EFTPOS terminals by region in 2014**



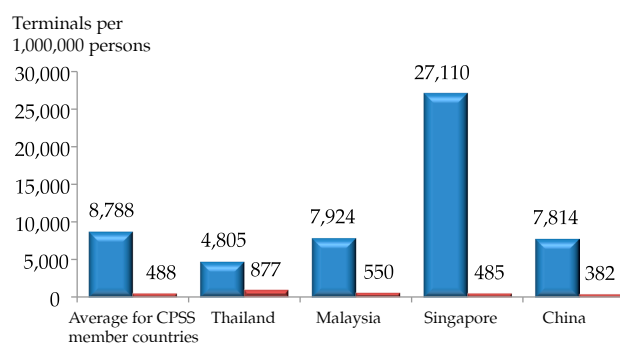
Source: Bank of Thailand

Compared to international statistics available in 2013 on automated machines and EFTPOS, it was found that Thailand's ratio of automated machines per one million persons stood at 877, higher than CPSS<sup>14</sup> which had an average ratio of 488. Thailand's ratio of automated machines was also higher than Malaysia, Singapore and China. 2014 data suggested that the ratio was still rising continuously for Thailand, registering at 949.

Moreover, the number of automated machines and EFTPOS terminals increased for all regions and followed a similar pattern to branches, with Bangkok and the central part of the country, having as high as 21,323 and 16,811 automated machine terminals, equivalent to 34 and 27 percent of the total number of automated machine terminals, respectively. EFTPOS terminals tended to be concentrated in Bangkok and the central part of the country, reaching 158,866 and 83,834 terminals or 47 and 25 percent of the total number of EFTPOS terminals, respectively. Meanwhile, the number of automated machines and EFTPOS terminals in the north, north-eastern and southern parts of the country stood at 23,705 and 95,758, respectively.

<sup>14</sup> The 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. The Committee changed its name to the Committee on Payments and Market Infrastructures (CPMI) on 1 September 2014

**Figure 17: Proportion of automated machines and EFTPOS machines per 1,000,000 people in 2013**



Sources: BIS (2014) Statistics on payment and settlement systems in the CPSS countries, the World Bank: World development indicators, Bank of Negara Malaysia, and Bank of Thailand

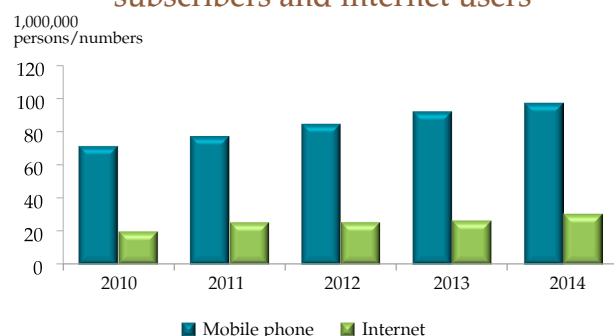
For EFTPOS terminals in 2013, it was found that Thailand's ratio of EFTPOS terminals per one million persons stood at 4,805, lower than CPSS by about half and lower than Singapore by more than five times.

By comparing statistics of payment infrastructure, it was clear that Thailand had the highest number of automated machines compared to other countries. However, Thailand had much less number of EFTPOS

terminals compared to peers, reflecting that usage of electronic cards such as debit cards and credit cards for purchases of goods and services at point of sale was still limited.

### 3.2.3 Subscribers of mobile phones and internet users

**Figure 18: Number of mobile phone subscribers and internet users**



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

The number of mobile phone subscribers continued to increase. At the end of 2014, there were 97.7 million subscribed numbers, increasing by 5.2 million numbers from the previous year and represented 150 percent of the population. In other words, every two persons had three mobile phone numbers.

Of the total number of mobile phone subscribers, most continued to be prepaid, representing 84.8 million numbers. The remaining 12.9 million numbers were postpaid.

The number of internet users at the end of 2014 stood at 27.7 million persons, increasing by 1.5 million persons or 5.8 percent from the previous year.

### 3.3 Major payment channels, instruments, and services

#### Summary of 2014

In 2014, the Thai economy expanded modestly following a slowdown in 2013 which led consumers to be cautious in their spending and businesses to postpone production and new investment. These factors caused growth in the volume and value of e-Payment and other payment channels to increase by less than both previous years and the average observed over the past five years.

However, the overall trend in Thailand's payment systems still remained on track and in line with the goal to promote e-Payment transactions. In other words, e-Payment including high value funds transfer, retail e-Payment including bulk payment, retail funds transfer, electronic cards, and e-Money, grew higher than cheque both in terms of volume and value.

**Table 1: Payment transactions via different payment systems in 2014**

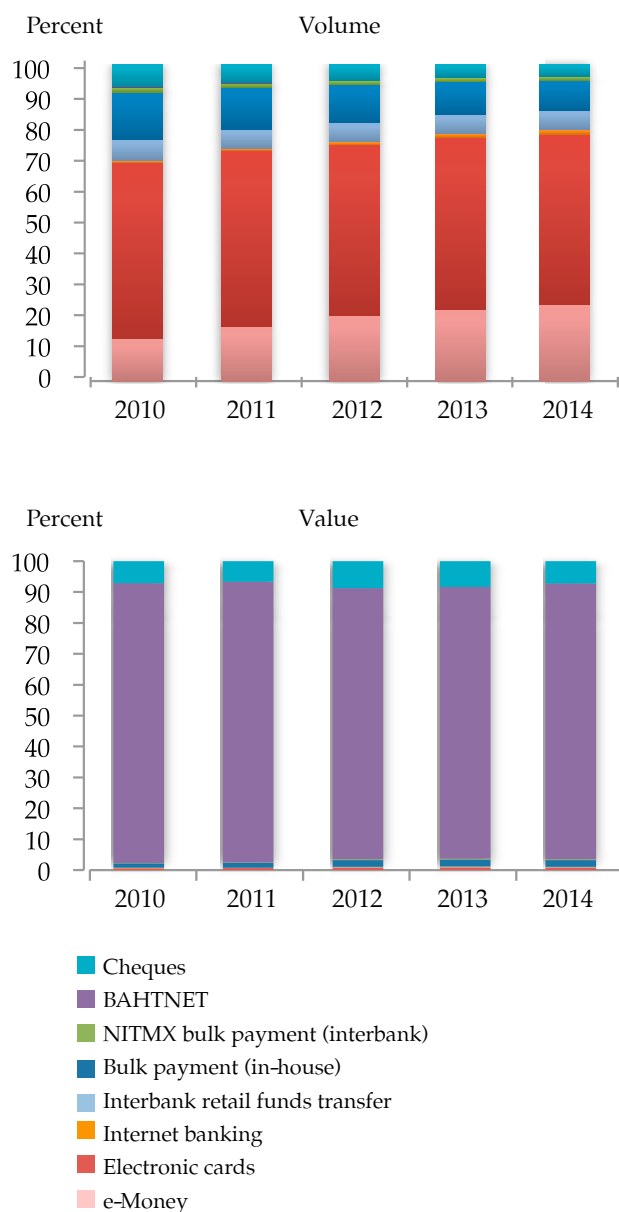
	Payment Transaction		Average per transaction	Growth		Cumulative Annual Growth Rate (CAGR) of 5 years (2010 – 2014)	
	Volume (in thousands)	Value (billion Baht)	(Baht)	Volume (percent)	Value (percent)	Volume (percent)	Value (percent)
Cheques	118,791	61,595	518,516	0.4	-4.6	-0.7	1.9
High value funds transfer BAHTNET	3,406	757,998	222,547,857	4.7	11.5	11.2	9.1
Bulk payment	345,629	21,001	60,762	0.7	6.0	8.0	17.8
Retail funds transfer <sup>1)</sup>	720,219	31,721	44,044	15.2	5.5	17.9	19.0
Electronic cards <sup>2)</sup>	977,216	7,177	7,344	4.9	4.6	9.0	13.2
e-Money	787,932	56	71	17.7	17.0	50.2	39.9

Source: Bank of Thailand

<sup>1)</sup> Include interbank Online Retail Funds Transfer and intrabank funds transfer (including payment for goods and services) via automated machines, internet, mobile phones and branches of commercial banks

<sup>2)</sup> For example, ATM, debit cards and credit cards for payment for goods and services and transfers (not including ATM withdrawals)

**Figure 19: Volume and value of various payment instruments**



Comparison showed that the volumes of various payment instruments remained similar to those of the previous year. The proportion of bulk payment declined slightly from ten percent in 2013 to nine percent this year while that of e-Payment rose from 23 percent in 2013 to 24 percent this year.

The values of various payment instruments were also similar to those of the previous year. The proportion of cheque usage declined from eight percent in 2013 to seven percent this year while that of BAHTNET increased from 87 percent in 2013 to 88 percent this year.

Source: Bank of Thailand



### 3.3.1 Large value funds transfer

Large value funds transfer in Thailand is conducted through the BAHTNET, a payment systems developed and operated by the BOT since 1995. The system provides services to commercial banks and other institutions, namely interbank funds transfer, third-party funds transfer, securities settlement, multilateral funds transfer and interbank messaging.<sup>15</sup>

In 2014, the BAHTNET had a total of 64 users, disaggregated into 17 Thai commercial banks, 13 foreign bank branches<sup>16</sup>, 10 securities companies, 14 SFIs, government offices, state enterprises and other institutions, and 10 BOT's departments. Total volume of transactions in 2014 was 3.4 million transactions or 758 trillion Baht in value, representing growth of 4.7 and 11.5 percent, respectively. The average volume and value of transactions of funds transfer through the BATHNET per day continued to increase, recording at 13,900 transactions and 3.1 trillion Bath.

**Figure 20: Volume and value of funds transfer through BAHTNET**



Source: Bank of Thailand

At the end of 2014, funds transfer through the BAHTNET, categorized by transaction type, revealed that the volume of third-party funds transfer was the highest at 94.7 percent of total transactions while the value of interbank funds transfer was the highest at 70.7 percent of total transaction value. Details are as follows.

1. Interbank funds transfer amounted to 178,765 transactions, totaling 536.1 trillion Baht in value. Compared to last year, the volume of transactions declined by 8.8 percent and the value of transactions rose by 14.7 percent.

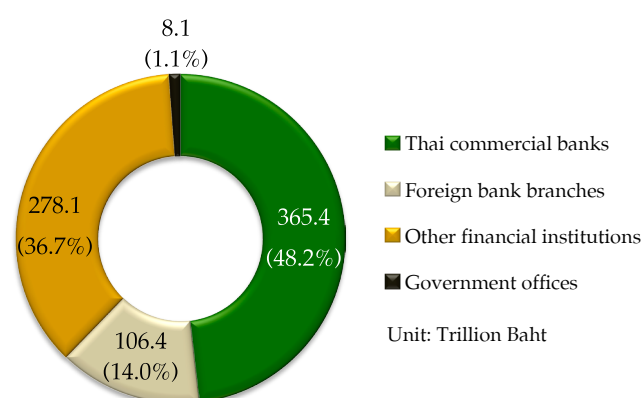
2. Third-party funds transfer amounted to 3,224,161 transactions, totaling 212.4 trillion Baht in value. Compared to last year, the volume and value of transactions increased by 5.6 and 5.3 percent, respectively.

3. Multilateral funds transfer (settlement and netting between institutions) amounted to 2,781 transactions, totaling 9.5 trillion Baht. Compared to last year, the volume and value of transactions decreased by 9.4 and 10.6 percent, respectively.

