



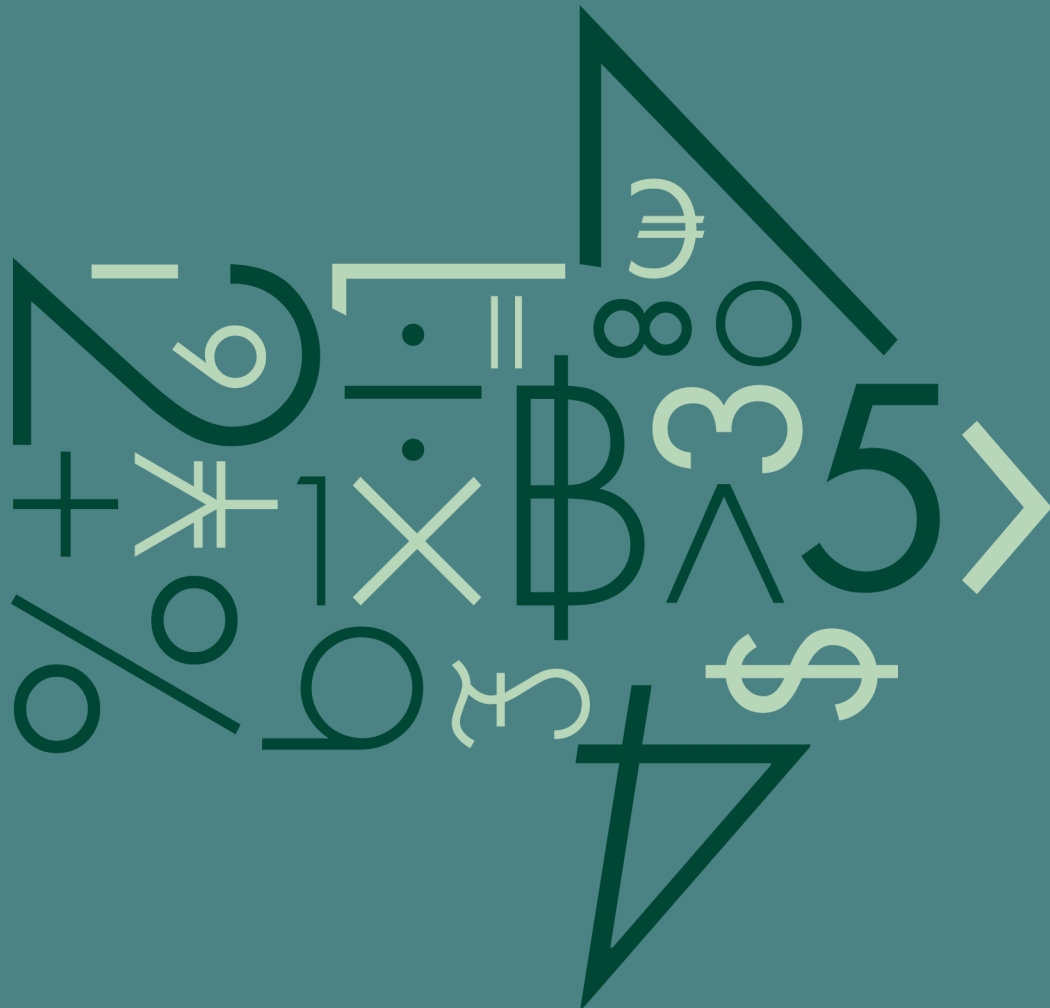
BANK OF THAILAND



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Payment Systems Report 2015

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PAYMENT SYSTEMS REPORT 2015

## Payment Systems Committee (PSC)



**Chairman**  
**Mr. Veerathai Santiprabhop**  
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 the 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.



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



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



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



**Miss Oranuch Vainusit**  
Deputy Director of the Comptroller  
General's Department



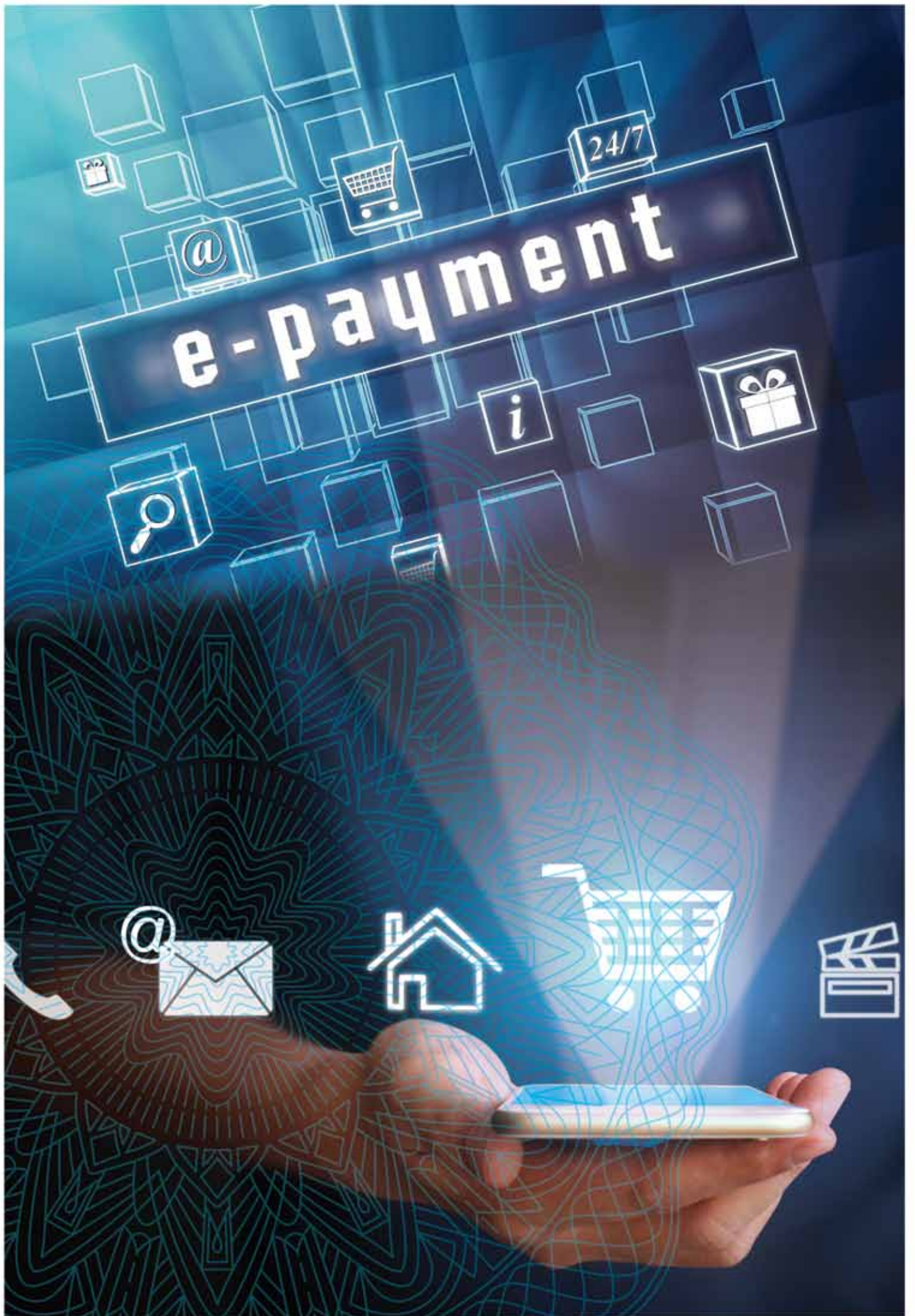
**Mr. Kriengkrai Thiennukul**  
Vice Chairman, the Federation of Thai Industries



**Ms. Ruchukorn Siriyodhin**  
Assistant Governor  
Financial Institutions Policy Group



# e-payment





## Key payment statistics in 2014 – 2015

	2014	2015	
Total population	65.1	65.7	Million
Nominal Gross Domestic Product (GDP)	12,141.1	13,537.5	Billion Baht
<b>Technological infrastructure</b>			
Number of fixed-line telephone number	8.7	8.2	Numbers per 100 persons
Number of mobile phone subscribers	150.0	126.4	Numbers per 100 persons
<b>Payment statistics</b>			
Number of Thai commercial bank branches	6,986	7,039	Branches
Number of foreign commercial bank branches	19	19	Branches
Number of 6 Specialized Financial Institutions branches	2,445	2,445	Branches
Number of post office branches	1,316	1,324	Branches
Number of Automated machines (ATMs/CDMs) <sup>1</sup>	61,592	63,432	Terminals
Number of EFTPOS terminals <sup>2</sup>	340,179	357,986	Terminals
Number of credit cards	20,303,751	21,762,471	Cards
Number of debit cards	44,823,517	50,413,672	Cards
Number of ATM cards	22,340,540	21,743,686	Cards
Currency in circulation per capita	18,414	19,031	Baht per person
Average cheque usage per capita	1.8	1.8	Cheques per person per year
Monthly average value of credit card payments <sup>3</sup>	5,325	5,477	Baht per card
Monthly average value of cash withdrawals via ATM card	8,229	7,586	Baht per card
Monthly average value of debit card payments <sup>4</sup>	196	248	Baht per card
Monthly average value of cash withdrawals via debit card	10,979	11,678	Baht per card

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

<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



ATMs  
63,432



EFTPOS terminals  
357,986

Source: Bank of Thailand

## Electronic cards (in millions)



ATM cards  
21.7



Credit Cards  
21.8

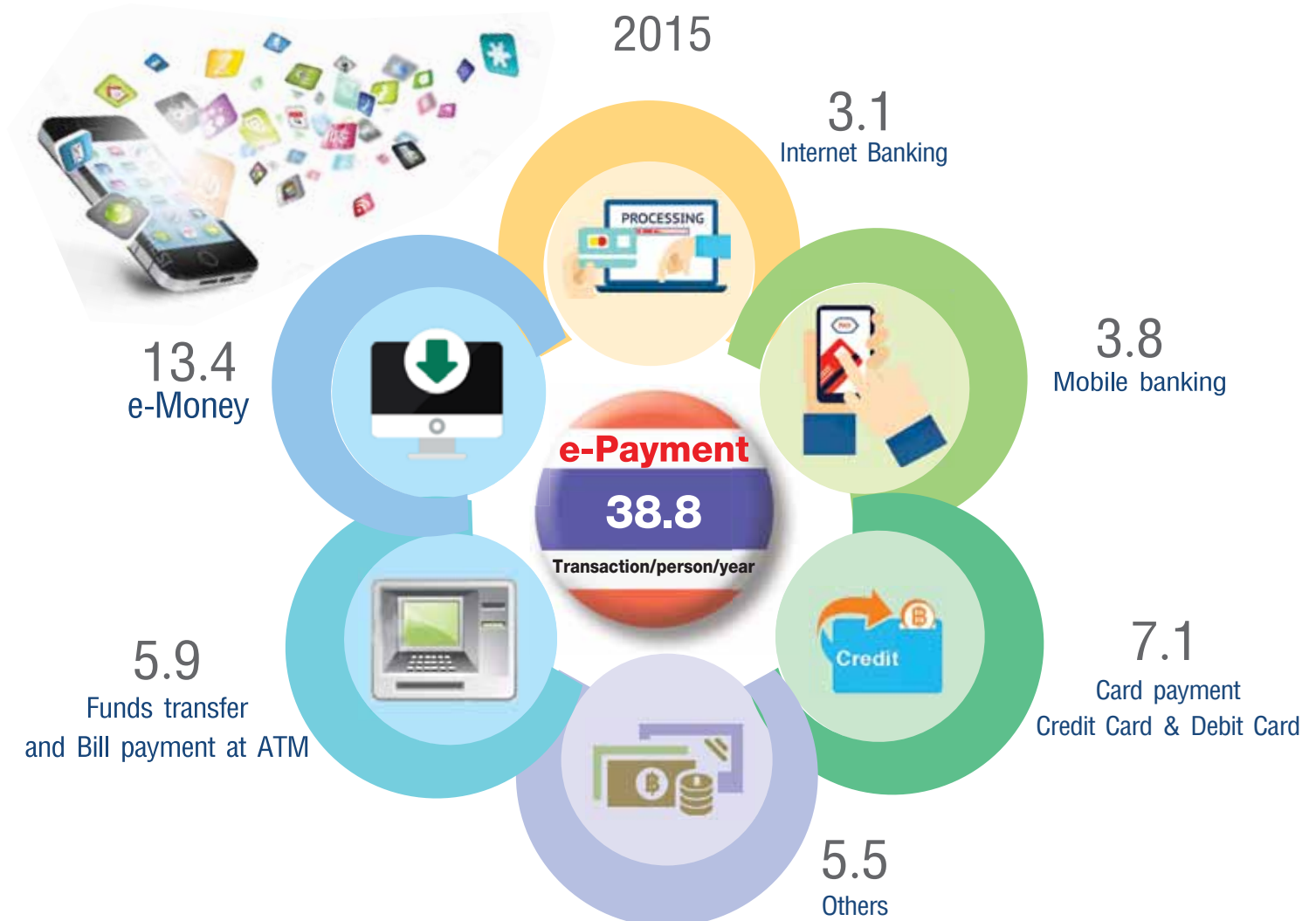


Debit cards  
50.4

(as of 2015)

## Use of e-Payment (Transaction/person/year)

2015



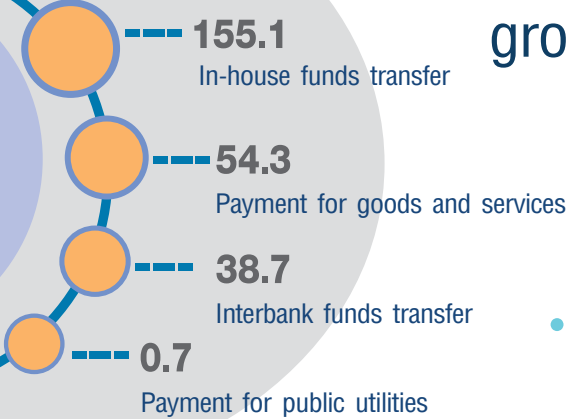
Source: Bank of Thailand

Others included Direct Debit, Direct Credit, BAHTNET (3<sup>rd</sup> party) and Bulk payment