<sup>15</sup> Multilateral Funds Transfer (MFT) refers to settlement in netting between institutions for transactions conducted on behalf of customers

<sup>16</sup> Includes two commercial banks that are subsidiaries of foreign commercial banks

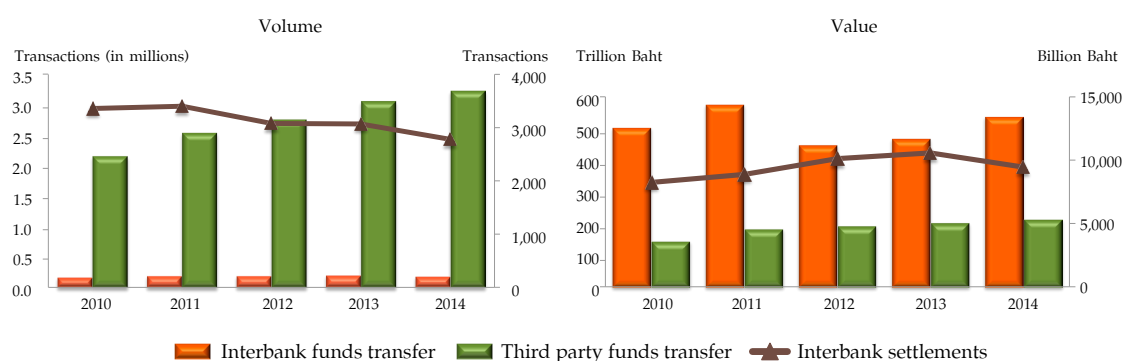
**Figure 21: Value of funds transfer through BAHTNET classified by institution type in 2014**



Source: Bank of Thailand

In 2014, Thai commercial banks were the main user group of BAHTNET, representing 48.2 percent of total transaction value. The top five users had a combined total value of 37.2 percent of total transaction value. Most transactions were bilateral repurchase operation, interbank funds transfer, and trading of government bonds. The second highest user group was other institution (including the BOT), with 36.7 percent of total transaction value. Foreign bank branches' usage made up 14.0 percent in which most transactions were trading of government bonds and interbank foreign exchange trading. Offshore transfers and transfers of government offices amounted to 1.1 percent in which most transactions were transfers for debt settlement. In this regard, government offices' usage of the BAHTNET rose by 16.7 percent from the previous year.

**Figure 22: Volume and value of funds transfer through BAHTNET classified by transaction type**



Source: Bank of Thailand

Classification of transfers through BAHTNET by transaction type revealed that bilateral repurchase operation was the highest in terms of value at 49.3 percent, followed by interbank funds transfer at 14.3 percent, securities settlement at 13.4 percent, in-house funds transfer at 12.0 percent, foreign exchange trading at 8.3 percent, and interbank lending at 2.7 percent.

Moreover, funds transfer through BAHTNET of less than one million Baht made up the highest proportion in terms of volume at 52.5 percent, followed by funds transfer of between 1 and 10 million Baht at 22.0 percent, funds transfer of between 50 and 500 million Baht at 19.2 percent, funds transfer of between 10 and 50 million Baht at 10.5 percent, and funds transfer of more than 500 million Baht at 4.1 percent.

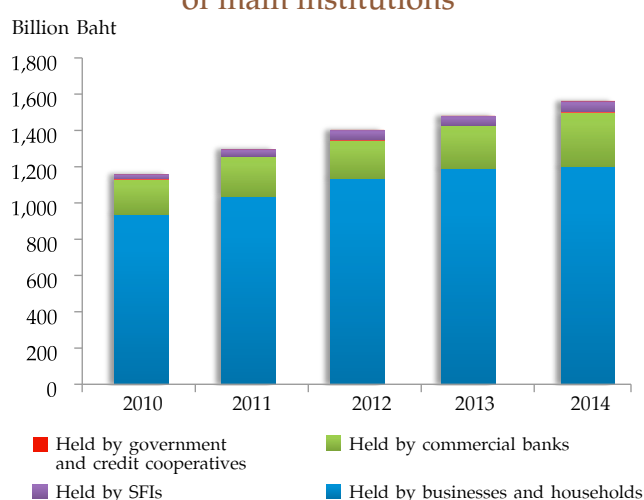
### 3.3.2 Retail payment

#### Paper-based payments

##### • Cash

At the end of 2014, currency (notes and coins) in circulation to GDP in Thailand stood at 9.9 percent, declining slightly from the previous year. Compared to other countries, Thailand's currency in circulation continued to be higher than South Korea, Malaysia and Singapore's ratios of 4.4, 6.4, and 8.5 percent of GDP, respectively<sup>17</sup>. However, Japan had a higher ratio of currency in circulation to GDP of 19.8 percent. In terms of component breakdown, the proportion of currency in the hands of households and businesses was the highest at 1,199 trillion Baht or 77.0 percent, followed by the proportion of currency held at commercial banks at 239 trillion Baht or 19.3 percent. Meanwhile, the proportion of currency held at SFIs stood at three trillion Baht or 3.7 percent. The rest were held in the hands of other institutions, including the government and cooperatives.

**Figure 23: Composition of currency  
of main institutions**



In 2014, currency held by households and businesses to narrow money<sup>18</sup> remained close to the previous year, registering at 71.3 percent compared to 71.6 percent in 2013.

Source: Bank of Thailand

<sup>17</sup> Data on South Korea, Singapore and Japan were for 2013, taken from Statistics on payment, clearing and settlement systems in the CPMI countries, Figures for 2013

<sup>18</sup> Narrow money includes 1) cash held by depository institutions and the government and 2) current deposits at depository institutions

Table 2: Comparison of currency in circulation

	2010	2011	2012	2013	2014
Currency in circulation per capita (Baht/person)	14,671	16,169	17,734	18,363	18,414
Currency held by households and businesses to narrow money (percent)	72.0	73.3	71.1	71.6	71.3

Source: Bank of Thailand

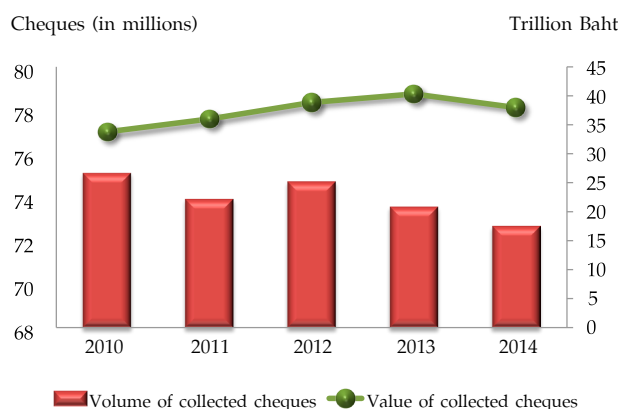
### • Cheque

Cheque usage is one of the indicators of Thailand's economic conditions, particularly the business sector which continued to use cheque to make payment. In 2014, cheque usage (including interbank and in-house cheques) totaled at 118.8 million cheques, declining by 1.8 percent from the previous year. Similarly, the value of cheque usage in 2014 was 61.6 trillion Baht, decreasing by 5.9 percent from the previous year. The trend has been consistent since the third quarter of 2013, in part due to the persistent slowdown of the economy. Moreover, the average value per collected cheque declined from 0.54 million Baht per cheque in 2013 to 0.52 million Baht per cheque in 2014. The average number of cheques per capita also declined from 1.9 cheques per person in 2013 to 1.8 cheques per person in 2014.

### Interbank cheque clearing system

In 2014, interbank cheques nationwide totaled at 72.7 million cheques, representing 37.9 trillion Baht, declining from the previous year by 1.2 and 5.8 percent, respectively.

Figure 24: Volume and value of interbank cheques

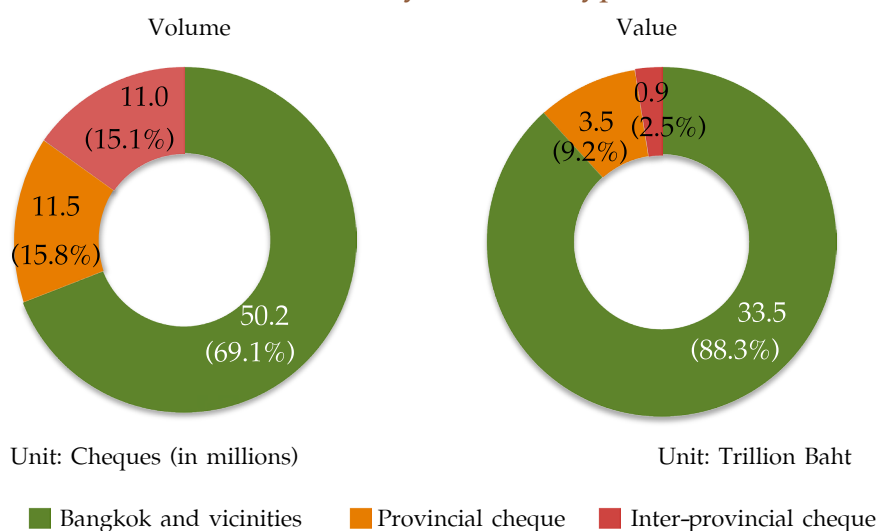


Source: Bank of Thailand

The volume and value of interbank cheques trended downwards, averaging at 296,682 cheques per day and 155.0 billion Baht, respectively. Meanwhile, returned cheques totaled at 1.2 million cheques, equivalent to 0.3 billion Baht, increasing slightly from the previous year by 1.6 and 0.7 percent, respectively. Of these, 0.8 million cheques totalling 0.1 billion Baht were returned on the grounds of insufficient fund, accounting for 1.1 and 0.3 percent of the total volume and value of collected cheques, respectively. The ratio of volume of dishonoured cheques rose by 10 percent from the previous year while the proportion of value did not change.

At the end of 2014, ratios of the volume and value of interbank cheques in Bangkok and its vicinities stood at 69.1 and 88.3 percent, respectively. Ratios of the volume and value of provincial interbank cheques followed at 15.8 and 9.2 percent, respectively. Meanwhile, ratios of the volume and value of inter-provincial interbank cheques stood at 15.1 and 2.5 percent, respectively.

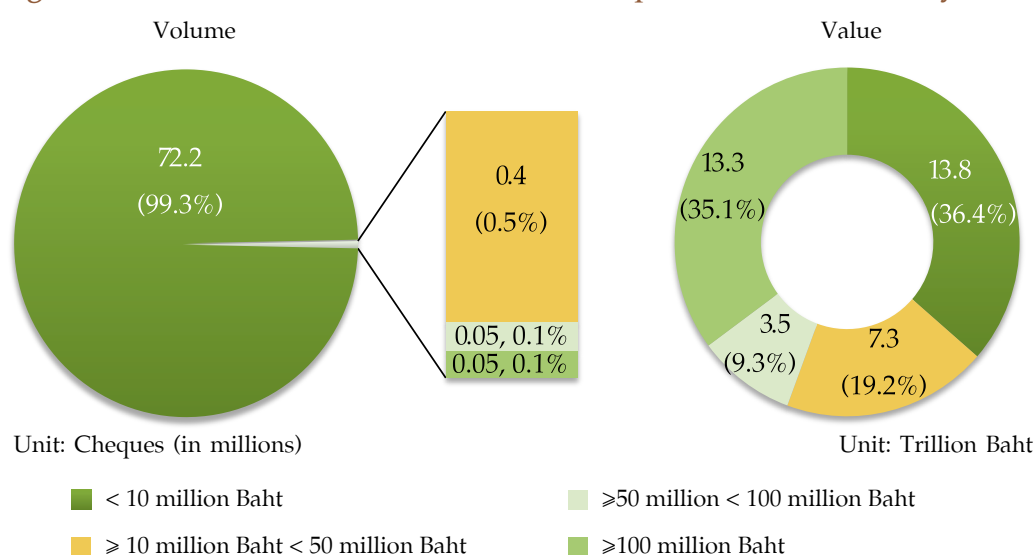
**Figure 25: Volume and value of interbank cheques (2014)**  
classified by collection type



Source: Bank of Thailand

In terms of value, the ratio of cheques that were less than 10 million Baht accounted for 36.4 percent of total collected cheques, similar to that of high value cheques (exceeding 100 million Baht) which recorded at 35.1 percent. These were followed by cheques that were between 10 and 50 million Baht at 19.2 percent and cheques that were between 50 and 100 million Baht at 9.3 percent. However, in terms of volume, the ratio of cheques that were less than 10 million Baht stood as high as 99.3 percent.

**Figure 26: Volume and value of interbank cheques (2014) classified by value**



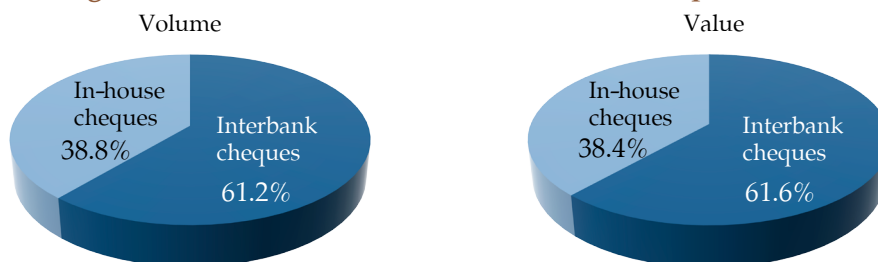
Source: Bank of Thailand



### In-house cheque clearing system

In 2014, in-house cheques that commercial banks reported to the BOT totaled at 46.1 million cheques, equivalent to 23.6 trillion Baht. Compared to 2013, the volume and value of in-house cheques decreased by 1.8 and 5.9 percent, respectively. Ratios of the volume and value of in-house cheques to total collected cheques stood at 38.8 and 38.4 percent, respectively.

**Figure 27: Volume and value of in-house cheques (2014)**



Source: Bank of Thailand

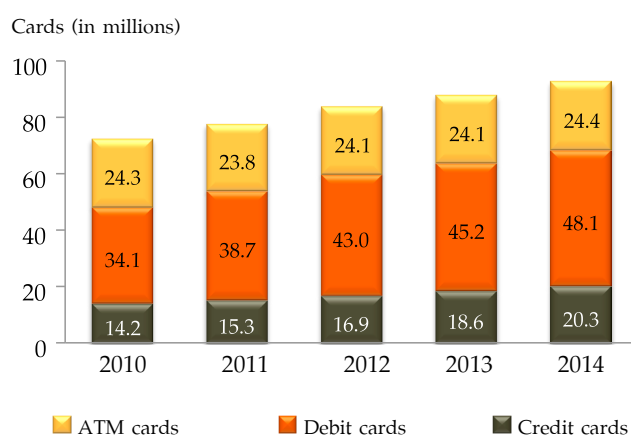
### Electronic payments

#### • Card payments

##### Number of electronic cards

The number of electronic cards (ATM cards, debit cards and credit cards) in Thailand expanded steadily. In 2014, there were 24.4 million ATM cards, 48.1 million debit cards, and 20.3 million credit cards, increasing from the previous year by 1.2, 6.4 and 9.0 percent, respectively.

**Figure 28: Number of ATM cards, debit cards and credit cards**

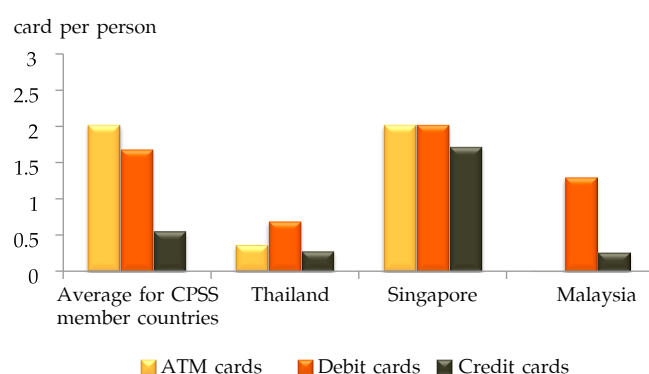


Source: Bank of Thailand

There was a declining trend in ATM card usage as reflected by its ratio to all electronic cards which dropped from 33 percent in 2010 to 26 percent in 2014. Growth in ATM cards was also smallest compared to other types of cards. In this regard, lower ATM card usage in part resulted from commercial banks' recent marketing promotion of debit cards which led to higher popularity. As a result, the ratio of debit cards to total electronic cards stood highly at 52 percent.

Meanwhile, credit card usage in Thailand continued to grow. In 2014, the number of credit cards grew by nine percent from the previous year. Of all credit cards, those issued by commercial banks accounted for 9.8 million cards while those issued by credit card companies (some are subsidiaries of commercial banks) accounted for 10.5 million cards. Rising popularity of credit cards in part stemmed from aggressive business strategy of service providers aiming to gain market share through joint promotion campaigns with retailers, in which special discounts and benefits were offered to credit card users. Another contributing factor was new innovations for mobile devices such as mobile phones which could store credit card information, making it more convenient for customers because they could pay for goods and services through their mobile applications instantly.

**Figure 29: Proportion of electronic cards per capita (2013)**



However, compared to other countries, Thailand's proportion of electronic cards per capita was much lower than CPSS countries, Singapore and Malaysia.

Sources: BIS (2014) Statistics on payment, clearing and settlement systems in the CPSS countries figures for 2013, Bank Negara Malaysia and Bank of Thailand

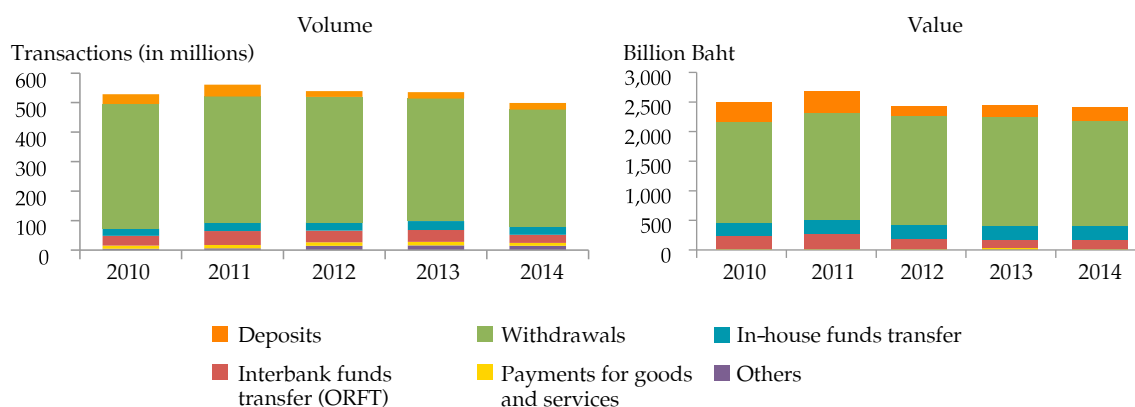
## Electronic card usage<sup>19</sup>

### *ATM cards*

ATM cards in Thailand were mostly used to withdraw cash from automated machines, accounting for 79.6 percent of total volume and 73.6 percent of total value of all ATM transactions. Cash withdrawals amounted to 1,772 billion Baht, declining by 4.0 percent from last year. The next most frequent usages were in-house funds transfer at 5.5 percent and interbank funds transfer also at 5.5 percent, representing a combined total of 54.9 million transactions and 379.5 million Baht in 2014. In terms of volume, funds transfer using ATM cards increased by 1.6 percent but decreased by 3.5 percent in terms of value. Overall, the trend of ATM card usage in terms of both volume and value continued to decline in line with the number of ATM cards.

<sup>19</sup> Not including ATM cards and debit cards issued by SFIs due to lack of detailed data

Figure 30: Volume and value of ATM transactions

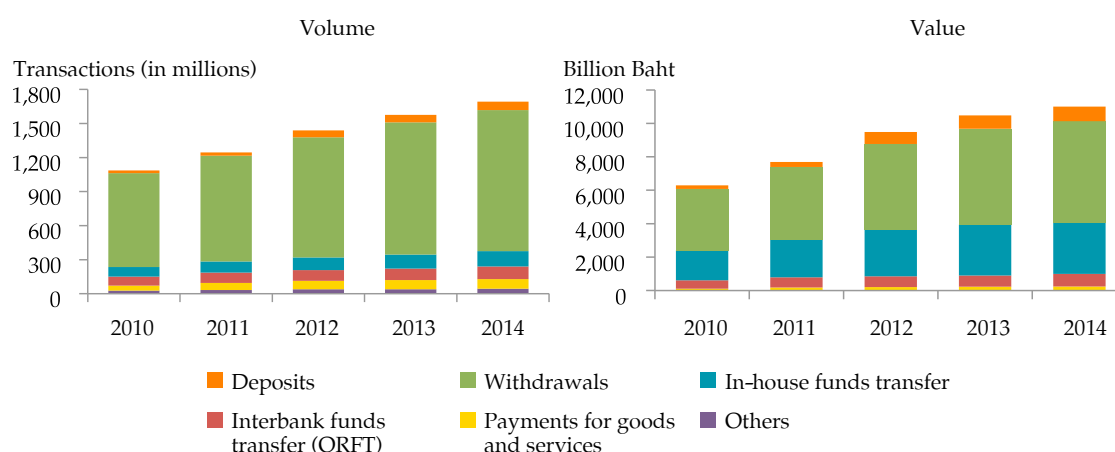


Source: Bank of Thailand

### Debit cards

In 2014, debit card transactions totaled at 1,691.8 million transactions, reaching as high as 11 trillion Baht, increasing from the previous year by 6.6 and 4.9 percent, respectively. However, most Thais continued to use debit cards mainly to withdraw cash from automated machines in the same way as ATM cards, representing 73.4 percent of all transactions. This was followed by in-house funds transfer at 8.0 percent, interbank funds transfer at 6.5 percent, and payment for goods and services at 5.1 percent.

Figure 31: Volume and value of debit card transactions



Source: Bank of Thailand

Comparison of ATM card and debit card usages in 2014 reflected that both card types were used in a similar manner. In this connection, cash withdrawals by ATM cards amounted to 79.6 percent of total transactions while those of debit cards accounted for 73.4 percent of total transactions.

Table 3: Commercial banks' electronic card transactions (2014)

	Volume		Value		Average value (Baht/ transaction)
	Transactions (in Millions)	Percent	Baht (in Billions)	Percent	
<b>ATM cards</b>					
Withdrawals	397.1	79.6	1,772.1	73.6	4,463
In-house transfers	27.3	5.5	221.8	9.2	8,125
Interbank transfers (ORFT)	27.6	5.5	157.7	6.6	5,714
Payments for goods and services	10.3	2.1	22.8	0.9	2,214
Deposits	22.0	4.4	228.3	9.5	10,377
Others	14.3	2.9	3.8	0.2	266
<b>Total</b>	<b>498.6</b>	<b>100.0</b>	<b>2,406.5</b>	<b>100.0</b>	<b>4,827</b>
<b>Debit cards</b>					
Withdrawals	1,241.9	73.4	6,081.2	55.3	4,897
In-house transfers	135.9	8.0	3,053.8	27.8	22,471
Interbank transfers (ORFT)	110.6	6.5	759.5	6.9	6,867
Payments for goods and services	85.6	5.1	235.3	2.1	2,749
Deposits	74.0	4.4	861.3	7.8	11,639
Others	43.8	2.6	6.0	0.1	137
<b>Total</b>	<b>1,691.8</b>	<b>100.0</b>	<b>10,997.1</b>	<b>100.0</b>	<b>6,500</b>

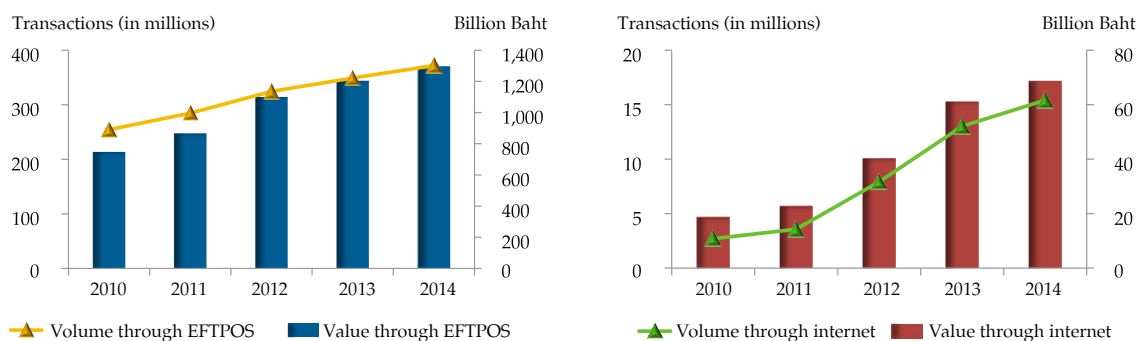
Source: Bank of Thailand

*Credit cards<sup>20</sup>*

Credit card transactions at point of sales through EFTPOS terminals in 2014 amounted to more than 95 percent of total transactions in terms of volume and value. Total value of transactions recorded at 1,297.4 billion Baht, increasing by 7.8 percent from the previous year. However, growth in credit card usage through the internet doubled that of EFTPOS in terms of volume and value, accounting for 15.4 million transactions and 68.8 billion Baht, increasing from the previous year by 12.5 and 18.3 percent, respectively.