## Mobile Banking Transactions (Millions)

248.8

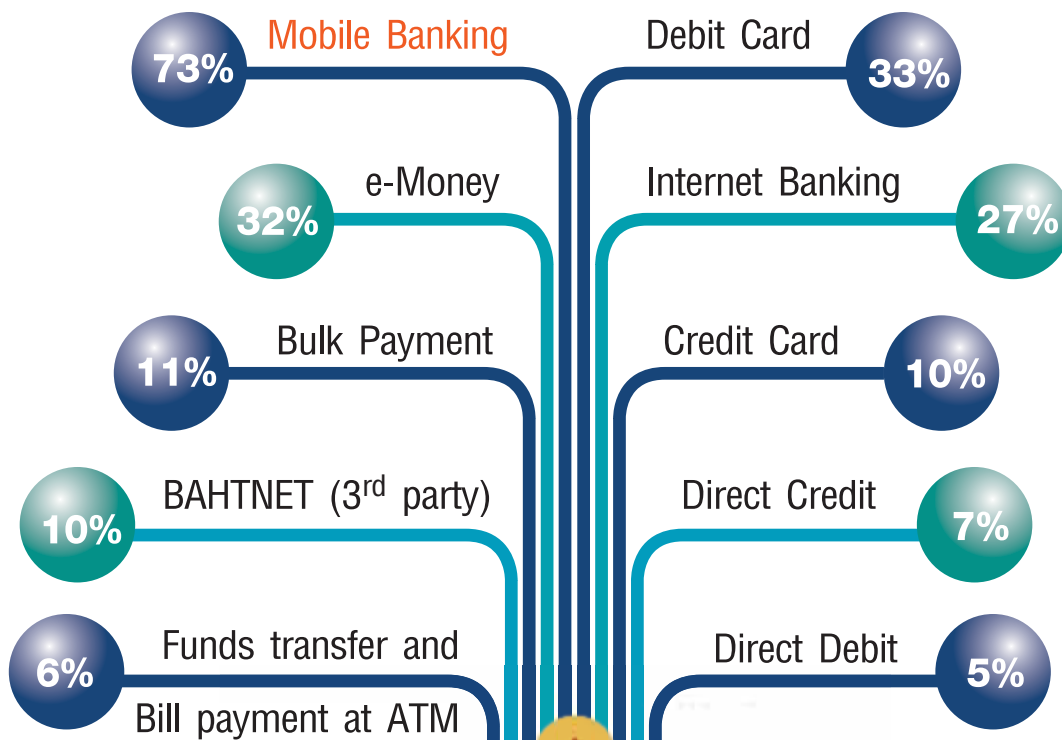


## e-Payment growth rate (Volume)

2010-2015

**18%**


## Growth rate (Volume) of e-Payment by channels (2010-2015)



Volume of e-Payment 2015

**2,551.4** Transactions  
(in millions)





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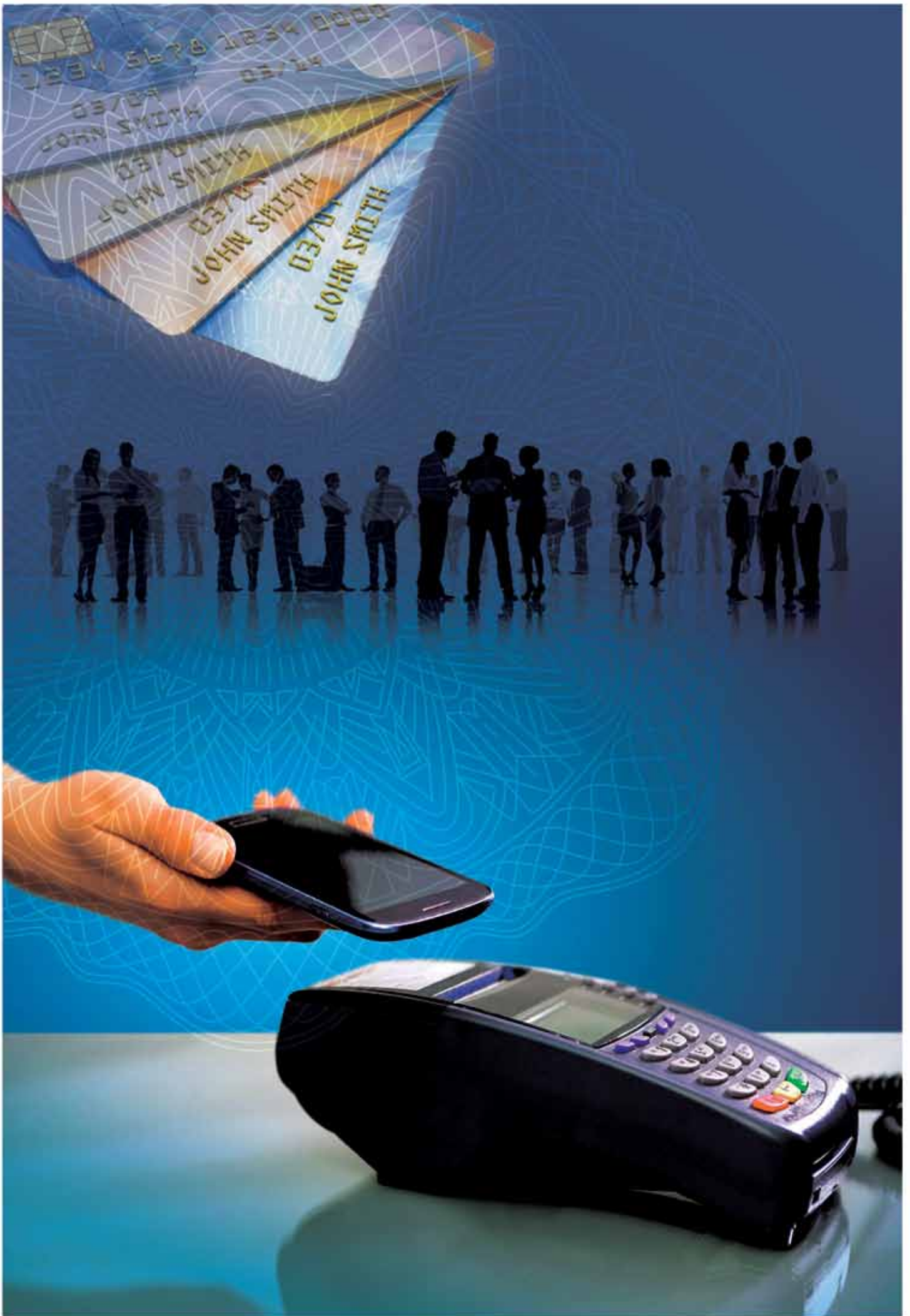
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## 1

## Payment Systems Policy in 2015

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In 2015, the Bank of Thailand (BOT) drove payment systems policy implementation through major payment systems development strategies, namely implementation of the Payment Systems Roadmap 2012 – 2016; development of a legal foundation for payment systems to strengthen the country's payment systems oversight, and implementation of the National e-Payment Master Plan as follows.

### 1.1 Implementation of the Payment Systems Roadmap 2012 – 2016

The BOT pushed forward a number of projects under the Payment Systems Roadmap 2012 – 2016 by forging collaboration with four groups of strategic partners, including banks, non-banks, the public and the private sectors. Such collaboration would enable the implementation of payment systems policy to support the economic activities across all sectors more efficiently and more cost effectively. This, in turn, would facilitate the change to e-Transaction and fully integrated e-Transactions. Key developments in 2015 are as follows.

#### 1.1.1 Development of innovative payment services and infrastructure

---

In the last period, the BOT pushed forward development of innovative payment services and infrastructure with key stakeholders through the e-Payment Working Committee (EWC), established under the Payment Systems Committee (PSC), consisting of commercial banks, non-banks, Federation of Thai Industries, Thai Chamber of Commerce and Electronic Transactions Development Agency (Public Organization) or ETDA. In the initial phase, the PSC approved seven projects to be implemented through the e-Payment Working Committee (EWC) and agreed on the principles and operational plans of three projects, including 1) Quick Response (QR) Code/2D Barcode Standard Development and Promotion Project; 2) Guiding Principles for Trusted Mobile Payments Project; and 3) Centralized Payment Gateway Project.



### Box 1: Seven projects under the e-Payment Working Committee (EWC)

1. **QR Code/2D Barcode Guideline Development and Promotion Project** – to develop guideline and promote a standard for QR code to allow e-Payment service providers, retailers and businesses to exchange information, with the same data format.

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2. **Guiding Principles for Trusted Mobile Payments Project** – to establish guiding principles to strengthen users' confidence in making mobile payments and enhance payment service providers' standards on security and consumer protection.

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3. **Real-time Interbank e-Payment Project (faster payment)** – to increase e-Payment access points for public sector, and also encourage retailer and business sector to provide more e-Payment channels.

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4. **Electronic Bill Presentment and Payment (EBPP) Project** – to establish a centralized system for electronic bill presentment and payment which lower issuers' invoicing/billing costs while provide more payment channels and insist customers in viewing bills and making payment electronically.

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5. **Centralized Payment Gateway Project** – to establish a centralized payment gateway to reduce the cost of data linkage between service providers and support e-Commerce by providing greater convenience for online customers through various payment channels.

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6. **Fraud Monitoring Network/Database Project** – to set up a central Know Your Customer/Customer Due Diligence (KYC/CDD) database which allowing all law enforcement agencies and financial institutions access to the unify database and able to make e-Identifying proof of an individual and track details of transactions at one place.

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7. **Shared Point of Sales (POS) Terminal Project** – to develop infrastructures to support sharing of POS terminals, thereby reducing operation costs associated with card acceptance and adequately distributing POS terminal.







The BOT was the key implementer of the first and second projects while the Thai e-Commerce Association was responsible for the third project. Details of the projects under the BOT's responsibility are summarized below.

#### **1) QR Code/2D Barcode Standard Development and Promotion Project for bill payment**

The BOT prescribed a standard for barcodes to be used on paper invoices/bills since 2005, providing the business sector with greater convenience from using a standardized format of payment information and barcodes. The initiative resulted in widespread benefits for the general public and the business sector, lowered burden on data management that once owed to existence of various data formats, reduced expenditures associated with barcode printing, and provided support for new technologies e.g. ATMs and mobile phones. However, given changes in the business environment and developments in technology, existing barcodes began to be less responsive to the business sector's increasing needs such as data requirement for receipt or tax invoice issuance at point of sale, barcode printing on small bills, or barcode printing using lower-quality portable devices. Thus, the BOT recognized the need to develop a QR code Guideline to be used for bill payment which would provide greater convenience for businesses and SMEs in printing QR codes on bills/invoices, reduce constraints in reading the existing barcode, in line with practices in many countries, and provide information needed in receipt or tax invoice issuance by payment agents according to the regulations of the Revenue Department.



## Box 2: International examples of QR code standards for payment services

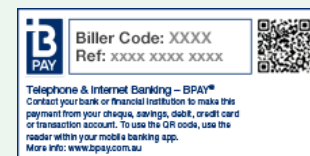
**United States:** National Automated Clearing House Association (NACHA) which is the Electronic Payment Association issued Guidelines on Quick Response (QR) Codes Bill Payment, prescribing requirements on QR code size to be printed/shown along with data structure to be embedded in the bill payment message.



**European Union (EU):** European Payment Council issued Quick Response Code: Guidelines to Enable Data Capture for the Initiation of a SEPA Credit Transfer to prescribe a standard on payment message embedded in QR code for credit transfers to be aligned to the Single Euro Payments Area (SEPA) standard, including details on QR code size, referenced international standards e.g. ISO and other data structure standards.



**Australia:** BPAY which is the service provider of electronic bill presentment and payment issued BPAY QR code specifications to support billers in accepting bill payment using standardized QR codes.



In addition, the standard can be adapted to cater for bill payment through smartphones, and further developed for commercial usage. The BOT is now in the process of preparing a draft QR code standard for bill payment to align with actual business practices in accepting bill payments through various channels as well as the government's requirement on sending payment and tax information under the National e-Payment Master Plan.

## 2) BOT's Guiding Principles for Trusted Mobile Payments

In 2015, the BOT drafted the Guiding Principles for Trusted Mobile Payments for mobile payment service providers to use as guideline in building up the good standard and improve the service standard to ascertain users' confidence and increase usage of mobile payment. The BOT is in the process of revising the Guiding Principles after receiving feedback from stakeholders before issuing a formal notification to the public in the coming future.

The Guiding Principles consist of six key principles, namely:

Principle 1: Risk Management

Principle 2: Secure Authentication





Principle 3: Consumer Protection and Consumer Education

Principle 4: Openness and Interoperability

Principle 5: Anti-Money Laundering, Combating Financing Terrorism and Fraud Protection

Principle 6: User Experience

### Box 3: International mobile payment guidelines

	EU 	Hong Kong 	China 	Canada 
<b>Rules/ Guidelines</b>	Recommendation for the Security of Mobile Payments (2013)	Best Practices for NFC Mobile Payments (2013)	Guidance on the Development of Mobile Phone Payment Businesses	NFC Mobile Payments Reference Model (2012)
<b>Issuer</b>	<ul style="list-style-type: none"> <li>European Central Bank</li> </ul>	<ul style="list-style-type: none"> <li>Hong Kong Monetary Authority</li> <li>The Hong Kong Association of Banks</li> </ul>	<ul style="list-style-type: none"> <li>People's Bank of China (regulator)</li> </ul>	<ul style="list-style-type: none"> <li>Canadian Financial Institutions (banks + credit unions)</li> </ul>
<b>Objectives</b>	<ul style="list-style-type: none"> <li>To reduce risks associated with mobile payment</li> <li>To build confidence in mobile payment usage</li> <li>To provide a mechanism for users' data protection</li> <li>To create knowledge and understanding on mobile payment</li> </ul>	<ul style="list-style-type: none"> <li>To ensure safety and soundness</li> <li>To support a wide range of mobile devices</li> <li>To support continued usage in case of device or operator change</li> </ul>	<ul style="list-style-type: none"> <li>To prevent fraud</li> <li>To prevent money laundering</li> </ul>	<ul style="list-style-type: none"> <li>To ensure safety and soundness</li> <li>To establish technical standards</li> <li>To ensure convenience in usage</li> <li>To promote interoperability</li> </ul>
<b>Regulated parties</b>	<ul style="list-style-type: none"> <li>MPSP</li> <li>Online shops</li> <li>Outsourcing</li> </ul>	<ul style="list-style-type: none"> <li>Member banks of Hong Kong Association of Banks</li> <li>MPSP</li> <li>Card schemes</li> <li>MNO</li> <li>Manufacturers</li> <li>TSM</li> </ul>	<ul style="list-style-type: none"> <li>Online payment service providers</li> <li>Mobile payment service providers</li> </ul>	<ul style="list-style-type: none"> <li>MPSP</li> <li>Payment network (VISA, MasterCard etc.)</li> <li>MNO</li> <li>Manufacturers</li> <li>TSM</li> </ul>

Notes:

MPSP – Mobile Payment Service Providers

MNO – Mobile Network Operators

TSM – Trusted Service Managers (central body that prescribes business agreement and technical networking arrangements for MPSP and MNO)



The Guiding Principles are in line with practices of central banks in many countries such as the EU, Canada, Hong Kong and China. They emphasized and issued specific guidelines to supervise mobile payment service providers by focusing on safety and soundness of mobile payment to strengthen consumer confidence. The guidelines also prescribe technical standards to support interoperability regardless of operator or mobile device type.

### 1.1.2 Formulation of the National Payment Message Standard (NPMS) and the e-Business and e-Invoicing Standards

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#### 1) The National Payment Message Standard (NPMS)

The BOT, the Electronic Transactions Development Agency (Public Organization) or ETDA and representatives from the banking and business sectors cooperated to develop and revise draft eight messages of NPMS for Corporate to Financial Institution (C to FI). These draft messages were formulated with reference to International Organization for Standardization (ISO) 20022 and aligned with the common global implementation which the Electronic Transactions Commission (ETC) announced as standards on 6 March 2015. Moreover, to promote C to FI message standards for wider usage and support Straight-Through Processing (STP) message transfer from corporates at the sending bank to the beneficiary at the different receiving bank in order to reduce cost and increase efficiency of e-Payment transactions in the country, the BOT, the ETDA and National ITMX Co. Ltd. (NITMX) also drafted formulated four NPMS message standards for bulk payment between financial institutions (FI to FI). The FI to FI NPMS was announced as country standard by the ETC on 7 March 2016.

## 2) Formulating of e-Business and e-Invoicing Standards

The BOT cooperated with financial institutions, businesses and government agencies to develop a standard to support integrated e-Business and provide convenience for e-Payment through the provision of STP which would standardize data format for information on traded merchandises and allow for automatic payment verification. The BOT, the Federation of Thai Industries, the ETDA and the Thai Retailers Association also completed the e-Invoicing Standard for retail businesses which was announced by ETDA on 25 August 2015 to serve as a recommended standard called 'Information Communication and Technology for Election Transactions' that is essential for e-Business, known as the Trade Services Message Standard.

### 1.1.3 Promotion of safety in electronic card usage

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The BOT, with approval of the PSC, stipulated a timeframe for migration of magnetic debit cards and ATM cards to chip cards in order to enhance safety and consumer confidence in card usage, increase efficiency, and ensure interoperability of both domestic and international service providers. In this regard, debit cards and ATM cards issued from 16 May 2016 onwards shall become chip cards. Also, majority of ATMs shall accept chip card by 15 May 2016 and all ATMs in the country shall accept chip card by 31 December 2016. Meanwhile, people who are still in possession of magnetic debit cards or ATM cards can continue using these cards until 31 December 2019.



### 1.1.4 Payment systems development to support ASEAN Economic Community 2015

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The BOT, in collaboration with the Working Committee on Payment and Settlement System (WC-PSS), has undertaken a study on existing payment systems landscape and formulated a strategic framework for regional payment systems development.

In 2015, the BOT, as a leader of the Task Force on Standardization, pushed forward the implementation of ISO 20022 for cross-border payment transactions and coordinated with member countries to promote cross-border payments in various areas. For instance, the introduction of 'Principles for product transparency and disclosure on cross-border trade settlement' and ensuring compliance (by Thai banks) to the Principles; the study on problems and challenges of financial institutions, exporters and importers in using ASEAN currencies and the Chinese





Renminbi for cross-border trade transactions; and the development of framework to promote retail payment systems, including card payments, in the region.

Furthermore, the WC-PSS has approved a revision of the task forces to better align with the Strategic Action Plan for ASEAN Economic Community Post-2015. Three task forces have been set up, comprising 1) Task Force on Payment Systems Interlinkages and Interoperability to be responsible for promoting the cross-border linkages of large-value and retail payment systems; 2) Task Force on Capital Market Settlement to be responsible for the post-trade linkages of ASEAN capital markets; and 3) Task Force on Policy Harmonization and Standardization to be responsible for formulating policies to promote a harmonization of payment systems policy and oversight framework among member countries along with the implementation of such policy and oversight framework for cross-border interlinked systems. The BOT is a co-leader of the Task Force on Policy Harmonization and Standardization with Bank Negara Malaysia. With this role, it would greatly benefit the BOT in formulating the country's policy framework and the oversight of payment systems that would, in turn, help preparing for safe and sound cross-border payment systems interlinkages, thereby enhancing users' confidence in conducting cross-border payments.

### 1.1.5 Payment systems policy education and communication

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The BOT hosted the Conference on Thailand's Payment 2015 on 31 August 2015 to strengthen collaboration between the public sector, banking sector and non-banks through the sharing of related organization's visions for developing payment system in various aspects. The conference also aimed to promote adoption of e-Payment and innovative technologies by businesses to

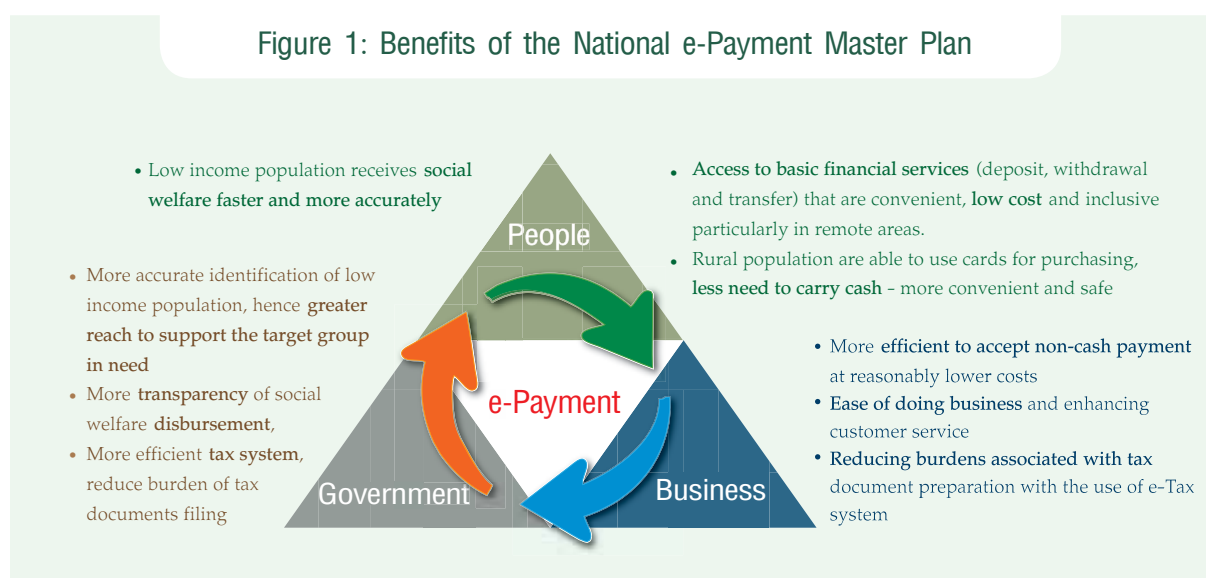
enhance competitiveness as well as served as a platform to exchange views between stakeholders. The conference presented key information on the direction of Thailand's payment systems development and fostered exchange of views amongst participants that would, in turn, benefit the country's efforts. Many activities were hosted, for example, panel discussions on e-Business and e-Payment adoption by businesses and e-Commerce, knowledge and experience sharing from successful businesses benefiting from e-Business and e-Payment adoption, service presentations by banks and non-banks, information boards on payment systems, and exhibition booths by e-Payment service providers and related agencies on innovations and services.