<sup>20</sup> Excluding cash advances

Figure 32: Volume and value of credit card transactions



Source: Bank of Thailand

### • Bulk payment

Bulk payment refers to a pre-authorized retail funds transfer that is conducted in bulk. The expansion of bulk payment has been steady in terms of volume and value with modest growth being recorded in 2014 whereby the volume of transactions recorded at 345.6 million transactions, increasing only slightly by 0.7 percent from the previous year and the value of transactions amounted to 19.8 trillion Baht, rising by 3.4 percent from the previous year.

Bulk payment can be categorized into two types.

#### 1) In-house preauthorized transactions, including

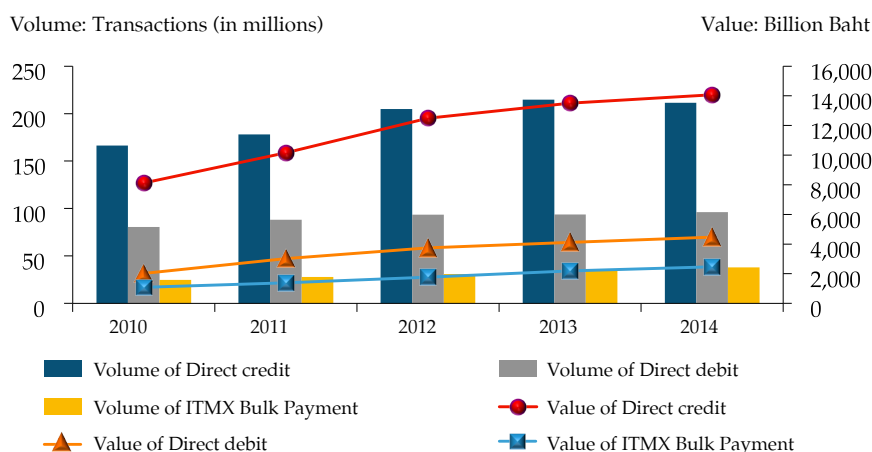
- Direct credit, for example, transfer of salaries, payment for goods and services and dividend payment, recording at 14.1 trillion Baht, increasing by 4.2 percent from the previous year. The volume, however, stood at 211.5 million transactions, decreasing by 1.5 percent from the previous year.
- Direct debit, for example, payment of utility bills, insurance premiums, credit card usage and others, totaling 4.5 trillion Baht, increasing by 8.5 percent from the previous year. The volume stood at 96.2 million transactions, increasing slightly by 2.7 percent from the previous year.

#### 2) Interbank preauthorized transactions

When the sender and recipient are using different banks, transfers are conducted through ITMX bulk payment which currently handles only direct credit. In 2014, the value of interbank preauthorized transactions totaled at 2.5 trillion Baht, increasing by 12.9 percent from the previous year. This represented 37.9 million transactions, increasing by 8.8 percent from the previous year.

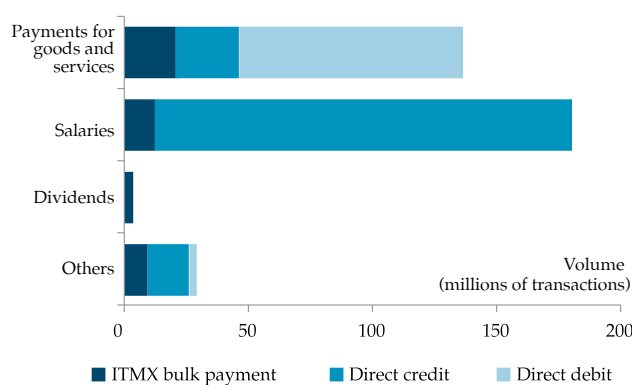


Figure 33: Volume and value of bulk payment



Source: Bank of Thailand

Figure 34: Volume of bulk payment (2014)



Source: Bank of Thailand

Note: Excluding SFIs

Closer examination of the purpose of bulk payment clearly showed that in-house direct credit was mostly used for transfer of salaries. Direct credit through ITMX bulk payment was predominantly used for payment of goods and services. Meanwhile, direct debit was popularly used to pay for goods and services, particularly utility bills such as electricity, water and telephone charges.

Comparison of average values of bulk payment through different systems reflected that in 2014, direct credit for payment of goods and services was the highest, recording at 275,362 Baht per transaction. ITMX bulk payment and direct debit followed at 84,573 and 48,536 Baht per transaction, respectively. In this connection, transfer of salaries through ITMX bulk payment averaged at 51,077 Baht per transaction, higher than through direct credit which averaged at 37,901 Baht per transaction.

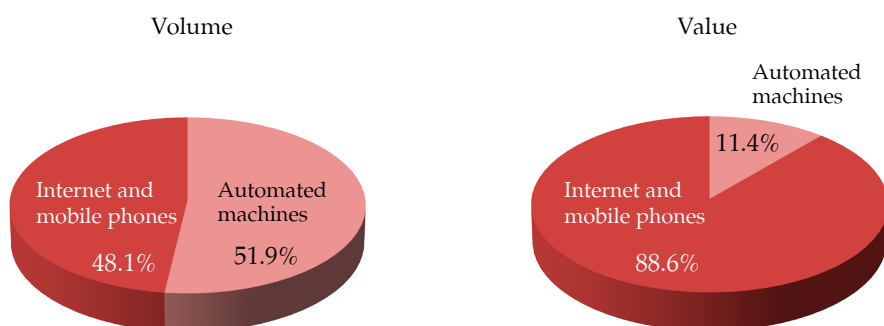
### • Retail funds transfer

Retail funds transfer entails in-house funds transfer and interbank funds transfer, also known as Online Retail Funds Transfer (ORFT). In 2014, retail funds transfer totaled at 31.7 trillion Baht, increasing by 5.5 percent from the previous year. The volume reached 720.2 million transactions, increasing by 15.2 percent from the previous year. In-house funds transfer continued to be popular, accounting for 72.3 and 95.0 percent of total transactions in terms of volume and value, respectively.

#### In-house funds transfer<sup>21</sup>

Commercial banks' in-house funds transfer which included payment for goods and services via automated machines and electronic transfers through the internet and mobile phones amounted to 520.6 million transactions and 30.1 trillion Baht, increasing from the previous year by 15.4 and 5.2 percent, respectively. Most transfers were Business to Business (B2B) transfers carried out over the internet. In this regard, the proportions of B2B transfers through the internet and mobile phone vis-à-vis transfers through automated machines were 88.6 and 11.4 percent, respectively.

**Figure 35: Proportion of in-house funds transfer (2014)**



Source: Bank of Thailand

#### Interbank funds transfer<sup>22</sup>

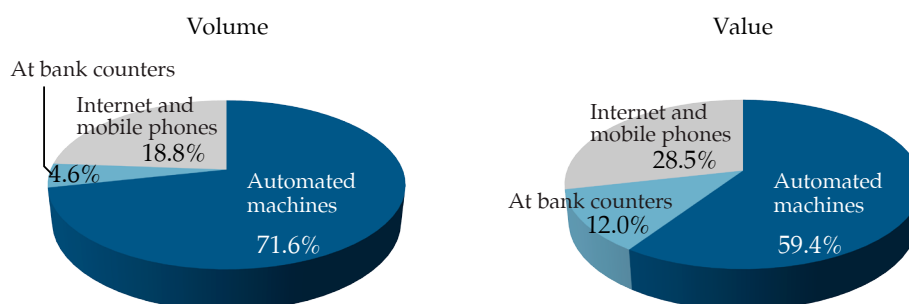
Interbank funds transfers can be conducted through many channels including automated machines, at bank branches, and over the internet.

<sup>21</sup> Excluding transfers at the counter

<sup>22</sup> Online Retail Funds Transfer (ORFT) is a service whereby customers can transfer funds through automated machines, at the counter, or over the internet. Receipts will be able to withdraw funds from the account right after the transfer order is successful. Commercial banks offering ORFT include BBL, KBANK, KTB, TMB, SCB, Standard Chartered Bank Thai, CIMB Thai, Krungsri, Thanachart and Thai Credit Retail Bank.

In 2014, interbank funds transfer totaled at 199.6 million transactions, increasing by 14.8 percent from the previous year. The value of transactions stood at 1.6 trillion Baht, increasing by 13.4 percent from the previous year. Most transfers were conducted through automated machines, representing as high as 71.6 and 59.4 percent of the total volume and value of transactions, respectively.

**Figure 36: Proportion of interbank funds transfer (2014)**

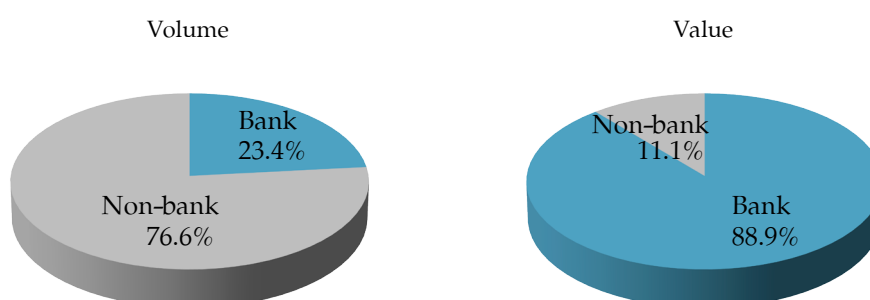


Source: Bank of Thailand

#### • Bill payment <sup>23</sup>

Bill payment at the counter was the most popular channel given the large number of service points that can be accessed 24 hours a day. Service providers also became more diversified from the entering into the market of non-bank service providers as licensed by the Royal Decree on Regulating Electronic Payment Services.

**Figure 37: Proportion of volume and value of bill payment (2014)**



Source: Bank of Thailand

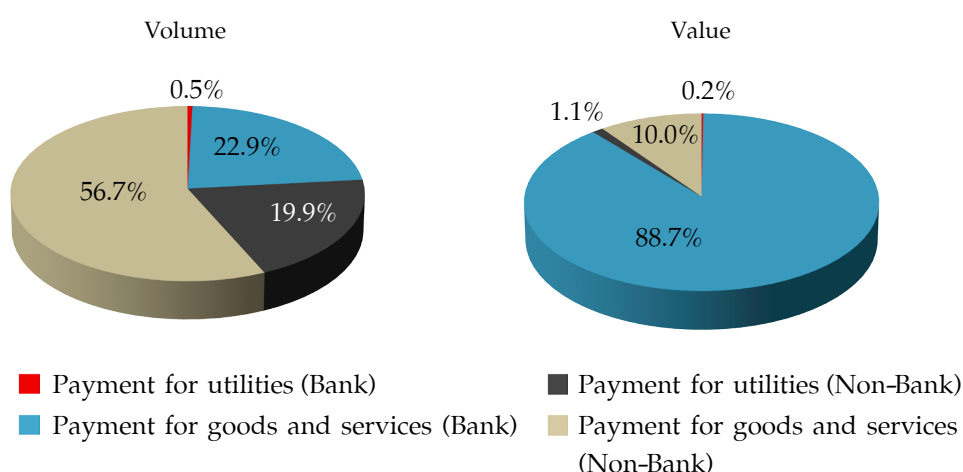
<sup>23</sup> Currently, bill payment can be made through various channels including 1) at the counter of non-banks such as convenient stores and retail stores; 2) e-Payment such as payment via automated machines, the internet and smart phones; and 3) credit card or direct debit. However, the Report only covers bill payment at the counter.

In 2014, bill payment at the counter of non-bank service providers accounted for 435.6 million transactions, increasing by 21.2 percent from the previous year. Up to 76.6 percent of transactions were for payment for goods and services at non-bank service points.

Though bill payment at commercial bank branches only accounted for a quarter of total transaction volume, it represented more than 88.7 percent of total transaction value. This was in part because commercial banks could provide bill payment service to the business sector which could be rather high in value as reflected by average values of transactions. In this regard, cheque payment averaged at a high 1.2 million Baht per transaction, account transfer averaged at 380,000 Baht per transaction, and cash payment averaged at 25,000 Baht per transaction. Meanwhile, cash payment at the counter of non-banks averaged at merely 3,300 Baht per transaction.

Bill payment at the counter could be categorized into payment for purchases of goods and services (for example, credit card bills, mobile phone and internet bills, insurance premium, air ticket, and lay-by installment) and payment for utilities (electricity, water and telephone services). The volume of payment for purchases of goods and services accounted for 80.1 percent of total transactions while that of payment for utilities stood at 19.9 percent of total transactions.

**Figure 38: Proportion of volume and value of bill payment (2014)**  
classified by type



Source: Bank of Thailand

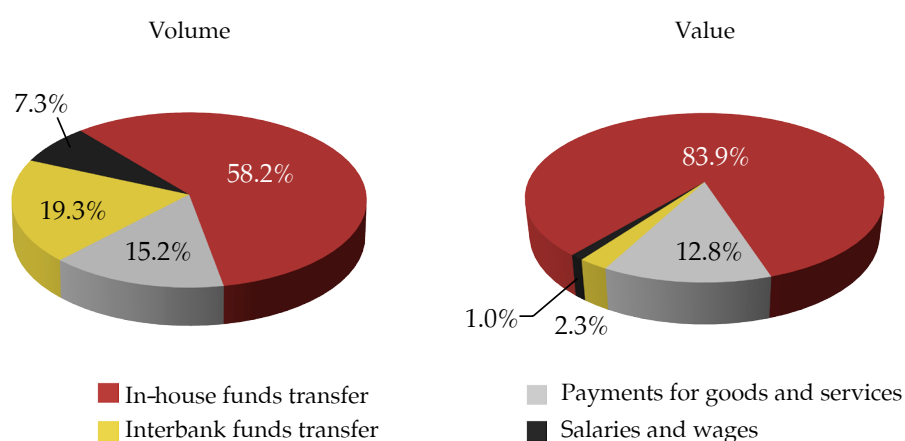
### • Internet banking and mobile banking

Recently, commercial banks have become active in developing electronic banking services, including internet banking and mobile banking, in response to technological advancement and greater consumer confidence.

In 2014<sup>24</sup>, there were 9.96 million internet banking accounts and 6.23 million mobile banking accounts, both with growing trend. In this connection, the volume and value of internet banking reached 183.9 million transactions and 18.9 trillion Baht, increasing by 13.8 and 7.6 percent, respectively. Meanwhile, the volume and value of mobile banking stood at 109.3 million transactions and 1,364.0 billion Baht, increasing by 91.2 and 81.5 percent, respectively.

In-house funds transfer made up most of internet banking transactions, accounting for 58.2 percent of total transactions, followed by interbank funds transfer, payment for goods and services, and payment of salaries and wages at 19.3, 15.2, and 2.3 percent of total transactions, respectively. Similarly, the value of in-house funds transfer via the internet represented 83.9 percent of total transactions, followed by payment for goods and services, interbank funds transfer, and payment of salaries and wages at 12.8, 7.3, and 1.0 percent of total transaction value, respectively.

Figure 39: Proportion of volume and value of internet banking (2014)

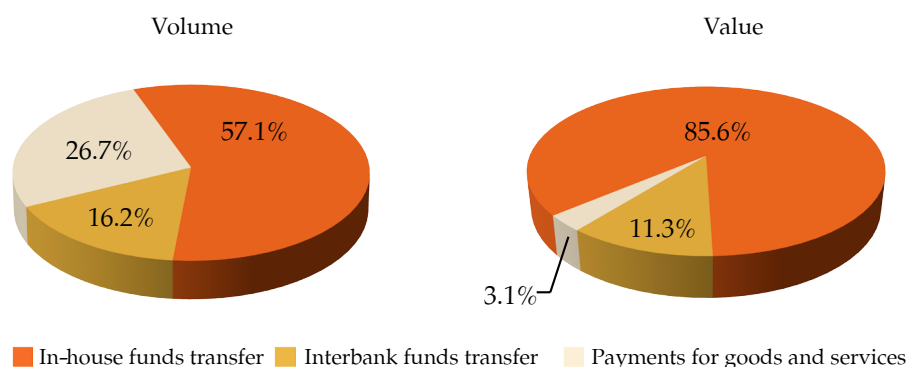


Source: Bank of Thailand

<sup>24</sup> Reporting format of internet banking and mobile banking was adjusted by the Bank of Thailand which affected data on the number of users and the volume and value of transactions.



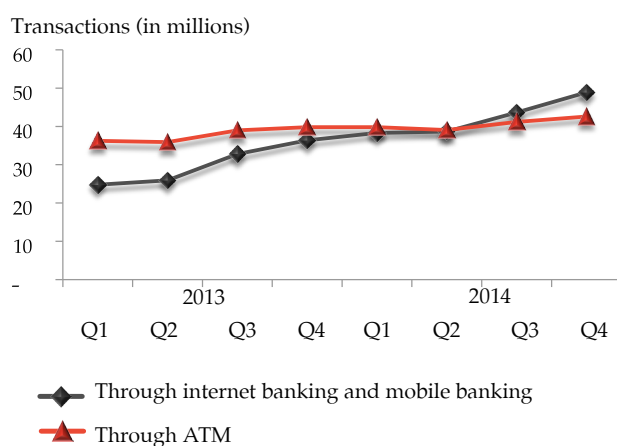
Figure 40: Proportion of volume and value of mobile banking (2014)



Source: Bank of Thailand

Likewise, in-house funds transfer constituted most of mobile banking transactions, representing 57.1 percent of total transactions, followed by payment for goods and services and interbank funds transfer at 26.7 and 16.2 percent, respectively. In terms of value, in-house funds transfer also made up most of total transaction value, recording at 85.6 percent, followed by interbank funds transfer and payment for goods and services at 11.3 and 3.1 percent of total transaction value, respectively.

Figure 41: Funds transfer via internet banking, mobile banking, and automated machines



Source: Bank of Thailand

The steady growth of in-house funds transfer was due in part to the decrease of interprovincial funds transfer<sup>25</sup> since the third quarter of 2013 coupled with changes in users' payment behavior. As a result, the volume of transfer through internet banking and mobile banking continued to rise in proportion, becoming higher than that through automated machines since the third quarter of 2014.

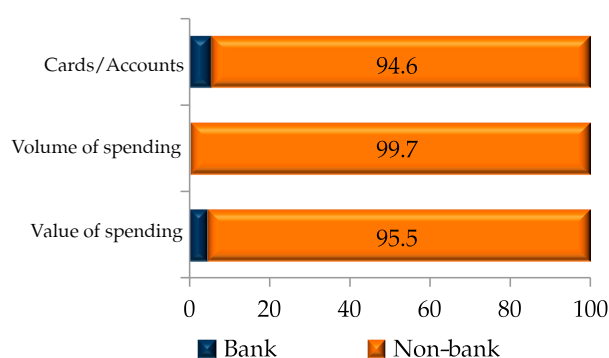
<sup>25</sup> The majority of commercial banks reduced the fees for internet and mobile phone transfers from the average of 10 Baht for each 10,000 Baht per transaction to free for the first 5 – 15 transactions of each month and 10 Baht per each subsequent transaction.

### • e-Money

Provision of 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).

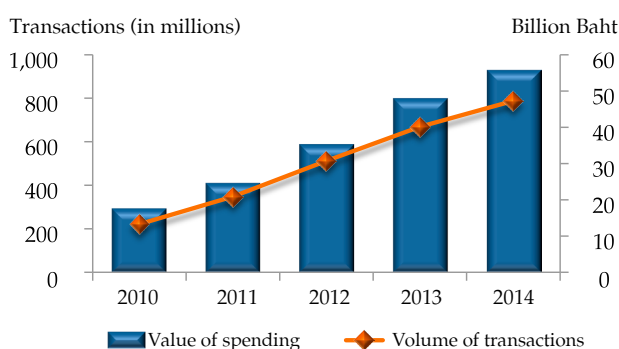
At the end of 2014, there were 21 e-Money service providers, the same as last year. Of these, eight were banks and 13 were non-banks. There were 26.9 million e-Money cards or accounts<sup>26</sup> in total, increasing by 2.6 million cards or accounts, or 10.6 percent from the previous year. The volume and value of transactions stood at 787.9 million transactions and 55,801.7 million Baht, increasing from the previous year by 17.7 and 16.2 percent, respectively.

**Figure 42: e-Money services of banks and non-banks (2014)**



Source: Bank of Thailand

**Figure 43: Volume and value of e-Money transactions**



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 94.6 percent share of the total number of e-Money cards or accounts. On the other hand, the proportion of e-Money cards or accounts issued by banks represented merely 5.4 percent. Likewise, almost all of the volume and value of e-Money transactions were provided by non-banks, recording at 99.7 and 95.5 percent of total transaction volume and value, respectively.

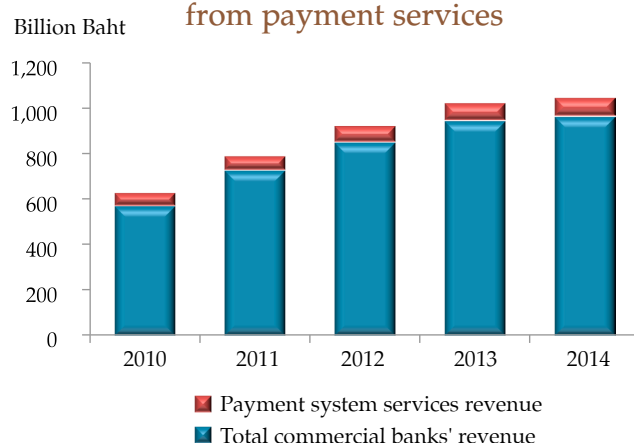
In 2014, total spending on e-Money continued to grow whereby the volume and value of spending amount rose from the previous year by 17.7 and 16.2 percent, respectively.

<sup>26</sup> Including e-Money that is used in place of cash to pay for goods and services and excluding pre-paid cards for mobile phones

### 3.4 Revenue from payment services

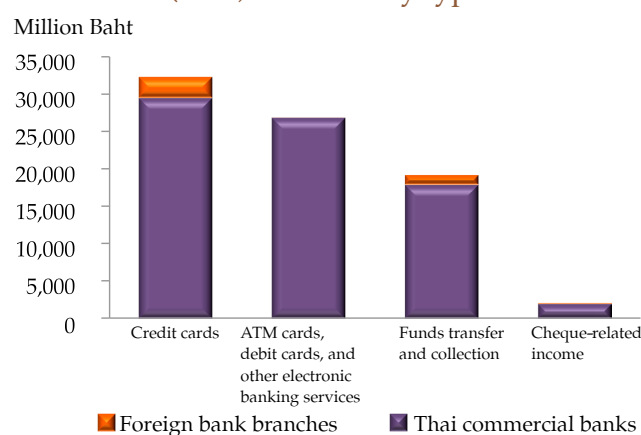
Commercial banks' revenue from payment services come from four sources of income namely 1) revenue from credit card services 2) revenue from ATM card, debit card and other e-Banking services 3) transfer and collection service revenues and 4) cheque-related revenues.