## 1.2 Implementation of the National e-Payment Master Plan

The BOT joined and acted as secretary of the National e-Payment Working Group as well as participated in drafting the National e-Payment Master Plan, covering various projects to promote the country's payment systems development. The National e-Payment Master Plan was approved by the Cabinet on 22 December 2015.

The National e-Payment Master Plan aims to develop Thailand's payment systems into an entire electronic payment that are comprehensive, integrated and sustainable. The Master Plan envisages payment systems that cater various financial transactions and economic activities with greater convenience and timeliness, being the key mechanism that strengthen competitiveness of the business sector and Thailand. The Master Plan would elevate people's quality of life and create stability for monetary and fiscal management. This is done through the enhancement of the national receipt/disbursement system and the integration of e-Tax system, thereby uplifting the country's potential in both the short and long terms. Moreover, the Master Plan would

Figure 1: Benefits of the National e-Payment Master Plan



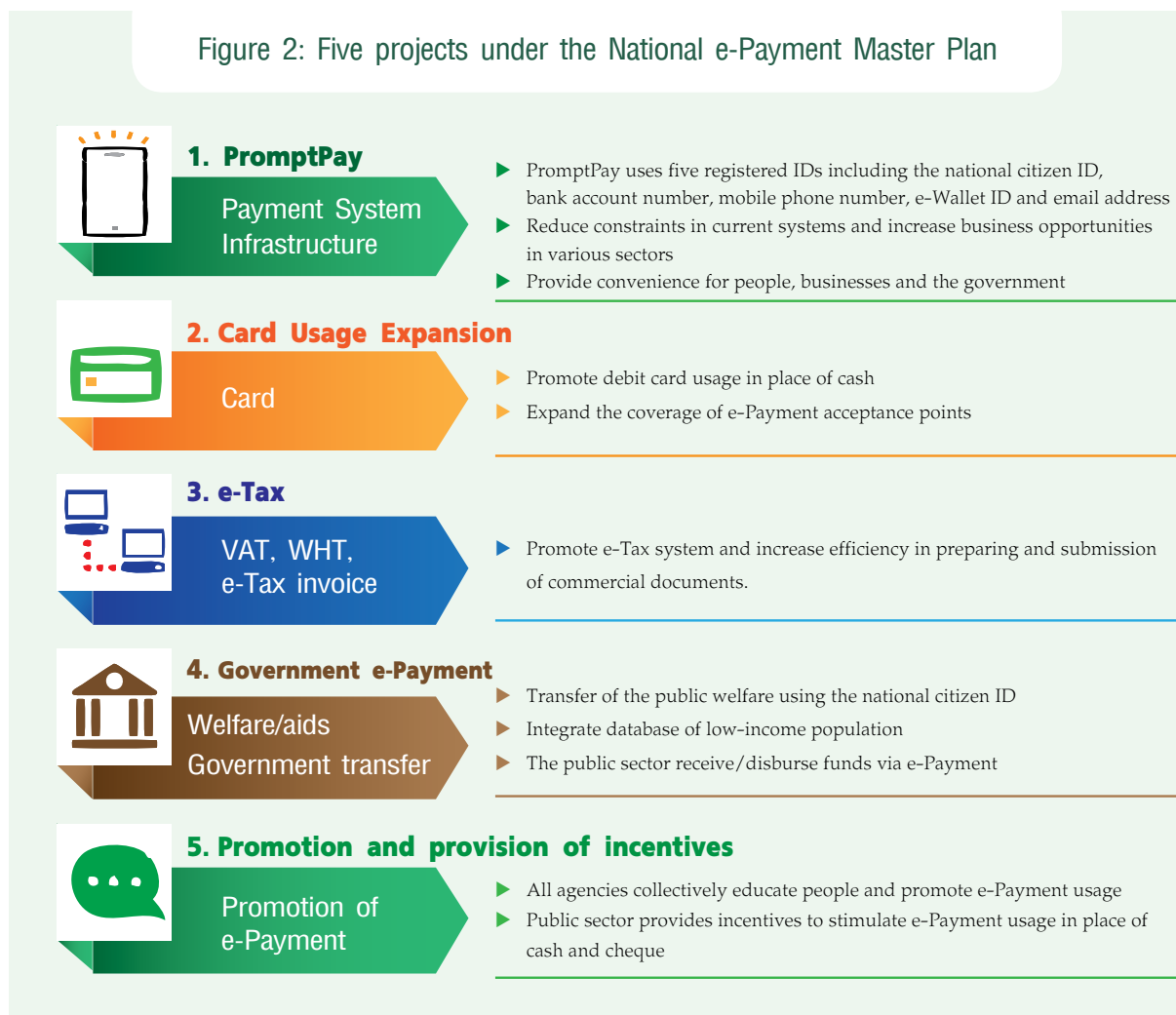
support other policies in attaining greater efficiency. For instance, the Digital Economy, the Ministry of Transport's common ticketing system, national savings fund and the government financial aids to recipients under various schemes. In this connection, strategic directives under the National e-Payment Master Plan are in line with payment systems development directions in many countries that are aiming towards becoming less cash society.

**Implementation of the National e-Payment Master Plan encompasses five projects as follows.**

- Project 1: PromptPay**— Development of Thailand's centralized payment systems infrastructure to cater for interbank funds transfer using mobile phone number, national ID number, bank account number, e-Wallet ID or e-mail address as the receiver's identifier. This project would enable people to access financial services more conveniently. The project also serves as a foundation for future financial services such as bill payments, e-Payment with tax information, and common ticket top-up etc.
- Project 2: Card usage expansion** — Promotion of electronic card usage in the replacement of cash and as a means to transfer welfare to recipients more efficiently. This project would also support the expansion of card acceptance points to allow greater accessibility.
- Project 3: e-Tax and e-Document systems** — Development of an e-Tax invoice system to offer convenience and streamline the process of preparing e-Tax invoices. This project also extends to development of e-Tax system to handle electronic transfer of Value Added Tax (VAT) information, sending withholding tax payment, as well as submitting related documents electronically.
- Project 4: Government e-Payment** — Integration of social security information and develop a centralized database on public welfare that cater for direct payment of welfares to recipients into electronic cards or national ID cards in an efficient and targeted manner. The project also aims to increase efficiency and support electronic fund transfers by government agencies instead of using cash or cheque for payment, for instance, collecting and submitting funds to the Treasury or disbursing funds by the public sector.
- Project 5: e-Transaction literacy and promotion** — Promotion of e-Payment using adequate and appropriate measures to stimulate e-Payment take-up in all sectors, as well as reduce costs for concerned stakeholders, and provide knowledge and understanding continually.



Figure 2: Five projects under the National e-Payment Master Plan



The National e-Payment Master Plan is in line with the BOT's Payment Systems Roadmap in many ways, including:

- (1) Development of efficient payment systems infrastructure
- (2) Promotion of financial inclusion
- (3) Promotion of e-Payment amongst people, businesses, and the government
- (4) Enhancement of business and national competitiveness
- (5) Provision of literacy to build trust in the overall payment systems

At present, the BOT is a member and co-secretary (together with the Revenue Department) of the National e-Payment Master Plan Steering Committee, established in accordance with the Cabinet resolution. The Committee is chaired by the Deputy Prime Minister and is responsible for ensuring that the implementation of the five projects under the Master Plan is successful against the set objectives, timeframe, and plan. Moreover, the BOT serves an important role in implementing Projects 1 and 2 (PromptPay and Card usage expansion) which are aimed at



developing key payment systems infrastructures and increasing varieties of e-Payment services as well as supervising payment systems and services to ensure efficiency, safety and soundness, alignment with international standards, and affordability.

#### Box 4: Sub-steering Committee under the National e-Payment Master Plan Steering Committee



The National e-Payment Master Plan Steering Committee, chaired by the Deputy Prime Minister, appointed four sub-steering committees to implement National e-Payment projects.

1. Sub-steering Committee on PromptPay and Card Usage Expansion
2. Sub-steering Committee on e-Tax and e-Document Systems
3. Sub-steering Committee on Government's e-Payment
4. Sub-steering Committee on e-Transaction Literacy and Promotion

### Box 5: Sweden's cashless society

**“Sweden has a goal to become a cashless society. We expect to become the first country with full implementation by 2030.”**

Currently, more than 80 percent of daily payments by Swedes are e-Payment, encompassing payment through debit cards, credit cards, e-Money as well as internet and mobile funds transfer or payment. Moreover, cash usage has been declining continuously so much so that there is a saying “If you have to pay in cash, something is wrong.”



There are many factors that support Sweden's increase in e-Payment, for example, the availability of EDC at shops and businesses with no minimum transaction amount set for payment of goods and services, the enactment of law that require individuals to explain the reason for conducting transactions at bank branches in cash (in forms of notes and coins), and the banks' policy that refuse to provide cash services at branches. In addition, an important thrust of e-Payment is the development of a mobile phone application called “Swish” that allows interbank transfers to be performed conveniently, quickly, and securely.

“Swish” is very popular amongst Swedes. At the end of 2014, there were more than two million registered accounts, totaling 11 billion Swedish krona (SEK) or approximately 51.7 billion Baht in transfer amount. The highest daily volume of “Swish” exceeded 170,000 transactions. Furthermore, at the end of 2014, “Swish” introduced a funds transfer service for customer to business (C2B) as an addition. In the future, “Swish” plans to expand its services further to cover transaction in e-Commerce and m-Commerce.

Source: Bankgirot, Annual Report, 2014

## 1.3 Draft Payment Systems Act

The BOT considered drafting the Payment Systems Act with key goals to create a single, unified law on payment systems supervision, enhance efficiency in oversight of payment systems stability and step up the country's payment systems to be in line with international standards, for instance, protection of funds transfer and settlement conducted through systemically important payment systems from being revoked once the payment instructions have been entered into the system and settle completely according to the systems regulations, i.e. payment finality. The BOT submitted the draft Payment Systems Act to the Ministry of Finance and it was approved in principle by the Cabinet on 1 December 2015. The Act is currently in the process of propose to National Legislative Assembly for consideration.

### Box 6: Payment Finality

Payment finality is a condition where funds transfer and settlement is considered successful and completed, unconditionally and irrevocably. The international standard – Principles for Financial Market Infrastructure (PFMIs) – stipulates that important payment systems must be supported by laws and regulations that clearly provide for payment finality such that completed funds transfer and settlement cannot be cancelled or revoked in both normal and abnormal circumstances.

#### **Normal circumstances**

Important payment systems must be supported by regulations and conditions that clearly specify a point in time at which funds transfer and settlement are considered final and cannot be revoked. At least, funds transfer and settlement should be completed by the end of day and if possible, intraday or real-time settlements should be conducted to reduce credit risk and liquidity risk that are, in turn, sources of systemic risk.

### Insolvency circumstances

In case that a member of important payment systems is bankrupted or subjected to a court ordered administration, there should be a legal provision to protect funds transfer and settlement that is considered completed (i.e. finality) from being revoked, revised, or suspended. Moreover, there should be a legal provision against the application of the Zero Hour Rules<sup>5</sup> to funds transfer and settlement conducted through important payment systems. These provisions would enable important payment systems to operate continually and prevent systemic risk that could affect the country's financial and economic systems.



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<sup>5</sup> "Zero Hour Rules" : A provision in the insolvency law of some countries whereby the transactions conducted by an insolvent institution after midnight on the date the institution is declared insolvent are automatically ineffective by operation of law.





## 2

## Oversight of Payment Systems Stability

### 2.1 Roles and responsibilities of the BOT in supervising important payment systems

Payment systems are significantly important financial infrastructures for the country's currency circulation and economic growth given their roles in supporting financial transactions of financial institutions, the public sector, the private sector, small businesses, and the general public. Therefore, it is crucial that payment systems are supervised to ensure sound management, security, continual operation, and appropriate consumer protection to foster users' confidence.

The BOT is entrusted with the task to maintain the country's payment systems stability, ensuring that operations are conducted with efficiency, safety, consumer protection, appropriate risk management, along with compliance with the international standard – Principles for Financial Market Infrastructures (PFMIs) – issued by the Bank for International Settlements (BIS). Committees whose functionalities are involved in this supervisory role include the Payment Systems Committee (PSC) that sets policies on supervision of systemically important payment systems and oversees the country's payment systems stability, and the Electronic Transactions Commission (ETC) that sets policies on supervision of electronic payment service providers.

### 2.2 Important payment systems

There are two categories of important payment systems under the BOT's oversight.

- 1) Systemically Important Payment Systems (SIPS) are infrastructures that support interbank high-value funds transfer and payment. There is only one SIPS in Thailand, that is, the Bank of Thailand Automated High-Value Transfer Network (BAHTNET), operated by the BOT.
- 2) Prominently Important Retail Payment Systems (PIRPS) include the Imaged Cheque Clearing and Archive System (ICAS), operated by the BOT, and interbank retail funds transfer systems such as ATM pool and interbank retail bulk payment systems, operated by National ITMX Co. Ltd. (NITMX).

## 2.3 Oversight approach

The BOT prescribes an approach in oversight of important payment systems in the Oversight Policy Framework as follows.

- 1) Periodic analysis, monitoring, and assessment of risks in important payment systems to assess impacts of key risks such as liquidity risk, operational risk and settlement risk, which could result in potential systemic risk in the payment systems under various abnormal circumstances or crises, including impacts in case of key changes to the systems or regulations;
- 2) Assigning payment systems operators to undertake self-assessment against to the PFMI; and
- 3) Conducting on-site assessment of service providers to assess potential risks which could arise during business processing and services.

In addition, the BOT undertakes cooperative oversight together with the Securities and Exchange Commission (SEC)<sup>6</sup> in relation to information sharing on oversight of Financial Market Infrastructures (FMIs), progression on oversight of interconnected systems, regulation compliance and risk management that should be aligned with PFMI.

## 2.4 Ensuring stability of important payment systems

### 2.4.1 Bank of Thailand Automated High-Value Transfer Network (BAHTNET)

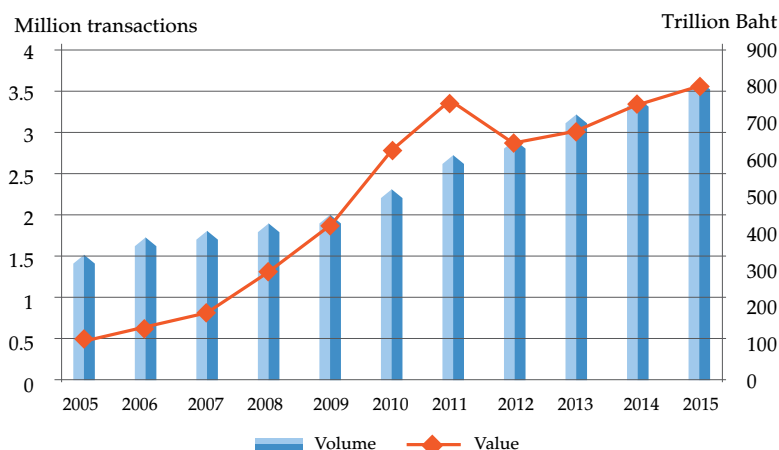
BAHTNET is an important high-value funds transfer system that caters for funds transfer between financial institutions with deposit accounts at the BOT, for example, interbank funds transfer, third-party funds transfer, funds transfer for securities settlement and multilateral funds transfer. The BOT, thus, needs to supervise BAHTNET in compliance with PFMI so that its operation and risk management are efficient enabling it to offer services with no interruption both normal and emergency circumstances.



<sup>6</sup> The SEC oversees the Securities Settlement System (SSS); Central Counterparties (CCP), operated by Thailand Clearing House (TCH); and Central Securities Depositories (CSD), operated by Thailand Securities Depository (TSD).

In 2015, funds transfer through BAHTNET totaled at 3.6 million transactions, equivalent to 790 trillion baht. Compared to 2014, funds transfer volume increased by 6.4 percent while funds transfer value increased by 4.3 percent. Both BAHTNET funds transfer volume and value increased steadily, averaging at 14,800 transactions and 3.3 trillion Baht per day. BAHTNET funds transfer value was 58.4 times of GDP.

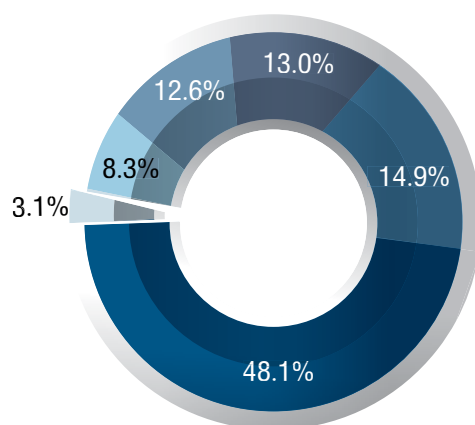
Figure 3: Volumes and values of funds transfer through BAHTNET



Source: Bank of Thailand

In transaction type categories revealed that bilateral repurchase operations (bilateral RP) was the highest proportion, reaching 48.1 percent with total value of 375.7 trillion Baht, followed by interbank funds transfer at 14.9 percent, securities trading at 13.0 percent, in-house funds transfer at 12.6 percent, foreign exchange transactions at 8.3 percent and interbank borrowing at 3.1 percent.

Figure 4: Proportion of funds transfer through BAHTNET categorized by transaction types



- Interbank borrowings
- Foreign exchange transactions
- In-house funds transfer
- Securities trading
- Interbank funds transfer
- Others (including bilateral RP)

Source: Bank of Thailand

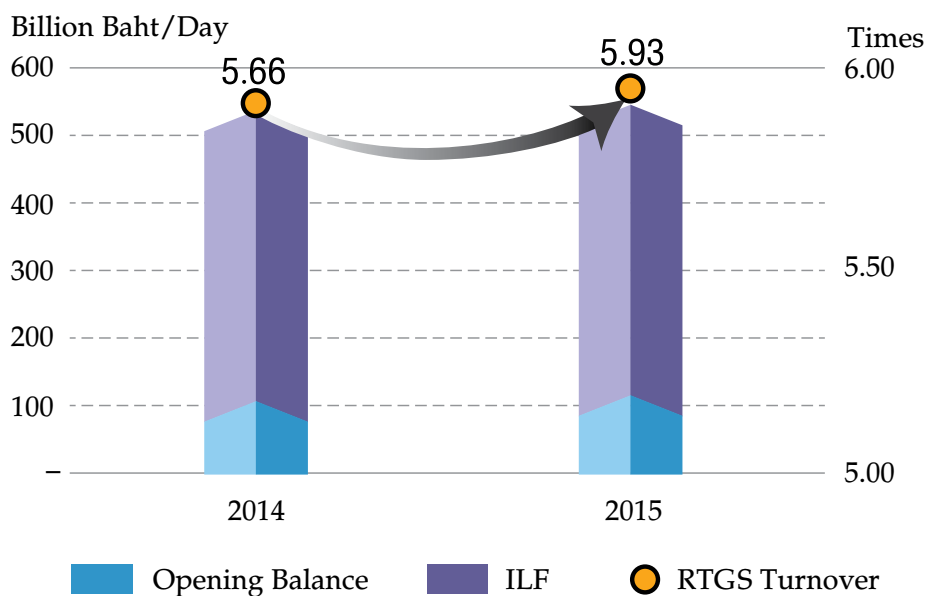
- Management of material risks in BAHTNET

### (1) Liquidity risk and settlement risk

BAHTNET members had adequate liquidity to support BAHTNET funds transfer without incurring settlement risk. In 2015, intraday liquidity of members consisted of opening balances and Intraday Liquidity Facility (ILF), averaging at 548.7 billion Baht per day, increasing by 0.3 percent or 1.8 billion Baht per day from 2014. In terms of Real-time Gross Settlement (RTGS) Turnover, daily turnover was 5.7 times in 2014 and 5.9 times in 2015. In addition, fund transfer orders in queue was only at 1.5 percent of total transaction volume.

On risk management for multilateral net settlement, the BOT endorsed the measurement on Securities Requirement for Settlement (SRS) which was come into effect on 2 July 2015, requiring member banks to pledge collateral against the exposure arising from net settlement of retail payment such as cheque clearing and interbank retail funds transfer. Securities requirement shall not be less than the maximum possible negative balance. This would reduce risk in case a member bank has insufficient funds to complete settlement and might affect others in the system. At present, multilateral net settlement can be completed within prescribed timeframe without the need to enforce SRS.

Figure 5: Daily average of BAHTNET intraday liquidity



Source: Bank of Thailand

## (2) Operational risk

Operational risk is a key risk in BAHTNET that the BOT should oversee to ensure a high degree of security and operational reliability in both normal and emergency circumstances. Management for continuity of BAHTNET is a crucial key to support smooth functioning of payment systems. The BOT, as an operator of BAHTNET, prescribed target system availability at 99.7 percent based on operations during past periods. In 2015, BAHTNET’s system availability was 99.95 percent, higher than the target set. The BOT monitors BAHTNET’s system availability periodically and reports results to concerned management and the PSC every six months.

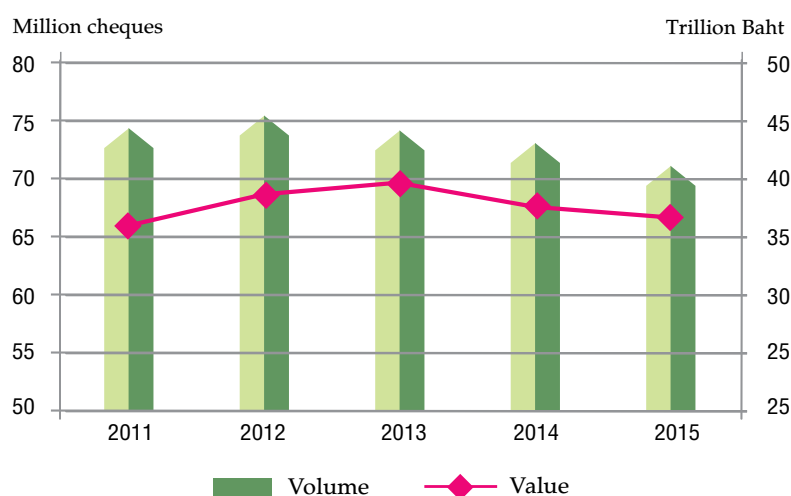
- **BAHTNET’s compliance with PFMI**s

The BOT plans to join for the Financial Sector Assessment Program (FSAP) in 2018. Since 2015, the BOT has enhanced the efficiency of BAHTNET along with its compliance with international standards such as expediting the legislation of payment finality, designing default rules and procedures for BAHTNET’s members in the event of default or bankruptcy (default management), and establishing a risk management framework to manage the range of risks that are borne by BAHTNET according to PFMI

### 2.4.2 Imaged Cheque Clearing and Archive System (ICAS)

ICAS is an important retail funds transfer system that caters for interbank imaged cheque clearing. The BOT has decided that 14 PFMI, out of the 18 that are applicable to ICAS.

**Figure 6: Volume and value of interbank cheques**



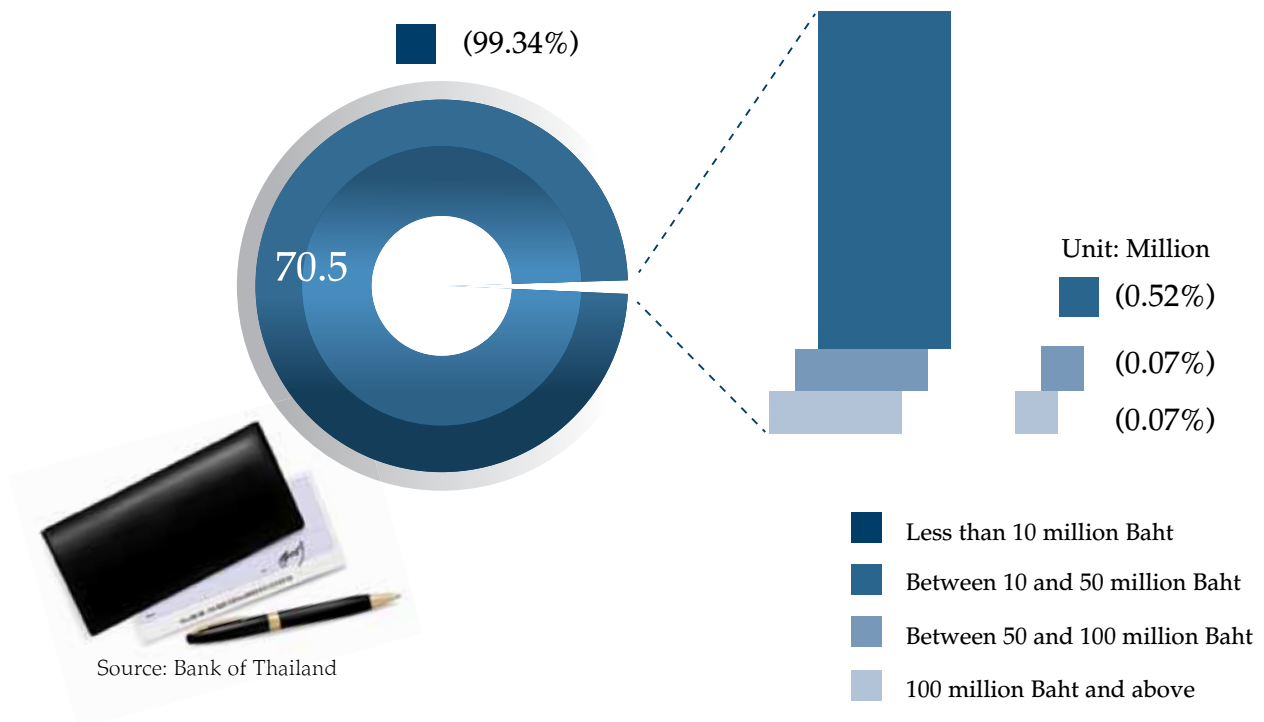
Source: Bank of Thailand



In 2015, interbank cheques nationwide totaled 71.0 million cheques, representing 37.4 trillion baht, declining from 2014 by 2.3 and 1.4 percent, respectively. The volume and value of interbank cheques averaged at 292,331 cheques and 154.1 billion baht per day, also trending downwards due to domestic economic condition coupled with increase in e-Payment during previous years.

In 2015, for Bangkok metropolitan region, interbank cheques of less than 10 million Baht in value made up the highest proportion of 99.34 percent or 70.5 million cheques, followed by interbank cheques of between 10 and 50 million Baht in value (0.52 percent), interbank cheques of between 50 and 100 million Baht in value (0.07 percent), and interbank cheques of 100 million Baht and above in value (0.07 percent).

**Figure 7: Volume of interbank cheques in Bangkok metropolitan region, classified by value in 2015**



- **Management of material risks in ICAS**

The BOT continuously managed operational risk and business continuity of ICAS whereby the target of systems availability was set at 99.7 percent. In 2015, ICAS achieved 99.99 percent systems availability, higher than the target set. The BOT monitors ICAS' system availability continually and reports results to concerned management and the PSC every six months.



- Oversight of ICAS

The BOT has adopted 14 PFMI out of the 18 in the oversight of ICAS. In 2015, the BOT conducted an onsite examination specifically on the ICAS' operational risk (Principle 17: operational risk) in two dimensions (1) operational reliability and availability; and (2) business continuity management (BCM). The examination found that ICAS had risk management measures and procedures for operational reliability and availability and business continuity management that mostly complied with PFMI. Any identified gaps were not issues of concern and manageable.

### 2.4.3 Interbank Transaction Management and Exchange (ITMX)

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The BOT oversees NITMX which is an important retail funds transfer system by virtue of the provisions of the Royal Decree on Regulating Electronic Payment Services Business B.E. 2551 (2008) and applies PFMI in the oversight of NITMX.

In 2015, the BOT conducted an onsite assessment of NITMX in compliance with PFMI and summarized that NITMX's operation and risk management mostly complied with PFMI on areas such as legal risk, operational risk, and settlement risk. In addition, its system development to respond to member banks' need was also carried out. The NITMX disclosed clear regulations, procedures, and access criteria as well as necessary usage information to members and stakeholders. Moreover, communication procedures for data transfer were found to meet required standards. There were no serious issues of concern that require immediate action.

## 2.5 International standards on key payment systems oversight

In 2015, the Working Group on Cyber Resilience under the Committee on Payments and Market Infrastructures (CPMI) and the Technical Committee of the International Organization of Securities Commission (IOSCO), referred to as CPMI – IOSCO, which is responsible for formulating international standards on oversight of efficiency and stability of payment systems and securities related systems, under the umbrella of the Bank for International Settlements (BIS), issued a consultative document titled “Guidance on Cyber Resilience for Financial Market Infrastructures” to be used as supplementary guidelines for PFMI.

In short, the Guidance requires operators of FMIs and their regulators to adequately recognize cyber risks, including personnel in all levels of the organizations. Consideration must also be given to connect-



tivity with FMIs that may result in interconnected risks and impacts, focusing on monitoring and collection of data on network computers for systematic analysis and interpretation in order to yield effective operation. The Guidance also focuses on subjecting designed cybersecurity measures to tests and emphasizes the importance of swift response and recovery by FMIs. The complete version of the Guidance was issued in June 2016 and the BOT would consider applying it to oversee important payment systems in the future.

## Box 7: Cyber resilience for Financial Market Infrastructures

Cyber resilience refers to the ability to prepare, resist, and control the situation as well as swiftly recover the systems to normal operation after a cyber-attack.

Strengthening cyber resilience of important payment systems classified as FMIs is a crucial task that would support payment systems efficiency and compliance with PFMI as well as allow financial transactions to be processed continuously. There must also be appropriate operational risk management and recovery procedures which allow the safe resumption of critical operations within 2 hours of a cyber disruption, and also enable itself to complete settlement by the end of the day the disruption occurred.

In order to ensure an operational framework for FMIs to strengthen cyber resilience, CPMI-IOSCO issued Guidance on Cyber Resilience for Financial Market Infrastructures to serve as guidelines for FMIs to adapt for usage. The guidance outlines 5 primary risk management categories known as GIPDR, as follow;

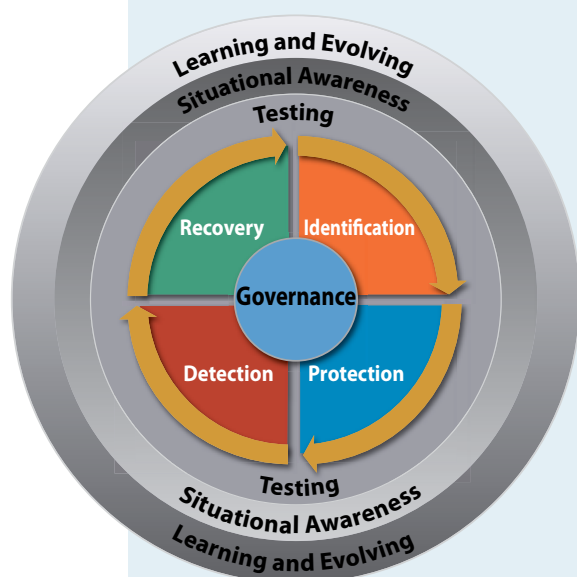
**Governance:** Ensure necessary measures, procedures and resources for cyber risk management

**Identification:** Identify factors that influence key operations, including procedures, systems or networks

**Protection:** Identify factors that influence key operations, including procedures, systems or networks  
Protection: Prescribe standards for control and design procedures to protect key operations

**Detection:** Monitor and detect cyber threats in a quick and timely fashion

**Recovery:** Control the situation and minimize damage, ensuring that recovery can take place quickly and securely, thereby enabling continuous operations of FMIs



Additionally, in order to achieve resilience objectives, there are 3 overarching components that should be factored across an FMI's cyber resilience framework. The overarching components are: testing (all elements of a cyber resilience framework should be tested to determine their overall effectiveness), situation awareness (ability to understand and pre-empt cyber events, and to effectively detect, respond to and recover from cyber attacks that are not prevented), and learning and evolving (aim to instil a culture of cyber risk awareness and demonstrate ongoing re-evolution).







## 3

## Supervision of e-Payment Service Providers

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### 3.1 Revision of laws and regulations on supervision of service providers

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In 2015, the BOT considered reviewing related laws and regulations as follows.

- 1) Revised rules, procedures, and conditions for supervision under the Royal Decree on Regulating Electronic Payment Services Business B.E. 2551 (2008) which is a sub-law under the Electronic Transactions Act B.E. 2544 (2001), including revision of notifications of the ETC and the BOT to be more appropriate and in line with changes in economic environment and business models. The revised notifications of the ETC and BOT were published in the Government Gazette dated 11 April 2016 and 28 April 2016 respectively with salient points as follows.
  - Revised rules on supervision of service providers' financial status to ensure soundness and continuity of business and services.
  - Prescribed additional qualifications and prohibited characteristics of executive board members.
  - Expanded the scope of e-Money services to include, for instance, foreign currency e-Money for usage abroad, undertaking of other businesses that support e-Payment operation by obtaining approval from the BOT prior to such undertaking. Moreover, the BOT also required service providers to maintain the ratio of net shareholders' equity to outstanding balance of deferred revenue to manage risks to financial status and soundness.
- 2) Revised rules, procedures, and conditions for supervision under the Notification of the Ministry of Finance on Business that Requires a Permit According to Section 5 of the Notification of the Revolution Council No. 58 (e-Money businesses) to be more appropriate and in line with changes in economic environment, ensure more efficient risk management by service providers, and comply with notifications of the ETC. Examples included additional qualifications and prohibited characteristics of executive board members, expansion of business scope, and reporting of open/move/close of branches. The revised notifications

of the Ministry of Finance and the BOT were published in the Government Gazette dated 28 June 2016 and 2 August 2016 respectively.