**Figure 44: Commercial banks' revenue from payment services**



Source: Bank of Thailand

**Figure 45: Revenue from payment services (2014) classified by type**



Source: Bank of Thailand

In 2014, commercial banks' revenue from payment services totaled at 80.6 billion Baht, equivalent to 8.4 percent of total revenue of 963.6 billion Baht. Revenue from payment services increased by 4.5 billion Baht or 5.9 percent, slowing down from the previous year. Credit card usage continued to be the main source of payment revenue, amounting to 40.1 percent of total revenue from payment services.

Detailed inspection according to revenue type showed that revenue from e-Payment services rose while cheque-related income dropped. In 2014, revenue from e-Payment services, including credit card usage fees, ATM card, debit card

and other e-Banking services, and transfer and collection increased from the previous year at similar paces of 6.3, 6.6, and 5.6 percent, respectively. Meanwhile, cheque-related income continued to decrease by 5.6 percent from the previous year, in line with greater usage of e-Payment.

# Appendix





## 4. Glossary and abbreviation

ABA	ASEAN Bankers Association
ATM	Automated Teller Machine
BAHTNET	Bank of Thailand Automated High-Value Transfer Network
BCP	Business Continuity Plan
BIS	Bank for International Settlements
BOT	Bank of Thailand
CDM	Cash Deposit Machine
CLS	Continuous Linked Settlement
e-Business	Electronic Business
e-Commerce	Electronic Commerce
EDC	Electronic Data Capture
EFTPOS	Electronic Funds Transfer at Point Of Sale
e-Invoicing	Electronic Invoicing
e-Money	Electronic Money
e-Payment	Electronic Payment
e-Receipt	Electronic Receipt
e-Tax invoice	Electronic Tax invoice
ETC	Electronic Transactions Commission
e-Wallet	Electronic Wallet
HKD	Hong Kong Dollar
HKMA	Hong Kong Monetary Authority
ICAS	Imaged Cheque Clearing and Archive System
IMF	International Monetary Fund
ISO	International Organization for Standardization
MFT	Multilateral Fund Transfer
MPOS	Mobile Point of Sale



NITMX	National ITMX
Non-bank	Non-bank financial institutions
NPMS	National Payment Message Standard
NPP	New Payments Platform
ORFT	Online Retail Funds Transfer
PFMI	Principles for Financial Market Infrastructures
PIRPS	Prominently Important Retail Payment Systems
PSC	Payment Systems Committee
PvP	Payment versus Payment
RMB	Renminbi (the official currency of the People's Republic of China)
RTC	Real-Time Clearing
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
STP	Straight-Through Processing
TH-PMPG	Thailand Payment Market Practice Group
USD	United States Dollar
USD CHATS	US Dollar Clearing House Automated Transfer System
WC-PSS	Working Committee on Payment and Settlement Systems
XML	eXtensible Markup Language

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**Table 1: Basic statistical data**

	2009	2010	2011	2012	2013	2014
Population (millions)	63.5	63.9	64.1	64.5	64.8	65.1
GDP current price (billion Baht)	9,041.5	10,104.8	10,539.4	11,363.0	11,897.4	12,141.1
GDP per capita (Baht)	142,329.7	15,8184.1	164,482.8	176,279.9	183,631.0	186,428.4
Exchange rate vis-à-vis US\$ (at year-end)	33.36	30.15	31.70	30.63	32.82	32.96

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

**Table 2: Technological infrastructure <sup>1</sup>**

	2009	2010	2011	2012	2013	2014
<b>Total fixed network telephone subscribers (millions)</b>	<b>7.2</b>	<b>6.9</b>	<b>6.7</b>	<b>6.4</b>	<b>6.1</b>	<b>5.7</b>
<b>Total mobile telephone subscribers (millions)</b>	<b>66.0</b>	<b>71.6</b>	<b>77.6</b>	<b>85.0</b>	<b>92.5</b>	<b>97.7</b>
Postpaid	7.1	7.3	8.0	9.8	11.7	12.9
Prepaid	58.9	64.3	69.6	75.2	80.8	84.8
<b>Total Internet users (millions)</b>	<b>18.3</b>	<b>19.8</b>	<b>25.1</b>	<b>25.2</b>	<b>26.1</b>	<b>27.7</b>
<b>Penetration rates</b>						
Fixed network telephone (%)	11.3	10.8	10.4	9.9	9.4	8.7
Mobile telephone (%)	103.8	112.1	121.1	131.9	142.7	150.0

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

<sup>1</sup> Data source was changed since 2013 and all data was reviewed.

**Table 3: Narrow money (at year-end, million Baht)**

	2009	2010	2011	2012	2013	2014
<b>Narrow money (1+2)</b>	<b>1,174,551</b>	<b>1,302,442</b>	<b>1,414,297</b>	<b>1,598,261</b>	<b>1,661,304</b>	<b>1,681,333</b>
1. Currency outside Depository Corp. Central Gov.	843,958	937,201	1,036,015	1,136,302	1,188,888	1,199,195
Banknotes in circulation	1,005,884	1,114,518	1,248,569	1,350,932	1,425,282	1,503,679
Coins in circulation	40,675	43,348	46,953	50,864	54,322	56,622
Less: currency held by Central Gov.	1,300	1,256	986	854	1,115	1,247
Less: currency held by Depository Corp.	201,301	219,409	258,521	264,640	289,601	359,859
Held by commercial banks	178,970	193,495	221,289	210,596	238,668	299,916
Held by finance companies	0	0	0	0	0	0
Held by Specialized Financial Institutions	22,183	25,737	36,905	53,602	50,538	58,385
Held by savings cooperatives	148	177	326	441	395	1,558
Held by money market mutual funds	0	0	0	0	0	0
2. Transferable deposits at Depository Corp.	330,593	365,241	378,282	461,959	472,416	482,138
Transferable deposits at Bank of Thailand	3,131	2,943	3,053	4,554	3,225	2,708
Transferable deposits at commercial banks	321,325	357,378	368,192	451,295	464,220	475,561
Transferable deposit at Specialized Financial Institutions	6,137	4,920	7,037	6,110	4,970	3,870

Source: Bank of Thailand

**Table 4: Settlement media used by non-banks (at year-end, billion Baht)**

	2009	2010	2011	2012	2013	2014
Currency outside Depository Corp. Central Gov. <sup>1</sup>	844	937	1,036	1,136	1,189	1,199
Transferable deposits at Depository Corp.	331	365	378	462	472	482
Narrow money	1,175	1,302	1,414	1,598	1,661	1,681
Broad money <sup>2</sup>	10,617	11,779	13,560	14,967	16,062	16,808

Source: Bank of Thailand

<sup>1</sup> Banknotes outside depository corporations and coins issued by central government<sup>2</sup> 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)**

	2009	2010	2011	2012	2013	2014
Balances held at central bank	48.2	78.2	59.3	88.7	89.8	95.6
Required reserves	425.9	457.8	488.5	655.6	668.2	733.5
Free reserves	1,908.3	2,110.7	2,004.5	2,489.4	2,575.2	2,529.8
Transferable deposits at other banks	3.7	6.7	7.9	6.5	3.7	4.5
Memorandum item:						
Institutions borrowing from central bank	14.9	10.0	0.0	124.7	119.4	98.9

Source: Bank of Thailand

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

Volume of transactions (in thousands)

	2009	2010	2011	2012	2013	2014
<b>Paper-based:</b>	<b>123,202</b>	<b>114,558</b>	<b>115,427</b>	<b>122,875</b>	<b>118,365</b>	<b>118,791</b>
In-house cheque <sup>1</sup>	48,310	39,435	41,833	48,145	44,793	46,103
Interbank cheque	74,892	75,123	73,594	74,730	73,572	72,687
<b>Electronic payment cards:</b>	<b>1,850,327</b>	<b>2,164,395</b>	<b>2,480,439</b>	<b>2,827,638</b>	<b>3,182,137</b>	<b>3,404,116</b>
ATM card	556,613	542,707	561,136	539,056	535,350	498,667
for cash withdrawal via ATM	387,175	422,546	429,288	424,354	415,872	397,139
for other purposes <sup>2</sup>	169,438	120,161	131,848	114,702	119,478	101,528
Debit card <sup>3</sup>	895,708	1,085,356	1,231,241	1,406,350	1,576,484	1,691,737
for cash withdrawal via ATM	724,622	828,607	920,029	1,059,075	1,165,118	1,241,829
for purchasing purpose via EFTPOS	11,913	13,802	25,057	30,748	37,221	43,871
for other purposes <sup>4</sup>	159,172	242,948	286,155	316,527	374,144	406,037
Credit card <sup>5</sup>	294,999	314,873	339,865	369,920	401,093	425,781
for purchasing purpose	263,424	282,597	308,212	343,346	373,046	397,697
for other purposes <sup>6</sup>	31,575	32,276	31,653	26,574	28,047	28,083
e-Money <sup>7</sup>	103,007	221,459	348,198	512,311	669,210	787,932
<b>Automated:</b>	<b>237,630</b>	<b>274,019</b>	<b>296,861</b>	<b>332,324</b>	<b>346,410</b>	<b>349,034</b>
Direct credit <sup>8</sup>	146,151	166,372	178,147	204,829	214,657	211,479
Direct debit <sup>9</sup>	68,583	80,621	88,086	93,531	93,636	96,205
ITMX Bulk Payment	20,891	24,702	27,901	31,018	34,864	37,944
BAHTNET <sup>10</sup>	2,005	2,323	2,728	2,946	3,253	3,406

Source: Bank of Thailand

<sup>1</sup> Some banks do not report in-house provincial cheques and inter-provincial cheques.<sup>2</sup> Data include purchasing goods and services, deposit and funds transfer.<sup>3</sup> Domestic and overseas spending of Thai debit cards.<sup>4</sup> Data include purchasing goods and services via other channels, deposit and funds transfer.<sup>5</sup> Domestic and overseas spending of Thai credit cards and domestic spending of foreign credit cards.<sup>6</sup> Data include cash withdrawal, cash advance, deposit and funds transfer.<sup>7</sup> Data exclude top-up cards.<sup>8</sup> Intra-bank pre-authorized direct credit.<sup>9</sup> Intra-bank pre-authorized direct debit.<sup>10</sup> 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)

	2009	2010	2011	2012	2013	2014
<b>Paper-based:</b>	<b>56,066</b>	<b>51,698</b>	<b>56,168</b>	<b>64,832</b>	<b>64,581</b>	<b>61,595</b>
In-house cheque <sup>1</sup>	22,473	17,918	20,363	25,989	24,262	23,632
Interbank cheque	33,593	33,780	35,805	38,843	40,319	37,963
<b>Payment cards:</b>	<b>8,467</b>	<b>9,871</b>	<b>11,496</b>	<b>13,350</b>	<b>14,498</b>	<b>15,086</b>
ATM card	2,643	2,508	2,677	2,437	2,451	2,406
for cash withdrawal via ATM	1,498	1,721	1,804	1,852	1,846	1,772
for other purposes <sup>2</sup>	1,145	787	873	584	606	634
Debit card <sup>3</sup>	4,876	6,294	7,620	9,489	10,475	10,997
for cash withdrawal via ATM	3,095	3,670	4,275	5,136	5,743	6,081
for purchasing purpose via EFTPOS	24	30	81	94	100	107
for other purposes <sup>4</sup>	1,757	2,593	3,264	4,259	4,633	4,809
Credit card <sup>5</sup>	937	1,052	1,174	1,389	1,524	1,626
for purchasing purpose	737	845	964	1,157	1,282	1,384
for other purposes <sup>6</sup>	200	207	211	232	241	242
e-Money <sup>7</sup>	10.5	17.7	24.7	35.4	48.0	56.2
<b>Automated :</b>	<b>498,861</b>	<b>665,846</b>	<b>780,284</b>	<b>667,134</b>	<b>699,527</b>	<b>778,999</b>
Direct credit <sup>8</sup>	6,698	8,121	10,163	12,495	13,500	14,065
Direct debit <sup>9</sup>	1,676	2,021	3,014	3,749	4,117	4,467
ITMX Bulk Payment	868	1,081	1,393	1,771	2,187	2,469
BAHTNET <sup>10</sup>	489,619	654,623	765,714	649,119	679,723	757,998

Source: Bank of Thailand

<sup>1</sup> Some banks do not report in-house provincial cheques and inter-provincial cheques.<sup>2</sup> Data include purchasing goods and services, deposit and funds transfer.<sup>3</sup> Domestic and overseas spending of Thai debit cards.<sup>4</sup> Data include purchasing goods and services via other channels, deposit and funds transfer.<sup>5</sup> Domestic and overseas spending of Thai credit cards and domestic spending of foreign credit cards.<sup>6</sup> Data include cash withdrawal, cash advance, deposit and funds transfer.<sup>7</sup> Data exclude top-up cards.<sup>8</sup> Intra-bank pre-authorized direct credit.<sup>9</sup> Intra-bank pre-authorized direct debit.<sup>10</sup> Data include funds transfer, third party funds transfer and Multilateral Funds Transfer.