- 3) Drafted the Royal Decree on Regulating Electronic Payment Services Business of Specialized Financial Institutions B.E. 2559 (2016) to be a sub-law under the Electronic Transactions Act B.E. 2544 (2001) to supervise e-Payment services of Specialized Financial Institutions (SFIs) to ensure alignment of service standards to those of bank and non-bank e-Payment service providers. The draft was prepared according to instructions of the ETC. It was approved by the Cabinet and published in the Government Gazette dated 30 March 2016 and would become effective on 28 July 2016 onwards. Currently, the BOT is in the process of formulating related notifications and regulations to supervise e-Payment services of SFIs pursuant to the abovementioned Royal Decree.

## 3.2 Supervision and examination of e-Payment service providers

The BOT supervises e-Payment service providers to ensure sound risk management in the provision of financial transaction services, foster reliable and safe e-Payment services, and enhance the business sector's competitiveness and the public sector's services. In this regard, the BOT supervises 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 Royal Decree on Regulating Electronic Payment Services B.E. 2551 (2008).

### 3.2.1 Supervision According to Notification of the Ministry of Finance on Business that Requires a Permit According to Section 5 of the Notification of the Revolution Council No. 58 (e-Money businesses)

The BOT supervises e-Money service providers that are non-banks as authorized by the Notification of the Ministry of Finance on Business that Requires a Permit According to Section 5 of the Notification of the Revolution Council No. 58 (e-Money businesses), dated 4 October 2004.





In 2015, there were four applications for e-Money license to offer e-Money services on mobile phone applications for payment of goods and services at participating retailers and online. At the end of 2015, there were a total of 12 e-Money service providers licensed under the Notification of the Revolution Council No. 58.

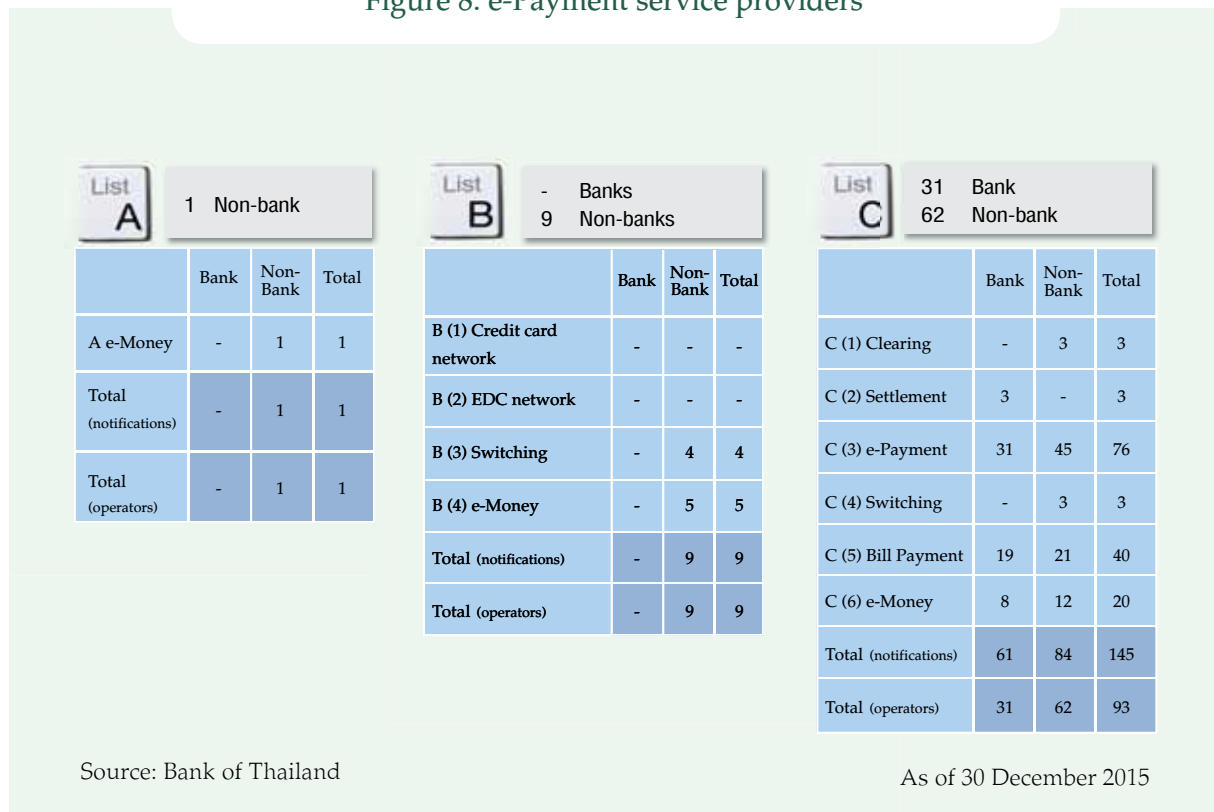
### 3.2.2 Supervision According to the Royal Decree on Regulating Electronic Payment Service Business, B.E. 2551 (2008)

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The BOT has a legal mandate to supervise e-Payment service providers according to the Royal Decree on Regulating Electronic Payment Services Business B.E. 2551 (2008), which is a sub-law 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 notify the BOT, List B for businesses that are required to register with the BOT, and List C for businesses that are required to acquire licenses before providing services. In 2015, the BOT supervised e-Payment service providers according to the Royal Decree as follows.

- 1) Considered that the applications from List A and List B applicants appropriately met the requirements as stipulated by the legislations and issued List A notifications and List B registrations. Considered the applications for List C licenses before passing recommendations to the ETC for approval. During 2015, there were issuances of one List A notification, one List B registration, and 13 List C licenses. Most of these were payment gateway service providers, e-Money service providers, and bill payment service providers. However, there were one cancellation on List B registration and three cancellations on List C license.

Figure 8: e-Payment service providers



At the end of 2015, there was one List A service provider, nine List B service providers, and 93<sup>7</sup> List C service providers (31 banks and 62 non-banks, representing the total number of 145 licenses issued).

- 2) Supervised and conducted off-site examination for compliance with the Royal Decree on Regulating Electronic Payment Services Business B.E. 2551 (2008) and related notifications, monitored users' complaints about service providers, and sought facts on other issues to

<sup>7</sup> List of e-Payment service providers can be found on the BOT's website (<https://www.bot.or.th/English/PaymentSystems/OversightOfEmoney/ListOfEmoney/Pages/eMoneyProvider.aspx>)



ensure legal compliance. In 2015, there were reports of non-compliance with promulgated legislations but such issues did not affect the consumers' use of services. The result of oversight activities and the incidences of non-compliance by service providers were reported to the ETC. The concerned service providers were also notified and the issues were promptly addressed.

- 3) Conducted on-site examinations at offices of e-Payment service providers. In 2015, the BOT conducted on-site examination and observed operations of non-bank e-Payment service providers under List C. The businesses were selected for examination based on their popularity among users, extent of impact on users, financial soundness, and complaints received from users. The BOT examined and assessed service providers' operations in both management of e-Payment services and IT risks perspectives. Findings were reported to service providers to ascertain that improvements are carried out to ensure that services are sufficiently comprehensive and exhaustive, able to be offered continuously and efficiently with satisfactory IT security standards. At the same time, improvements must also address fair treatment of consumers or users and compliance with prescribed laws and regulations, thereby fostering confidence in e-Payment services.





## 4

## Payment Systems Trend

## 4.1 Overall payment systems usage in 2015

In 2015, Thailand's e-Payment usage continued to grow continually, growing higher than last year in terms of both volume and value and also higher compared to cheque usage. The volume of e-Payment transactions<sup>8</sup> totaled 2,589.6 million transactions, growing by 13.3 percent from 2014. In particular, internet banking/mobile banking transaction volume totaled 451.4 million transactions, expanding significantly at 51.6 percent from last year. Moreover, growth records over the last five years (2010 – 2015) revealed that the volume of e-Payment grew by 18.1 percent per year, on average. Meanwhile, cheque usage in 2015 totaled 120.5 million transactions, growing by a mere 1.4 percent from 2014 or 1 percent per year, on average.

Technological development, especially transaction devices such as mobile devices, along with internet network coverage expansion to include different regions of the country were the key factors that facilitated people in accessing e-Payment more conveniently and easily. Similarly, other easy and convenient-to-use services such as internet banking, mobile banking and payment service via mobile applications also contributed to the increasing popularity of e-Payment.

Despite relatively high growth in e-Payment usage in Thailand, from 35 times/person/year in 2014 to 39 times/person/year in 2015, compared to developed countries, Thailand's e-Payment usage remained significantly smaller. For instance, e-Payment usages in Malaysia, South Korea and Singapore stood at 71, 369 and 698 times/person/year, respectively<sup>9</sup>. Moreover, consideration of e-Payment types showed that Thais used electronic cards (debit cards and credit cards) at point of sales (through Electronic Data Capture – EDC) and over the internet only seven times/person/year while people in developed countries used electronic cards as the main mediums

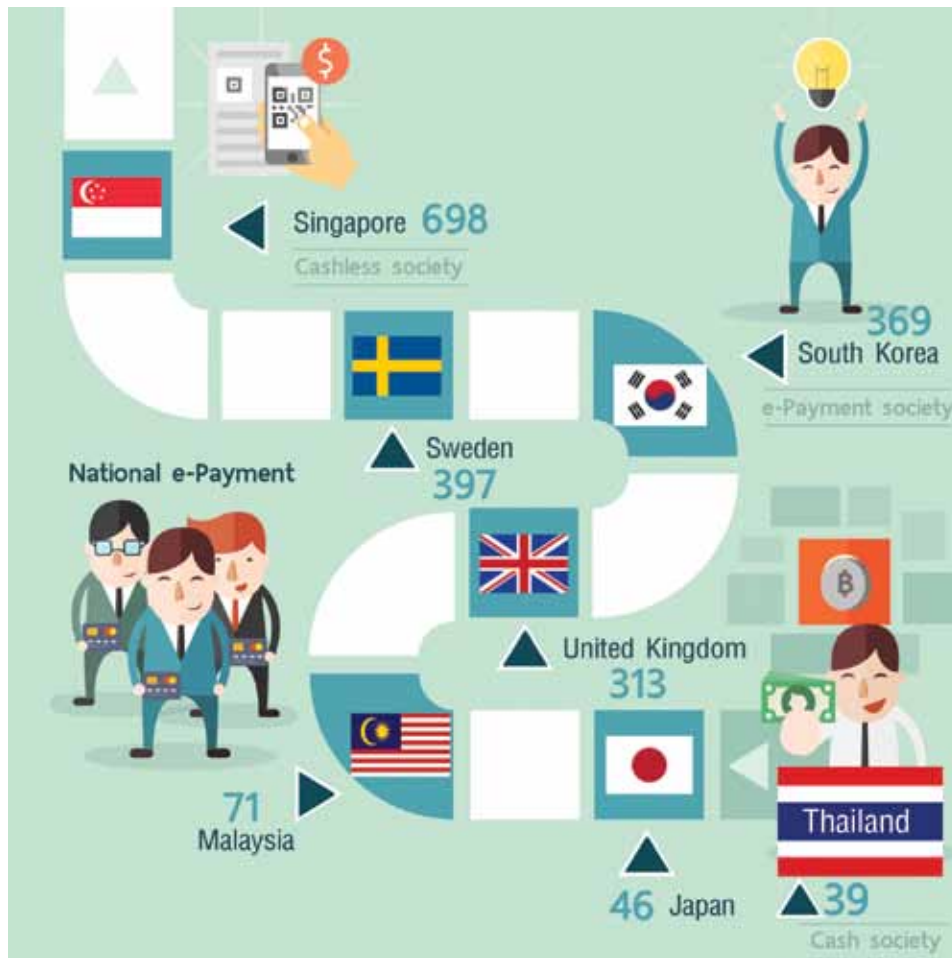


<sup>8</sup> Includes high-value funds transfer, bulk payment, online retail funds transfer (interbank and in-house), electronic card and e-Money

<sup>9</sup> Foreign countries' volumes of e-Payment transactions (times/person/year) were 2014 data



Figure 9: Volumes of e-Payment per capita of various countries\*



Unit: (times/person/year)

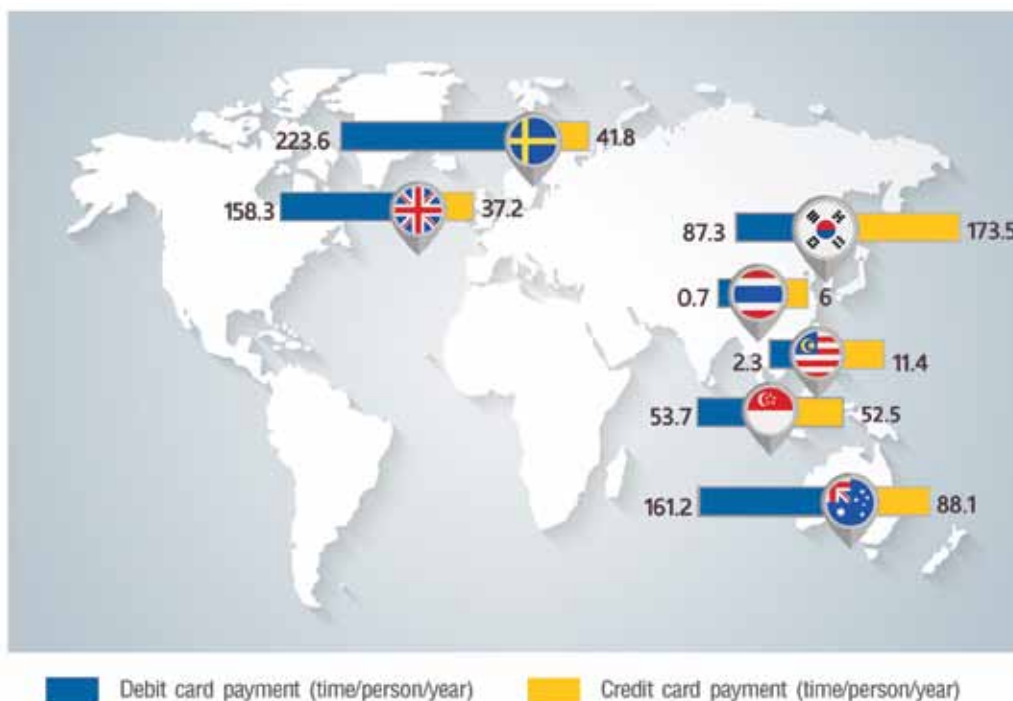
Sources: BIS (2015) Statistics on payment and settlement systems in the CPSS countries, Bank of Negara Malaysia and Bank of Thailand

\* 2014 data for foreign countries and 2015 data for Thailand

of transactions on a daily basis, with usage registering at more than 200 times/person/year. The reason behind limited usage of electronic cards by Thais stemmed from the habit of using cash to purchase goods and services and inadequate distribution of EDC which were mostly concentrated in business districts or tourist destinations.

Promotion of wider usage of e-Payment would yield benefits in many dimensions for individuals, businesses and the country, for example, more convenient access to e-Payment via various channels, cost reduction for processes relating to cash management, lower probability of error and fraud from cash usage and enhanced business efficiency which would help increase competitiveness of the business sector to be in line with international competitors. Furthermore, for the public sector, benefits included direct and quick benefit payment to people and reduction in duplication and error, which would contribute towards lowering the country's overall economic burden.

Figure 10: Electronic card usage per capita of various countries



Sources: BIS (2015) Statistics on payment and settlement systems in the CPSS countries, Bank of Negara Malaysia and Bank of Thailand

## How we spend

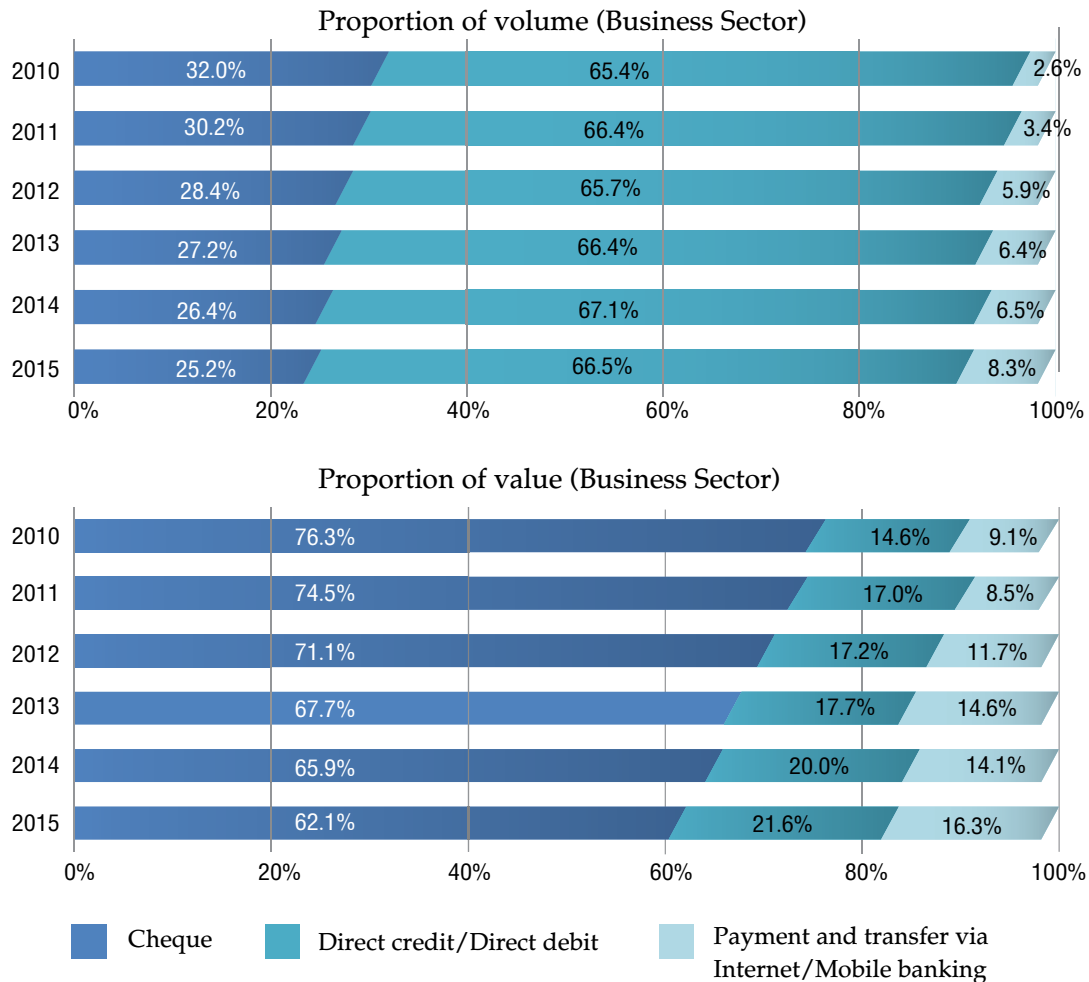
In the previous period, Thais' spending behaviors began to shift further from using paper-based payment, namely cheque and cash, to electronic-based payment. In this regard, payment behaviors of businesses and the general public differed and progressed interestingly as follows.

### Business sector

For the business sector, cheque continued to be the key medium of payment for payment of goods and services, as reflected by its highest proportion of 62.1 percent of all business sector payment in value terms. However, during the past 2-3 years, the value of cheque usage declined slightly, dropping from a significant growth of 8 percent in 2011 to a contraction of 0.1 percent in 2015 as businesses shifted more towards e-Payment, for example, direct credit/direct debit and internet banking/mobile banking, given that e-Payment helped them manage financial transactions efficiently, conveniently and quickly. Thus, it could be observed that business sector e-Payment grew as high as 20 percent in value terms over the past five years and almost doubled compared to 2010, registering at 37.5 trillion Baht in value terms in 2015. Although business sector internet banking/mobile banking continued to record a low proportion in terms of volume and value, popularity of these services started to pick up, as reflected by an average annual growth rates of 21 and 34 percent, respectively, over the past five years.



Figure 11: Proportion of Thais' spending during 2010 – 2015  
(business sector)



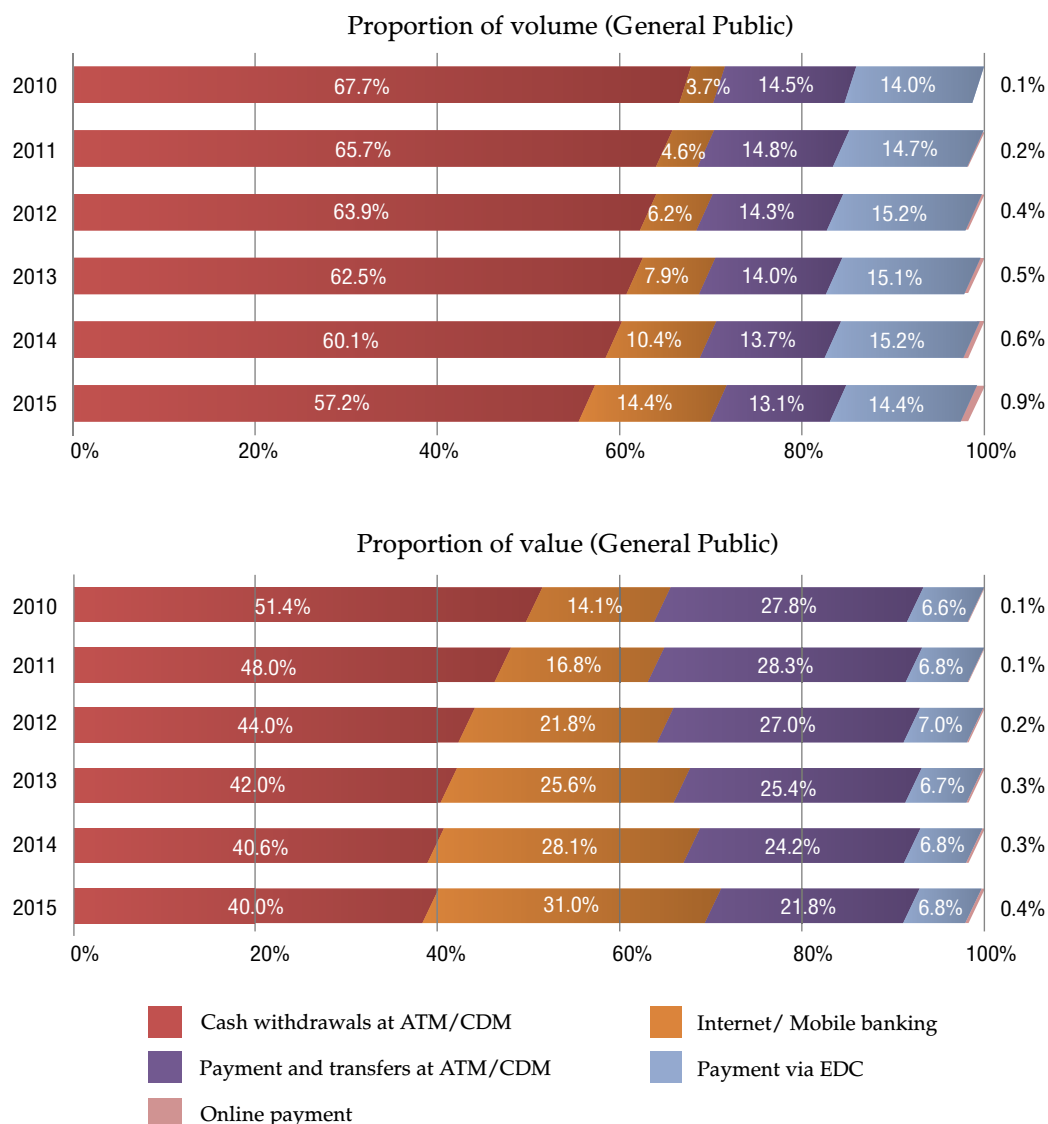
Source: Bank of Thailand

### General public

Cash continued to be the key medium of payment for Thais and cash withdrawals at ATM/CDM was considered to be the highest transaction in terms of volume and value, with the proportions of 57.2 and 40.0 percent of all payment channels, respectively. Nonetheless, the proportion of cash withdrawal at ATM/CDM started to decline continuously since 2010 as Thais shifted more towards e-Payment. In particular, the proportion of internet banking/mobile banking stood at 31.0 percent in value terms in 2015 compared to a mere 14.1 percent in 2010. Meanwhile, the proportion of ATM/CDM usage declined whereby the proportion of cash withdrawals at ATM/CDM recorded at 40 percent in value terms, dropping from 51.4 percent in 2010, and the proportion of payment and transfers at ATM/CDM stood at 21.8 percent in value terms, decreasing from 27.8 percent in 2010.



Figure 12: Proportion of Thais' spending during 2010 – 2015  
(general public)

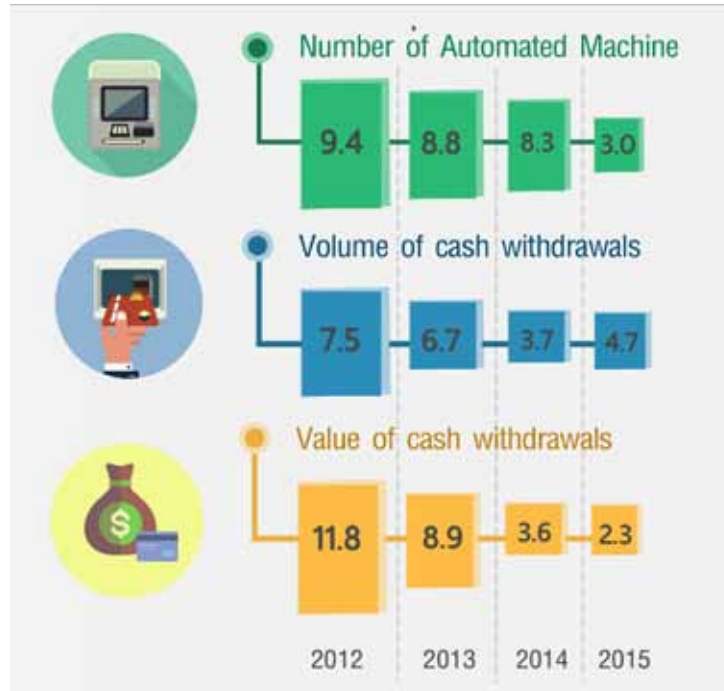


Source: Bank of Thailand

### How we get and deposit cash

Consideration of Thais' cash withdrawal behaviors over various channels revealed that Thais preferred to use ATM cards and debit cards to withdraw cash at automated machines for daily payment. The frequency of cash withdrawals recorded at 24 times/person/year or approximately two times/person/month with the average withdrawal value of 4,500 Baht per transaction.

Figure 13: Growth in cash withdrawal at ATM/CDM and number of ATM/CDM

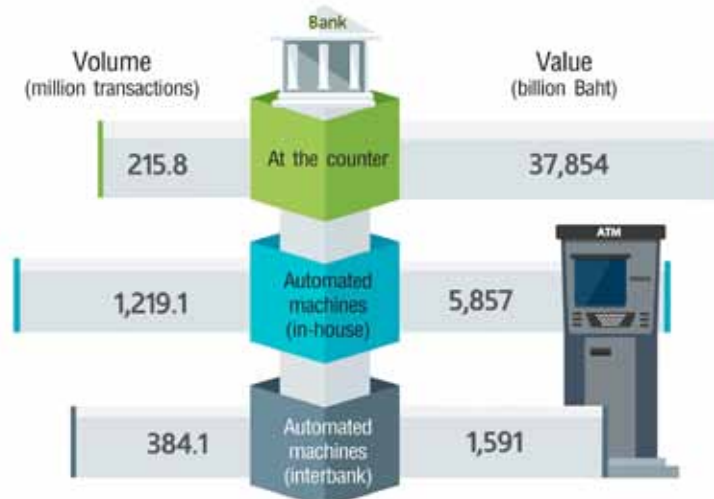


Source: Bank of Thailand

Cash withdrawals grew continually but at a slowing pace in line with growth in the number of ATM/CDM that also slowed down.

Most cash withdrawals at automated machines were in-house, surpassing interbank withdrawals by approximately four times in terms of both volume and value as most banks did not charge a fee for in-house withdrawals while a fee of 10 – 20 Baht/transaction was charged for interbank

Figure 14: Cash withdrawals through various channels in 2015

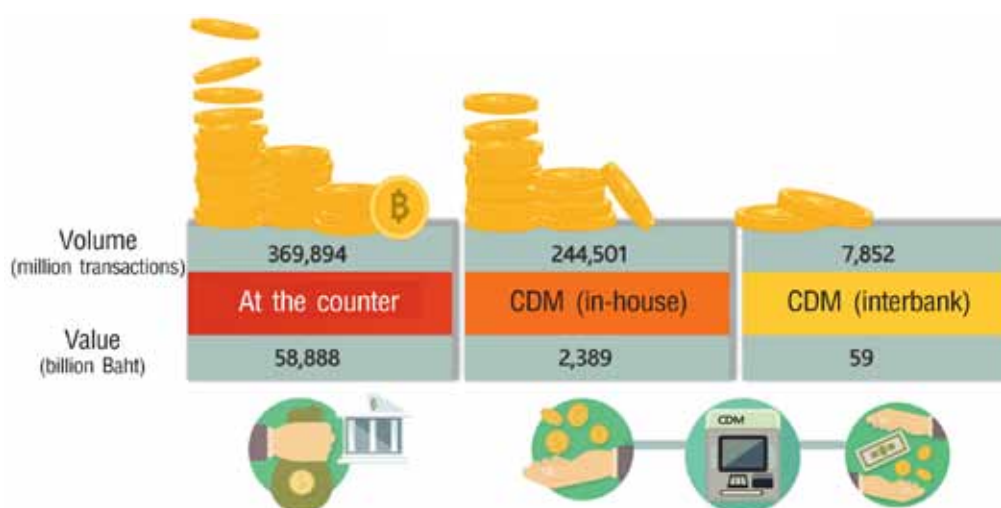


Source: Bank of Thailand

withdrawals from the fifth transaction onwards in each month. However, for high-value withdrawals, Thais continued to perform the transaction over the counter, averaging at approximately three times/person/year. These included business sector's cash withdrawals which averaged at 174,124 Baht/transaction, equivalent to 83.5 percent of the total value of cash withdrawals.

For cash deposits, Thais prefer to perform the transaction over the counter rather than at CDM, as reflected by the average frequency of 10 times/person/year, the average value of deposits of 159,202 Baht/transaction and a 96 percent proportion of the total value of cash deposits. Meanwhile, cash deposits at CDM were mostly low-value deposits, averaging at 9,698 Baht/transaction. Most cash deposits at CDM were in-house deposits rather than interbank deposits because of the high fee associated with interbank CDM cash deposits (starting at 50 Baht/transaction).

Figure 15: Cash deposits through various channels in 2015



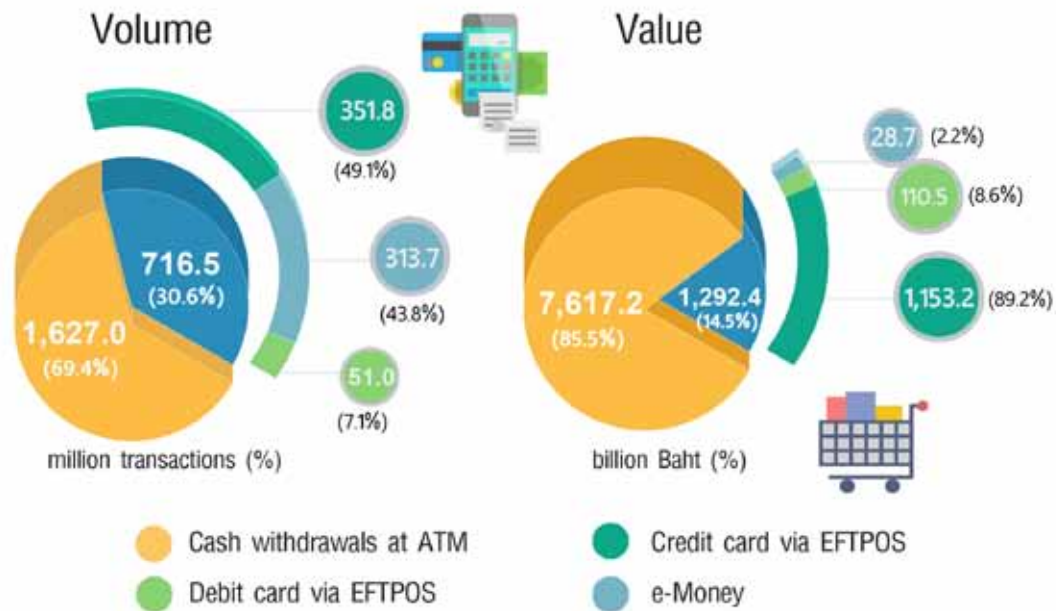
Source: Bank of Thailand

### How we spend face-to-face

Cash<sup>10</sup> remained the most popular medium of payment for purchases of goods and services at points of sales, as reflected by a high proportion of 85.5 percent of the total point of sales transactions in value terms. Meanwhile, payment via electronic cards (credit card, debit card and e-Money) totaled at 14.5 percent.

<sup>10</sup> Assuming that cash withdrawals and cash advances at ATM/CDM reflect usage of cash for payment of goods and services at points of sale.

Figure 16: Volumes and values of payment at points of sale in 2015



Source: Bank of Thailand

Considering only payment via electronic cards at points of sale (via EFTPOS), credit cards remained the most popular choice for payment of goods, amounting to a significant proportion of 89.2 percent of the total payment via EFTPOS in value terms, followed by debit cards and e-Money. However, in terms of volume and frequency, credit cards and e-Money were the popular choices for Thais, as reflected by a combined proportion of 92.9 percent of the total volume of payment via points of sale.

A detailed analysis of e-Money usage revealed that it was mostly used for retail transactions, for example, payment for goods at convenient stores and public transportation services. These were low-value payments, averaging at 91.5 Baht/transaction. Meanwhile, the average values of debit card and credit card transactions recorded at 2,164.8 and 3,278.6 Baht/transaction, respectively.

Overall, electronic card payment via EFTPOS in Thailand was considered relatively low, recording at approximately 11 transactions/person/year. Nonetheless, debit card payment via EFTPOS trended up, growing at 18 percent, higher than cash and credit card payments by about three times in terms of volume as a result of commercial banks' ongoing promotional campaigns that encouraged people to increase debit card usage.



## How we spend online

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In 2015, Thais' online payment (including only payment for goods and services and bill payment by individuals) in terms of volume and value of transactions continued to grow overall, increasing by 55.1 and 13.6 percent, respectively. These growth rates were considered to be significant compared to the previous year. In this regard, the volume of transactions amounted to 108.2 million transactions while the value stood at 745.9 billion Baht.

Classifying online payment into four categories – mobile banking, internet banking, debit card payment and credit card payment, it was found that the volume of mobile banking payment almost doubled due to the increased popularity of smartphones coupled with commercial banks' development of various mobile applications which can be used more conveniently. Other categories of online payment, namely credit card payment, internet banking and debit card payment, expanded by 70, 15 and 10 percent, respectively. It could be seen that growth in online credit card payment was highly significant compared to 2014 in which a growth of 20 percent was observed due to the popularity of e-commerce among Thais.