**Table 8: Use of credit cards and debit cards via EFTPOS (monthly average per card, Baht)**

	2009	2010	2011	2012	2013	2014
Credit card <sup>1</sup>	3,462	3,753	4,011	4,598	4,871	5,325
Debit card <sup>2</sup>	65	76	181	191	194	196

Source: Bank of Thailand

<sup>1</sup> Domestic and overseas spending of Thai credit cards and domestic spending of foreign credit cards via EFTPOS.<sup>2</sup> Domestic and overseas spending of Thai debit cards via EFTPOS.**Table 9: Cash withdrawal via ATM (monthly average per card, Baht)**

	2009	2010	2011	2012	2013	2014
ATM card	5,327	6,767	7,711	8,265	8,381	8,229
Debit card <sup>1</sup>	8,402	8,961	9,198	9,956	10,579	10,979

Source: Bank of Thailand

<sup>1</sup> Domestic and overseas cash withdrawal of Thai debit cards via ATM**Table 10: Notes and coins (at year-end, million Baht)**

	2009	2010	2011	2012	2013	2014
<b>Notes and coins</b>	<b>1,095,159</b>	<b>1,187,828</b>	<b>1,346,438</b>	<b>1,401,796</b>	<b>1,479,604</b>	<b>1,560,301</b>
<b>Notes:</b>	<b>1,054,484</b>	<b>1,144,480</b>	<b>1,299,485</b>	<b>1,350,932</b>	<b>1,425,282</b>	<b>1,503,679</b>
500,000 Baht	117	116	117	118	118	118
1,000 Baht	774,058	889,617	1,028,838	1,102,770	1,202,441	1,282,400
500 Baht	140,972	113,746	119,826	128,217	138,695	124,976
100 Baht	98,605	98,235	108,220	121,358	129,095	141,047
80 Baht	0	0	0	149	1,178	1,181
60 Baht	1,163	1,166	1,173	1,175	150	151
50 Baht	13,062	12,799	9,599	13,194	13,347	19,070
20 Baht	22,835	25,134	28,045	28,840	30,801	36,884
10 Baht	3,346	3,342	3,340	3,336	3,334	3,332
5 Baht	196	195	196	196	196	196
1 Baht	121	121	121	121	121	121
50 Satang	9	9	9	9	9	9
<b>Coins:</b>	<b>40,675</b>	<b>43,348</b>	<b>46,953</b>	<b>50,864</b>	<b>54,322</b>	<b>56,622</b>

Source: Bank of Thailand

Table 11: Institutional infrastructure

	2009	2010	2011	2012	2013	2014
<b>Central Bank</b>						
Number of Institutions	1	1	1	1	1	1
Number of Branches	3	3	3	3	3	3
Number of Accounts <sup>1</sup>	226	231	231	241	182	182
Value of Accounts (million Baht) <sup>1</sup>	250,262	422,059	353,916	381,223	439,175	310,132
<b>Thai Commercial Banks</b>						
Number of Institutions	17	17	16	16	16	17
Number of Branches	5,791	5,961	6,183	6,421	6,696	6,986
Number of Accounts	76,078,336	79,073,950	77,588,699	81,344,121	84,433,032	86,582,576
Value of Accounts (million Baht)	6,557,653	6,886,058	7,367,485	9,540,114	10,350,543	11,065,024
<b>Specialized Financial Institutions</b>						
Number of Institutions	6	6	6	6	6	6
Number of Branches	1,853	2,002	2,240	2,348	2,549	2,689
Number of Accounts	41,618,537	37,838,856	37,366,503	48,233,488	54,377,970	68,684,785
Value of Accounts (million Baht)	2,175,906	2,435,471	2,249,904	3,199,296	3,604,591	4,724,271
<b>Foreign Bank Branches</b>						
Number of Institutions	15	15	15	15	14	14
Number of Branches	15	15	18	19	19	19
Number of Accounts	89,866	92,402	96,165	86,556	89,607	79,641
Value of Accounts (million Baht)	466,418	511,604	623,338	679,790	699,573	789,461
<b>Post Office</b>						
Number of Institutions	1	1	1	1	1	1
Number of Branches	1,254	1,281	1,295	1,298	1,303	1,316
Number of Accounts	-	-	-	-	-	-
Value of Accounts (million baht)	-	-	-	-	-	-

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

<sup>1</sup> Data exclude regional offices.

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

	2009	2010	2011	2012	2013	2014
<b>Paper-based:</b>	<b>74,892</b>	<b>75,123</b>	<b>73,598</b>	<b>74,705</b>	<b>73,572</b>	<b>72,687</b>
Intra-provincial Cheque in Bangkok and vicinity <sup>1</sup>	53,926	53,864	52,116	53,137	52,051	50,215
Intra-provincial Cheque in Regional Area <sup>2</sup>	14,353	14,533	14,775	14,800	13,312	11,455
Inter-provincial Cheque <sup>3</sup>	6,613	6,726	6,707	6,768	8,209	11,017
<b>Automated:</b>	<b>99,110</b>	<b>116,482</b>	<b>130,554</b>	<b>150,962</b>	<b>170,153</b>	<b>184,270</b>
BAHTNET <sup>4</sup>	2,005	2,323	2,728	2,946	3,253	3,406
ITMX Bulk Payment	20,891	24,702	27,901	31,018	34,864	37,944
ORFT-ATM (Online Retail Funds Transfer)	76,214	89,456	99,926	116,997	132,035	142,920

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

<sup>1</sup> ICAS was implemented to replaced ECS on 4 February 2012.<sup>2</sup> Provincial Cheque Clearing migrated to ICAS since 15 November 2012 and implemented nationwide in December 2013.<sup>3</sup> Inter-provincial Cheques cleared via ICAS since 16 May 2013.<sup>4</sup> 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)**

	2009	2010	2011	2012	2013	2014
<b>Paper-based:</b>	<b>33,593</b>	<b>33,780</b>	<b>35,998</b>	<b>38,740</b>	<b>40,319</b>	<b>37,963</b>
Intra-provincial Cheque in Bangkok and vicinity <sup>1</sup>	30,473	30,247	32,053	34,445	35,980	33,530
Intra-provincial Cheque in Regional Area <sup>2</sup>	2,761	3,137	3,508	3,811	3,684	3,500
Inter-provincial Cheque <sup>3</sup>	359	396	438	484	655	933
<b>Automated:</b>	<b>490,940</b>	<b>656,253</b>	<b>767,749</b>	<b>651,660</b>	<b>682,762</b>	<b>761,411</b>
BAHTNET <sup>4</sup>	489,619	654,623	765,714	649,119	679,723	757,998
ITMX Bulk Payment	868	1,081	1,393	1,771	2,187	2,469
ORFT-ATM (Online Retail Funds Transfer )	453	549	642	771	852	944

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

<sup>1</sup> ICAS was implemented to replaced ECS on 4 February 2012.<sup>2</sup> Provincial Cheque Clearing migrated to ICAS since 15 November 2012 and implemented nationwide in December 2013.<sup>3</sup> Inter-provincial Cheques cleared via ICAS since 16 May 2013.<sup>4</sup> 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						
	2009	2010	2011	2012	2013	2014
<b>Bond registry system:</b>						
Government securities	5,153	6,665	7,204	7,979	4,222	2,009
<b>Book-entry system:</b>						
Equity securities (in millions)	2.46	2.8	2.7	3.1	3.7	4.1
Government securities (in millions)	0.09	0.1	0.1	0.2	0.2	0.2

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)						
	2009	2010	2011	2012	2013	2014
<b>Bond registry system:</b>						
Government securities	42.0	20.0	22.1	28.1	50.0	22.8
<b>Book-entry system:</b>						
Equity securities	539.0	816.3	1,028.7	839.0	1,220.0	1,027.8
Government securities	51,070.9	66,816.7	80,468.7	82,954.0	81,839.0	87,274.8

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

Table 16: Number of participants in selected payment and settlement systems						
	2009	2010	2011	2012	2013	2014
BAHTNET <sup>1</sup>	65	66	64	65	64	64
Intra-provincial Cheque in Bangkok and vicinity <sup>2</sup>	38	38	38	36	36	36
Intra-provincial Cheque in Regional Area <sup>3</sup>	21	22	22	21	23	36
Inter-provincial Cheque <sup>4</sup>	37	37	37	35	36	36
ITMX Bulk Payment	33	33	32	32	31	30
<b>Bond registry system:</b>						
Government securities	633,708	529,237	341,968	283,597	211,631	113,842
<b>Book-entry system:</b>						
Equity securities and Government securities	88	89	89	86	86	38

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

<sup>1</sup> Data include funds transfer, third party funds transfer and Multilateral Funds Transfer.

<sup>2</sup> ICAS was implemented to replaced ECS on 4 February 2012.

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

<sup>4</sup> Inter-provincial Cheques cleared via ICAS since 16 May 2013.

Table 17: Number of Automated machines<sup>1</sup> and EFTPOS terminals<sup>2</sup>

	2009	2010	2011	2012	2013	2014
<b>Total of Automated machines</b>	<b>39,454</b>	<b>44,468</b>	<b>47,759</b>	<b>52,242</b>	<b>56,851</b>	<b>61,817</b>
Bangkok	13,586	14,639	15,099	15,802	16,304	16,789
Central	13,951	15,669	16,658	18,036	19,640	21,323
Northeast	4,370	5,314	6,091	7,128	7,270	9,290
North	3,707	4,304	4,760	5,474	6,110	6,881
South	3,840	4,542	5,151	5,802	7,527	7,534
<b>Total of EFTPOS terminals</b>	<b>247,837</b>	<b>258,248</b>	<b>267,168</b>	<b>264,236</b>	<b>311,289</b>	<b>338,485</b>
Bangkok	120,786	133,353	133,712	129,777	146,012	158,866
Central	48,962	56,468	61,134	61,898	76,939	83,834
Northeast	13,558	16,387	17,751	18,926	23,937	26,675
North	21,596	24,697	25,966	24,432	30,296	36,073
South	22,381	27,343	28,605	29,203	34,105	33,037

Source: Bank of Thailand

<sup>1</sup> Automated Teller Machines (ATM) and Cash Deposit Machines (CDM)<sup>2</sup> Data include commercial banks and some credit card companies.Table 18: Number of electronic payment cards<sup>1</sup>

	2009	2010	2011	2012	2013	2014
<b>Total</b>	<b>67,631,419</b>	<b>72,627,280</b>	<b>77,818,347</b>	<b>83,966,632</b>	<b>87,970,298</b>	<b>92,826,149</b>
Credit card <sup>2</sup>	13,489,422	14,187,815	15,328,291	16,870,025	18,626,864	20,303,751
ATM card	23,438,658	24,308,945	23,756,810	24,108,467	24,101,957	24,401,333
Debit card	30,703,339	34,130,520	38,733,246	42,988,140	45,241,477	48,121,065

Source: Bank of Thailand

<sup>1</sup> Data exclude e-Money.<sup>2</sup> Data include non-bank.Table 19: Sources of payment revenues of Thai commercial banks (million Baht)<sup>1</sup>

	2009	2010	2011	2012	2013	2014
<b>Total</b>	<b>47,266</b>	<b>52,719</b>	<b>57,190</b>	<b>65,571</b>	<b>71,680</b>	<b>76,257</b>
Credit card	13,451	15,562	19,867	24,049	27,419	29,501
ATM card and e-banking	16,539	18,477	19,288	22,475	25,194	26,851
Money transfer and collection	15,148	16,516	15,937	16,875	16,944	17,896
Cheque-related fee	2,128	2,164	2,098	2,172	2,123	2,009

Source: Bank of Thailand

<sup>1</sup> From 2013, data exclude securities custodian and letter of credit.