In terms of online payment behaviors through various services in Thailand, it was observed that internet banking payment registered the highest proportion of 77 percent of the total online payment in value terms, averaging at 20,000 Baht/transaction since nowadays, internet banking can be used for bill payment, purchases of stock, mutual fund, LTF and RMF. Meanwhile, the proportion of mobile banking payment stood at 10 percent in value terms as most transactions



were for bill payment, averaging at approximately 1,800 Baht/transaction. The proportion of online payment via credit cards and debit cards, for instance, for online shopping, stood at only 10 percent in value terms, averaging at 3,900 and 1,300 Baht/transaction, respectively. Moreover, compared to last year, all four categories of online payment registered higher frequencies in 2015 while the average online transaction values declined.

As for online payment behaviors overseas, for instance, e-Commerce transactions on international websites, Thais preferred credit cards rather than debit cards, as reflected by the proportions of 86 and 93 percent of the total volume and value of international online payment. In 2015, credit card usage grew as high as 40 percent in volume and value terms compared to 2014 in which only a 10 percent growth was recorded. In this connection, the average transaction value remained stable at 2,400 Baht/transaction. Nonetheless, total international online payment via credit cards of 26.3 billion Baht was almost half of domestic online payment by credit cards. In the meantime, international online payment via debit cards continued to be low with the total value of just 2.2 billion Baht.



Figure 17: Proportion of volumes and values of domestic online payment

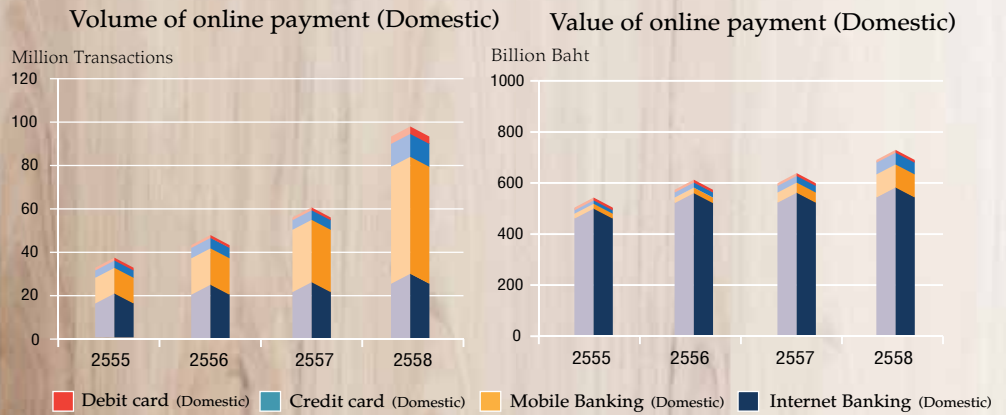
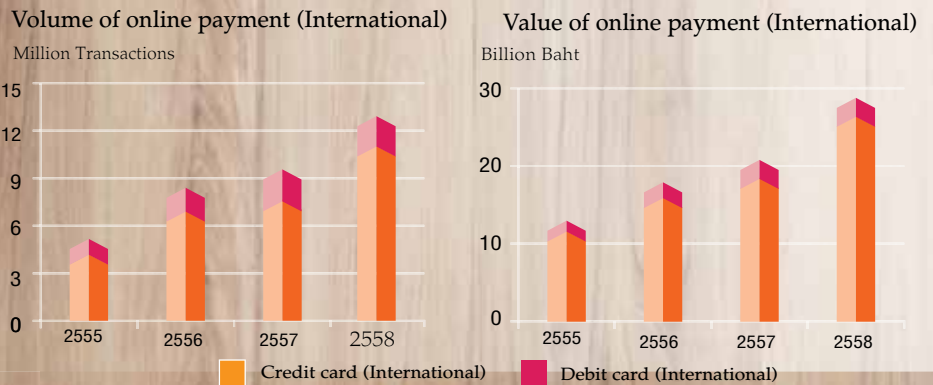


Figure 18: Proportion of volumes and values of international online payment



Source: Bank of Thailand

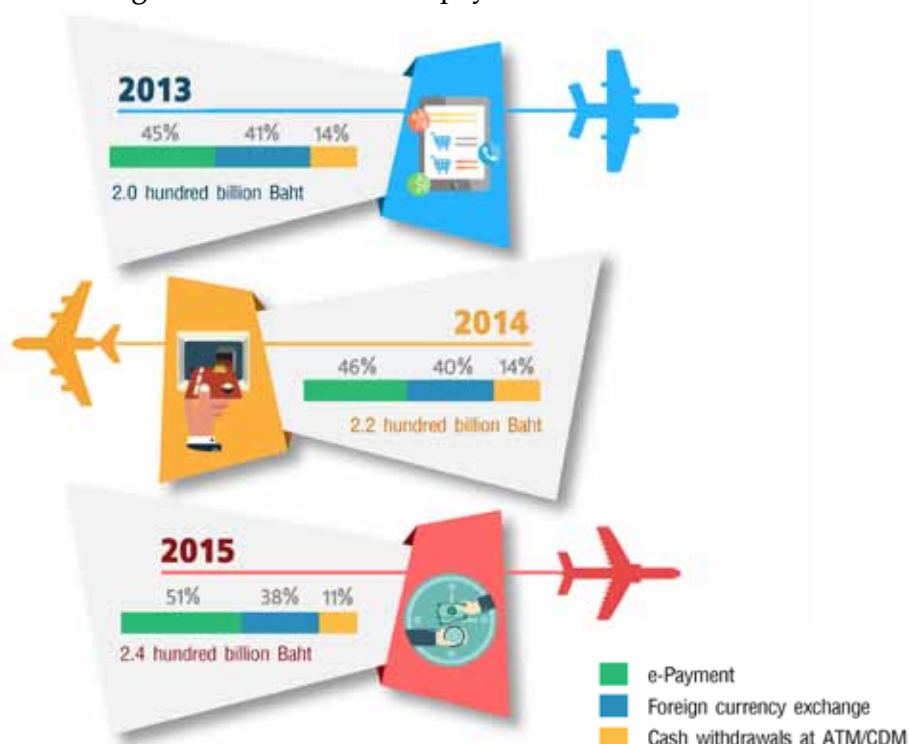
## How we spend abroad

Thais' international travels trended upwards consistently in line with international spending which continued to rise every year. In this connection, international spending can be categorized into three methods, namely electronic cards via EFTPOS, foreign currency exchange at commercial banks and money changers and cash withdrawals at automated machines abroad.

Payment via electronic cards for purchases of goods and services abroad remained the most popular medium of payment for Thais. In 2015, payment for goods and services registered the highest proportion in value terms of 51 percent. In this regard, Thai travelers preferred to use credit cards rather than debit cards whereby the value of credit card and debit card usages stood at 109.6 and 13.4 billion Baht, respectively, increasing by approximately 20 percent from the previous year. Meanwhile, cash usage from foreign currency exchange and withdrawals at automated machines abroad accounted for 38 and 11 percent or 90.0 and 27.9 billion Baht in value terms, respectively. Moreover, foreign currency exchange increased slightly at 3.5 percent while cash withdrawals at automated machines abroad contracted by a large 9.7 percent, demonstrating that Thai travelers began to shift their behaviors from cash withdrawals at automated machines abroad to credit card and debit card payment.



Figure 19: Value of Thais payment abroad

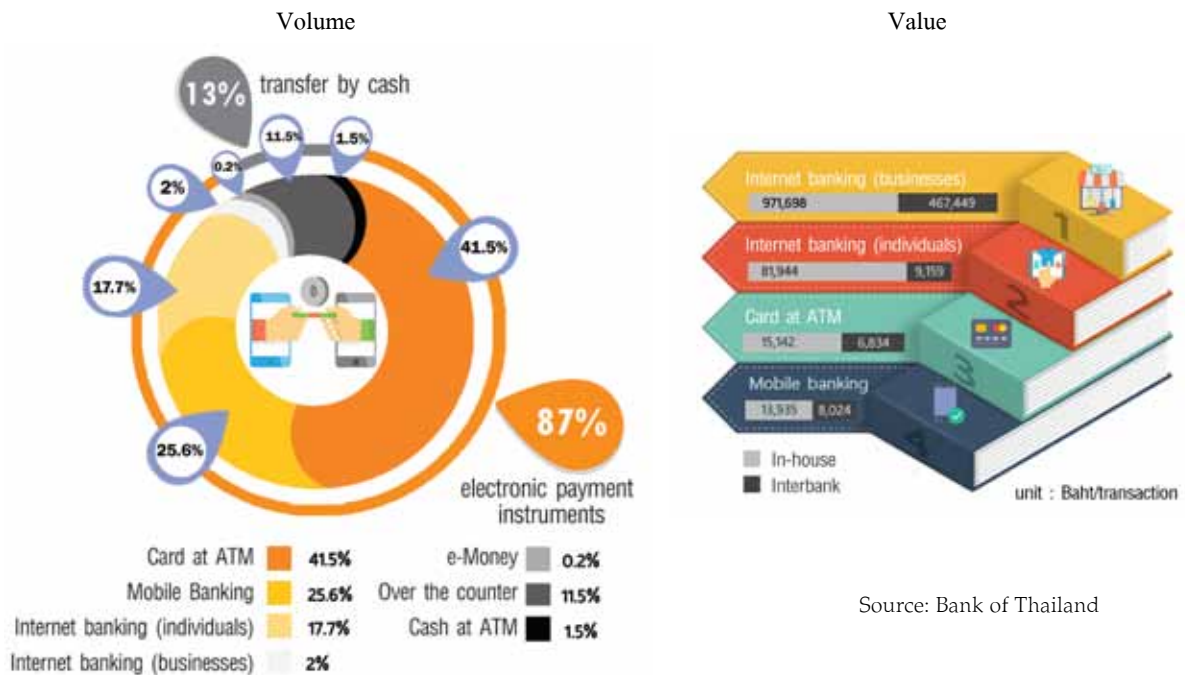


Source: Bank of Thailand

How we transfer money

In 2015, Thais preferred to transfer money via electronic channels, as reflected by the high proportion of 87 percent of total funds transfer volume. Transfers via mobile banking and e-Money almost doubled compared to the previous year. Meanwhile, other transfer channels such as electronic card, internet banking and over the counter grew only slightly. However, transfers via electronic card at ATM/CDM remained the most popular channel with the average transaction value of 12,294.3 Baht/transaction, followed by mobile banking at 12,753.4 Baht/transaction. These two transfer channels were mainly used for small transfers by individuals. In contrast, transfer via internet banking was dominated by the business sector. As a result, the average transaction value of the business sector stood at 840,000 Baht/transaction. For high-value funds transfer, Thais preferred to conduct the transaction over the counter due to familiarity and confidence in transacting with bank officers. In addition, electronic channels still did not cater for high-value funds transfer. Thus, over the counter funds transfer recorded the highest proportion of 83 percent in value terms, equivalent to the average transaction value of 1.4 million Baht/transaction.

Figure 20: Proportion of volumes and values of funds transfer via various channels



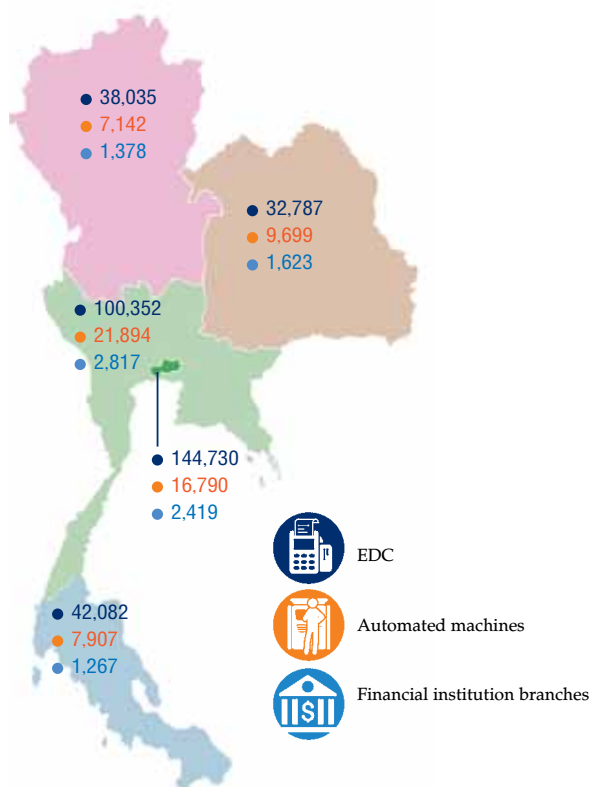
Furthermore, on the whole, Thais tended to conduct in-house funds transfer rather than interbank funds transfer with the former doubling the latter. This was because in-house funds transfer usually did not incur transaction fees while interbank funds transfer via all channels did. Therefore, interbank fees certainly played a role in affecting individuals' internet banking behaviors.

## 4.2 Major channels and payment instruments

### Payment service infrastructure

Thailand's key payment service infrastructures included branches of commercial banks and Specialized Financial Institutions, automated machines (ATM/CDM)<sup>11</sup> and EDC – most of which were still concentrated in Bangkok and the central region.

Figure 21: Distribution of financial institutions' branches and automated machines in 2015



Source: Bank of Thailand

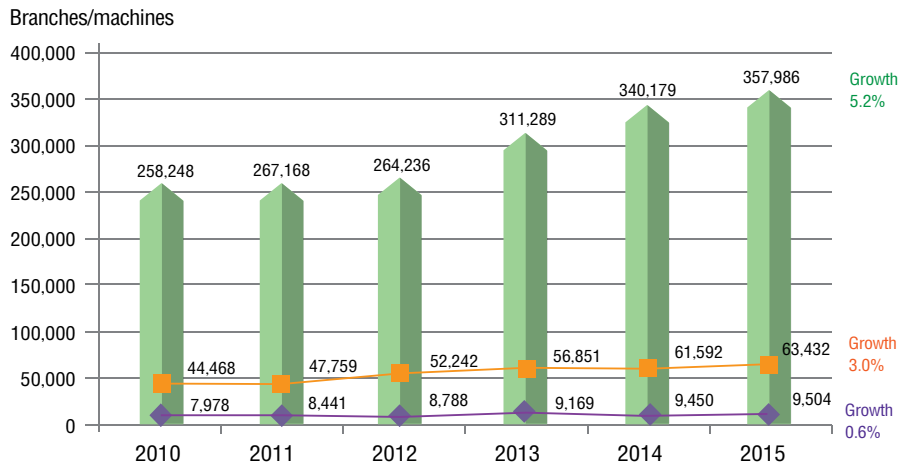
Last year, financial institutions expanded their nation-wide branch networks by only 0.6 percent, a slower growth rate from last year in which the expansion of three percent was observed. In particular, the number of branches in large cities such as Bangkok dropped by 43 branches from the previous year. Meanwhile, automated machines and EDC increased by 3.0 and 5.2 percent, respectively, especially in the central region where ATM/CDM and EDC saw the highest growth of 606 and 16,301 machines.

The above mentioned expansion in payment service infrastructures was consistent with financial institutions' focus on developing e-Payment channels to reduce operating costs coupled with stronger shift by people towards electronic transactions such as payment or transfer via internet banking/mobile banking or deposit/withdrawal at automated machines which were more convenient and less time consuming compared to over-the-counter transactions.

In terms of adequacy in Thailand's financial service infrastructures compared to other countries, it was found that Thailand's ratio of financial institution branches per one million persons stood at 145, similar to other countries such as Malaysia (140), Singapore (97), Australia (269) and Sweden (183) (2014 data).

<sup>11</sup> Automated machines included Automated Teller Machine (ATM) and Cash Deposit Machine (CDM)

Figure 22: Payment service infrastructure between 2010 – 2015

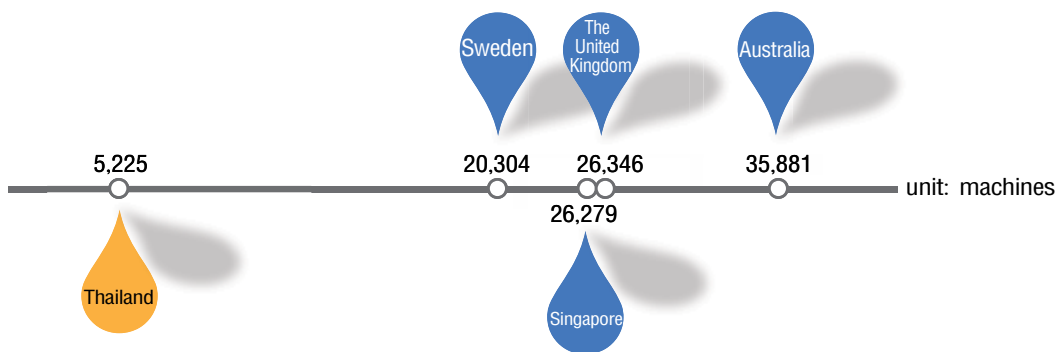


Source: Bank of Thailand

Meanwhile, the ratio of Thailand’s automated machines per one million persons was 965, higher than neighboring countries and many developed countries such as Malaysia (519), Singapore (500) and Sweden (33) (2014 data). However, more than 60 percent of automated machines were concentrated in Bangkok and its vicinities because most banks’ strategy was to offer automated machine service in areas with high expected usage, for example, shopping malls, sky train stations and business districts. In 2015, it could be clearly observed that the expansion in the number of automated machines slowed down, growing at 3.0 percent compared to 2012 – 2014, during which higher than 8.0 percent growth rates could be observed annually.

At the same time, in 2015, the number of EDC in Thailand was still considered small, recording at only 5,446 machines per one million persons. Compared to developed countries such as Sweden, Singapore, the U.K. or Australia, their ratios of EDC per one million persons stood between 4 – 7 times higher than Thailand.