**Table 20: Sources of payment revenues of foreign bank branches (million Baht)<sup>1</sup>**

	2009	2010	2011	2012	2013	2014
<b>Total</b>	<b>3,291</b>	<b>3,653</b>	<b>4,153</b>	<b>3,991</b>	<b>4,428</b>	<b>4,313</b>
Credit card	2,356	2,564	2,945	2,653	3,011	2,838
ATM card and e-banking	46	47	49	50	50	48
Money transfer and collection	874	913	1,029	1,162	1,234	1,306
Cheque-related fee	15	129	130	126	133	121

Source: Bank of Thailand

<sup>1</sup> From 2013, data exclude securities custodian and letter of credit.**Table 21: Daily averages of BOT payment services - Volume of transactions**

	2009	2010	2011	2012	2013	2014
BAHTNET <sup>1</sup>	8,251	9,600	11,180	12,025	13,278	13,901
Intra-provincial Cheque in Bangkok and vicinity <sup>2</sup>	221,919	222,578	213,590	216,886	212,453	204,961
Intra-provincial Cheque in Regional Area <sup>3</sup>	59,065	60,053	60,553	60,407	54,336	46,756
Inter-provincial Cheque <sup>4</sup>	27,216	27,795	27,488	27,625	33,505	44,966
ITMX Bulk Payment	85,972	102,074	114,346	126,606	142,304	154,874

Source: Bank of Thailand

<sup>1</sup> Data include funds transfer, third party funds transfer and Multilateral Funds Transfer.<sup>2</sup> ICAS was implemented to replaced ECS on 4 February 2012.<sup>3</sup> Provincial Cheque Clearing migrated to ICAS since 15 November 2012 and implemented nationwide in December 2013.<sup>4</sup> Inter-provincial Cheques cleared via ICAS since 16 May 2013.**Table 22: Daily averages of BOT payment services - Value of transactions (billion Baht)**

	2009	2010	2011	2012	2013	2014
BAHTNET <sup>1</sup>	2,015	2,705	3,138	2,649	2,774	3,094
Intra-provincial Cheque in Bangkok and vicinity <sup>2</sup>	125	125	131	141	147	137
Intra-provincial Cheque in Regional Area <sup>3</sup>	11.4	13.0	14.4	15.6	15.0	14.3
Inter-provincial Cheque <sup>4</sup>	1.5	1.6	1.8	2.0	2.7	3.8
ITMX Bulk Payment	3.6	4.5	5.7	7.2	8.9	10.1

Source: Bank of Thailand

<sup>1</sup> Data include funds transfer, third party funds transfer and Multilateral Funds Transfer.<sup>2</sup> ICAS was implemented to replaced ECS on 4 February 2012.<sup>3</sup> Provincial Cheque Clearing migrated to ICAS since 15 November 2012 and implemented nationwide in December 2013.<sup>4</sup> Inter-provincial Cheques cleared via ICAS since 16 May 2013.

**Table 23: Peak day figures of BOT payment services - Volume of transactions**

	2009	2010	2011	2012	2013	2014
BAHTNET <sup>1</sup>	12,898	18,542	18,581	19,303	22,190	21,820
Intra-provincial Cheque in Bangkok and vicinity <sup>2</sup>	473,362	547,686	515,908	477,396	547,406	417,618
Intra-provincial Cheque in Regional Area <sup>3</sup>	111,561	131,468	127,070	125,127	114,492	90,005
Inter-provincial Cheque <sup>4</sup>	122,138	122,979	125,934	125,189	172,463	184,197
ITMX Bulk Payment	314,828	350,156	359,198	417,015	508,748	473,040

Source: Bank of Thailand

<sup>1</sup> Data include funds transfer, third party funds transfer and Multilateral Funds Transfer.

<sup>2</sup> ICAS was implemented to replaced ECS on 4 February 2012.

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

<sup>4</sup> Inter-provincial Cheques cleared via ICAS since 16 May 2013.

**Table 24: Peak day figures of BOT payment services - Value of transactions (billion Baht)**

	2009	2010	2011	2012	2013	2014
BAHTNET <sup>1</sup>	2,829.3	4,193.3	5,002.9	3,597.3	8,384.9	3,877.3
Intra-provincial Cheque in Bangkok and vicinity <sup>2</sup>	252.4	292.8	259.1	268.2	283.4	266.0
Intra-provincial Cheque in Regional Area <sup>3</sup>	19.1	22.6	23.3	25.7	26.8	25.6
Inter-provincial Cheque <sup>4</sup>	5.3	5.9	6.5	6.8	11.0	12.4
ITMX Bulk Payment	16.8	15.7	19.2	28.8	44.3	77.8

Source: Bank of Thailand

<sup>1</sup> Data include funds transfer, third party funds transfer and Multilateral Funds Transfer.

<sup>2</sup> ICAS was implemented to replaced ECS on 4 February 2012.

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

<sup>4</sup> Inter-provincial Cheques cleared via ICAS since 16 May 2013.

**Table 25: Use of mobile banking**

	2009	2010	2011	2012	2013	2014
No. of agreements	257,677	519,450	706,439	864,312	1,164,796	6,229,960
Volume of transactions	11,107,223	15,884,571	19,941,530	36,285,076	57,198,604	109,349,726
Value of transactions (million Baht)	63,363	109,816	186,511	439,960	751,558	1,364,022

Source: Bank of Thailand

**Table 26: Use of internet banking**

	2009	2010	2011	2012	2013	2014
No. of agreements	3,165,663	4,822,947	5,626,233	6,645,161	8,033,061	9,960,419
Volume of transactions <sup>1</sup>	49,368,820	60,793,740	83,841,394	125,276,726	161,784,249	184,500,782
Value of transactions (billion Baht)	5,692.6	7,891.7	8,779.7	14,112.1	19,548.0	20,421.6

Source: Bank of Thailand

<sup>1</sup> Enquiry transactions were excluded.**Table 27: Use of ORFT (Online Retail Funds Transfer) - Volume of transactions (in thousands)**

	2009	2010	2011	2012	2013	2014
<b>Total</b>	<b>90,920</b>	<b>109,559</b>	<b>124,832</b>	<b>150,440</b>	<b>173,909</b>	<b>199,633</b>
ATM	76,214	89,456	99,926	116,997	132,035	142,920
Counter	8,051	9,162	10,010	10,273	9,160	9,146
Internet banking	6,656	10,941	14,896	23,169	32,714	47,567

Source: Bank of Thailand

**Table 28: Use of ORFT (Online Retail Funds Transfer) - Value of Transactions (billion Baht)**

	2009	2010	2011	2012	2013	2014
<b>Total</b>	<b>648</b>	<b>832</b>	<b>1,014</b>	<b>1,250</b>	<b>1,399</b>	<b>1,588</b>
ATM	453	549	642	771	852	944
Counter	130	172	213	227	201	191
Internet banking	64	111	159	252	347	453

Source: Bank of Thailand

**Table 29: Bill payment at counters - Volume of transactions (in thousands)**

	2009	2010	2011	2012	2013	2014
<b>Total</b>	<b>84,389</b>	<b>264,295</b>	<b>283,786</b>	<b>323,168</b>	<b>359,423</b>	<b>435,653</b>
<b>Total bill payment at bank counters</b>	<b>84,389</b>	<b>81,941</b>	<b>83,334</b>	<b>87,425</b>	<b>87,992</b>	<b>101,821</b>
Cash	80,918	78,081	79,540	83,320	84,297	95,544
Cheque	1,566	1,640	1,658	1,663	1,560	1,895
Others	1,905	2,220	2,136	2,442	2,135	4,381
<b>Total bill payment at non-bank counters</b>	<b>nav.</b>	<b>182,354</b>	<b>200,452</b>	<b>235,742</b>	<b>271,431</b>	<b>333,832</b>
Cash	nav.	179,088	196,846	231,446	266,825	329,794
Cheque	nav.	277	298	351	346	333
Others	nav.	2,989	3,308	3,946	4,260	3,705

Source: Bank of Thailand



**Table 30: Bill payment at counters - Value of transactions (billion Baht)**

	2009	2010	2011	2012	2013	2014
<b>Total</b>	<b>4,717</b>	<b>5,744</b>	<b>6,115</b>	<b>6,461</b>	<b>5,985</b>	<b>7,031</b>
<b>Total bill payment at bank counters</b>	<b>4,717</b>	<b>5,296</b>	<b>5,604</b>	<b>5,855</b>	<b>5,278</b>	<b>6,250</b>
Cash	1,690	1,856	2,057	2,133	1,933	2,400
Cheque	1,935	2,113	2,620	2,613	2,506	2,361
Others	1,092	1,326	928	1,109	838	1,490
<b>Total bill payment at non-bank counters</b>	<b>nav.</b>	<b>448</b>	<b>511</b>	<b>606</b>	<b>708</b>	<b>781</b>
Cash	nav.	444	507	600	700	773
Cheque	nav.	2	2	2	3	3
Others	nav.	3	3	4	5	5

Source: Bank of Thailand

**Table 31: Use of e-Money <sup>1</sup>**

	2009	2010	2011	2012	2013	2014
No. of cards/accounts	9,713,416	11,483,751	13,804,287	20,220,438	24,286,746	26,852,975
Volume of transactions	109,504,114	221,458,769	348,197,980	512,331,773	669,210,802	787,932,371
Value of transactions (million Baht)	10,919.1	17,142.9	24,732.8	35,375.8	48,031.9	55,801.7

Source: Bank of Thailand

<sup>1</sup> Data exclude top-up cards.**Table 32: Fraud through specific payment channels and payment instruments<sup>1</sup> (million Baht)**

	2009	2010	2011	2012	2013	2014
<b>Total fraud</b>	<b>793</b>	<b>186</b>	<b>150</b>	<b>179</b>	<b>205</b>	<b>205</b>
Payment channels <sup>2</sup>	561	44	34	51	71	26
Payment instruments <sup>3</sup>	232	142	116	128	134	179

Source: Bank of Thailand

<sup>1</sup> Data collect from banks, some special financial institutions and some credit card companies.<sup>2</sup> Banks report only final result. Fraud through specific payment channels include phone banking, mobile banking, internet banking, pass book and other channels.<sup>3</sup> Banks report only final result. Fraud via specific payment instruments include cheque, credit card, ATM card, debit card, prepaid card and other cards.

## 6. Notes of statistical tables

Symbols used in tables	Explanation
"_"	No data
"nav."	Data not available
"neg."	Negligible in value compared to all other
"0"	Zero or near zero in value

- Table 1
- Gross Domestic Product expressed in current prices
  - Using the average foreign exchange rate
- Tables 6-7
- Data on cheque 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 cards, 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 transfers.
  - Direct debit refers to pre-authorized in-house direct debit funds transfers
  - BAHTNET data consists of data relating to interbank funds transfers, third party funds transfers and multilateral funds transfers.

Table 8	- Average value of monthly transactions by debit cards and credit cards via EFTPOS terminals within and outside the country
Table 11	- 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	<ul style="list-style-type: none"><li>- Include ATMs and CDMs</li><li>- Data on the number of EFTPOS terminals represents information consolidated from commercial banks and some credit card companies</li></ul>
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

## Payment Systems Report

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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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