Figure 23: Ratio of EDC per one million persons in various countries (2014)



Sources: Statistics on payment, clearing and settlement systems in the CPMI countries (figures for 2014) and the Bank of Thailand



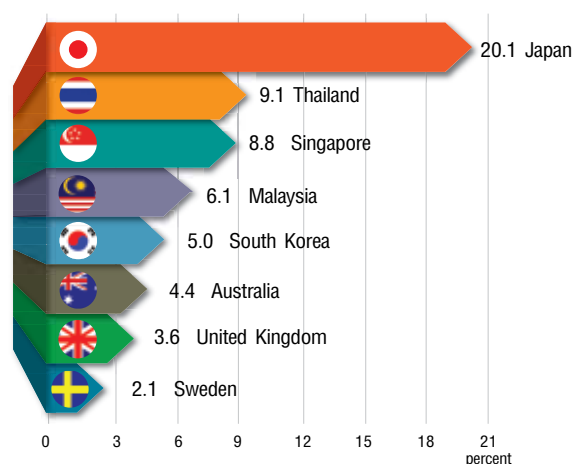
In this regard, the government’s plan, to promote wider distribution of e-Payment acceptance points to government agencies and retailers through the Card Usage Expansion project under the National e-Payment Master Plan, would be a key supporting factor in encouraging people to increase usage of electronic cards. Retailers would also be able to increase payment channels and reduce costs associated with cash handling and management.



## Cash

The ratio of currency (notes and coins) in circulation to Gross Domestic Product (GDP) is an indicator of cash requirement in the economic system. In 2015, Thailand’s currency in circulation to GDP stood at 9.2 percent, stabilizing from the previous year.<sup>12</sup> Compared to other countries of similar economic growth or countries in Asia, for example, Malaysia, Singapore and South Korea, their currency in circulation to GDP ratios were lower than Thailand’s, registering at 6.1, 8.8 and 5.0 percent, respectively.<sup>13</sup> For Japan, despite a relatively high currency in circulation to GDP ratio of 20.1 percent, its usage of e-Payment was higher than Thailand, recording at 46 times/person/year compared to 35 times/person/year. For developed countries in which e-Payment usage is high, currency in circulation to GDP is usually lower. Particularly, Sweden, a country committed to becoming a cashless society<sup>14</sup>, had a ratio of currency in circulation to GDP of only 2.1 percent together with a continually declining trend.

Figure 24: Currency in circulation to GDP (2014)



Sources: Statistics on payment, clearing and settlement systems in the CPPI countries (figures for 2014) and Bank of Thailand

<sup>12</sup> GDP was revised and back-dated at the end of 2015. As a result, currency in circulation to GDP in 2014 stood at 9.1 percent.

<sup>13</sup> Malaysia’s Payment Statistics (Basic Payments Indicator 2015)

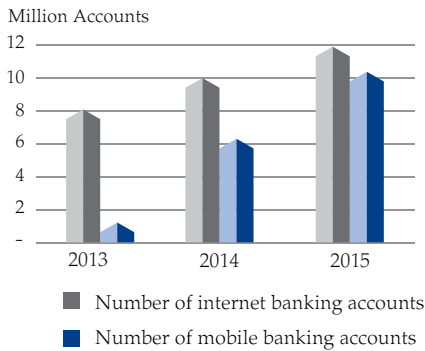
<sup>14</sup> <https://sweden.se/business/cashless-society/>

### Internet banking and mobile banking

In the past two years, the number of mobile banking users jumped significantly and was considered the highest growing payment service, expanding from 1.2 million accounts in 2013 to 10.4 million accounts in 2015. During the same period, the number of internet banking users increased at a stable rate of approximately 20 percent. At the end of 2015, the number of internet banking users recorded at 11.9 million accounts. The volume and value of mobile banking was consistent with growth in the number of users, expanding as high as 126.9 and 88.4 percent, respectively. Meanwhile, the volume and value of internet banking expanded only slightly at 7.9 and 16.5 percent, respectively.

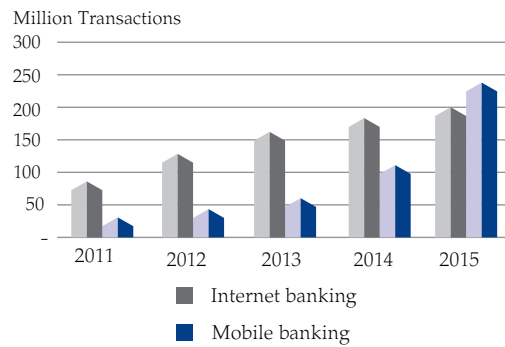
Apart from the frog-leaping in the number of mobile banking users, 2015 was also the first year that the volume of mobile banking surpassed that of internet banking, registering at 248.1 million transactions.

Figure 25: Internet banking and mobile banking accounts



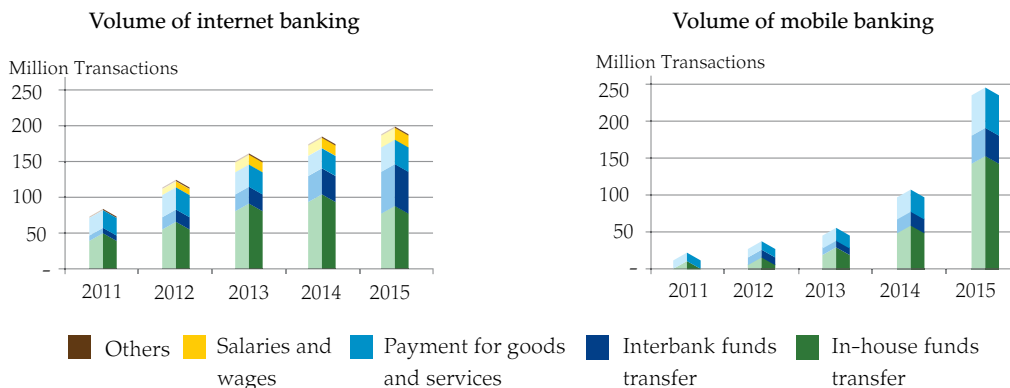
Source: Bank of Thailand

Figure 26: Internet banking and mobile banking transactions



In terms of transaction types of both internet banking and mobile banking, it could be observed that most transactions, about 50 percent of all transactions, constituted in-house funds transfer. A detailed analysis in 2015 further revealed that funds transfer behavior of Thais shifted further from internet banking to mobile banking. As a result, the volume of in-house funds transfer via internet banking decreased while that of mobile banking increased significantly.

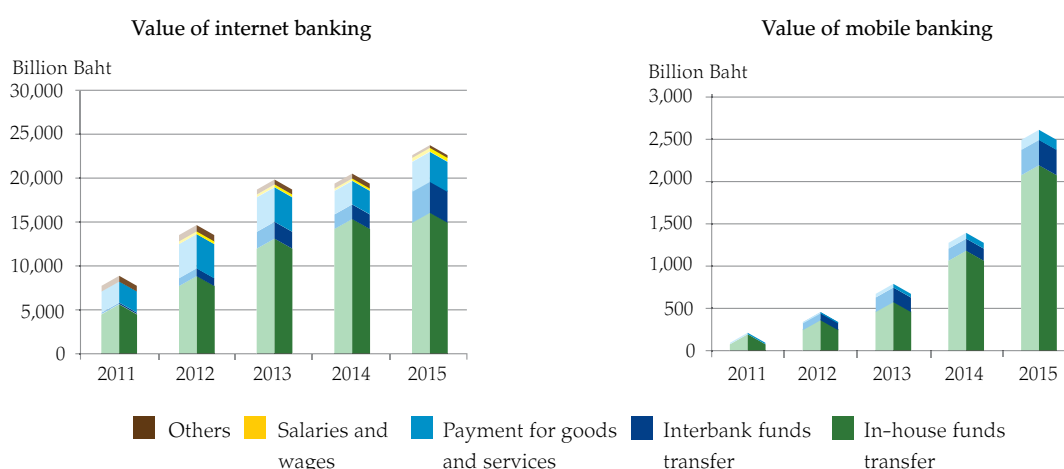
Figure 27: Volumes of internet banking and mobile banking



Source: Bank of Thailand

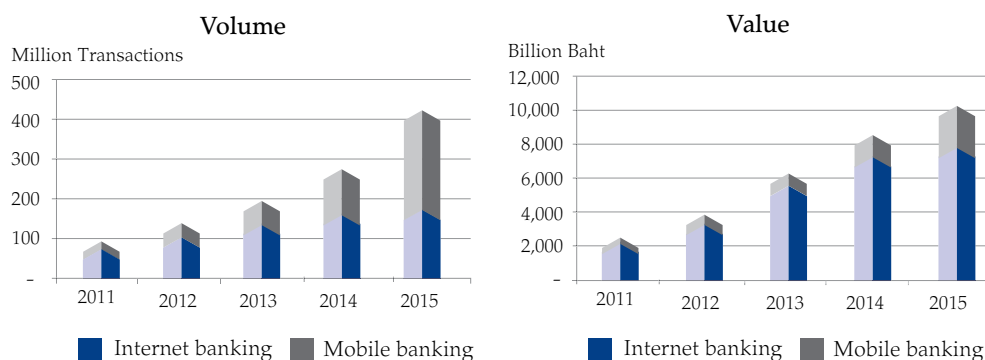
Regarding the value of transaction, in 2015, the value of internet banking remained higher than that of mobile banking, recording at a tall 23.9 trillion Baht compared to 2.6 trillion Baht. This was because the majority of mobile banking transactions were conducted by individuals who required convenience and speed in low-value funds transfer. In contrast, internet banking transactions mostly represented financial transactions for trade conducted by businesses, for instance, funds transfer, payment of goods and services along with salaries and wages. Overall, the value of internet banking and mobile banking of the business sector averaged at 405,510.8 Baht and 32,838.7 Baht per transaction, respectively.

**Figure 28: Values of internet banking and mobile banking**



Considering only internet banking and mobile banking transactions by individuals, it could be seen that the volume of mobile banking grew significantly at 126.9 percent while that of internet banking increased by only 2.8 percent. Meanwhile, internet banking was predominantly used for higher-valued transactions compared to mobile banking, averaging at 47,484.5 Baht compared to 10,357.2 Baht per transaction.

**Figure 29: Volumes and values of internet banking and mobile banking (individuals)**



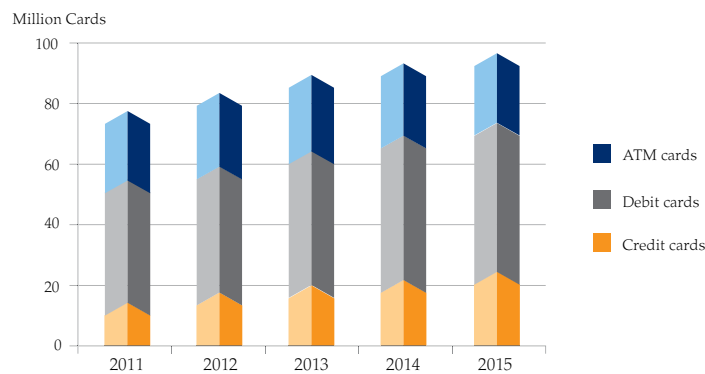
## Card payments

### Number of electronic cards

At the end of 2015, the number of electronic cards (ATM cards, debit cards and credit cards) in Thailand increased only marginally. Debit cards and credit cards continued to grow at 4.8 and 7.4 percent, recording at 50.4 and 21.8 million cards while ATM cards decreased by 13.4 percent from the previous year, recording at 21.7 million cards.



Figure 30: Number of electronic cards



Source: Bank of Thailand

By comparing ATM cards to debit cards, it could be clearly seen that the number of debit cards trended upwards continuously as commercial banks utilized more promotional strategies to stimulate debit card usage. In this regard, issuance fees and annual fees of debit cards were the same as ATM cards but debit cards could be used for payment of goods and services at points of sale and had various additional benefits, for example, health insurance protection and points accumulation and discounts at participating stores. As a result, debit cards continued to receive higher preference. In 2015, the proportion of debit cards stood at 53.7 percent of all electronic cards.

Usage of electronic cards in Thailand could be categorized into four transaction types, namely deposits, withdrawals, funds transfer and payment for goods and services. In this connection, ATM card and debit card usages were mostly for cash withdrawals at ATM/CDM, followed by funds transfer, cash deposits and payment for goods and services. In contrast, almost all credit card usages were for payment of goods and services at points of sale via EDC terminals, followed by online payment. However, in 2015, Thais' electronic card usage behaviors continued to change interestingly. Details of each transaction type are as follows.

Table 1: Volumes and values of electronic cards in 2015

Transaction type	Volume (million transactions)			Value (billion Baht)		
	ATM	Debit	Credit	ATM	Debit	Credit
Deposits	12.3 (-44.3%)	85.0 (14.9%)	n/a	90.4 (-60.4%)	915.6 (6.3%)	n/a
Withdrawals*	375.4 (-5.5%)	1,365.2 (9.9%)	19.1 (5.0%)	1,658.7 (-6.4%)	6,497.1 (6.8%)	128.4 (5.6%)
Funds transfer	63.7 (16.0%)	267.3 (8.4%)	n/a	464.3 (22.3%)	3,529.1 (-7.5%)	n/a
Payment for goods and services	12.7 (23.5%)	94.9 (11.9%)	374.7 (4.6%)	36.5 (60.2%)	257.6 (10.1%)	1,227.50 (4.8%)

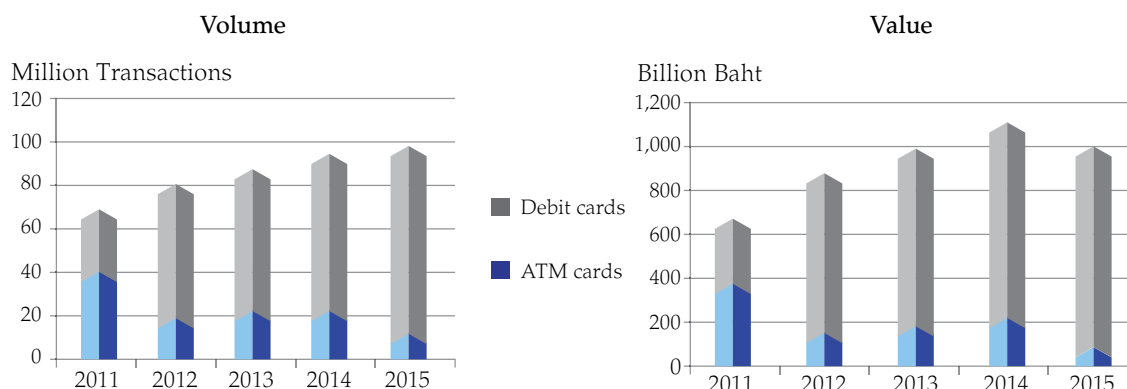
( ) represents growth rates in 2015 compared to 2014

\* refers to cash withdrawal or cash advance from ATM/CDM

## Cash deposits

In 2015, cash deposits at CDM totaled 97.3 million transactions, increasing by one percent from the previous year. The values equivalent to 1.1 trillion Baht. Cash deposits via electronic cards were mostly conducted with debit cards. Meanwhile, the value of cash deposits via electronic cards dropped significantly by eight percent. Most of the reduction could be attributed to a decrease in the number of ATM cards by 3.4 million cards, which resulted in more than 60 percent reduction in the value of cash deposits via ATM cards.

Figure 31: Volumes and values of cash deposits



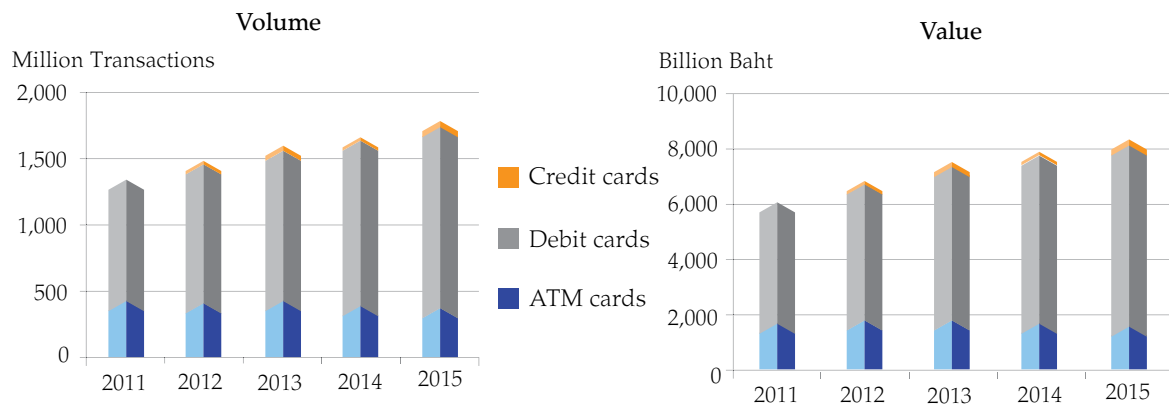
Source: Bank of Thailand



## Cash withdrawals and cash advances

In 2015, the volume of cash withdrawals at automated machines totaled 1,759.7 million transactions, equivalent to 8,284.2 billion Baht, growing by 6.2 and 3.9 percent in terms of volume and value, respectively. This reflected that Thais continued to prefer withdrawing cash from automated machines for day-to-day spending. Categorized by electronic card type, it could be observed that cash withdrawals via ATM cards and debit cards increased slightly, growing at six and four percent in terms of volume and value, respectively. Meanwhile, cash advances via credit cards at automated machines also increased, growing at five percent in terms of both volume and value.

Figure 32: Volumes and values of cash withdrawals



Source: Bank of Thailand

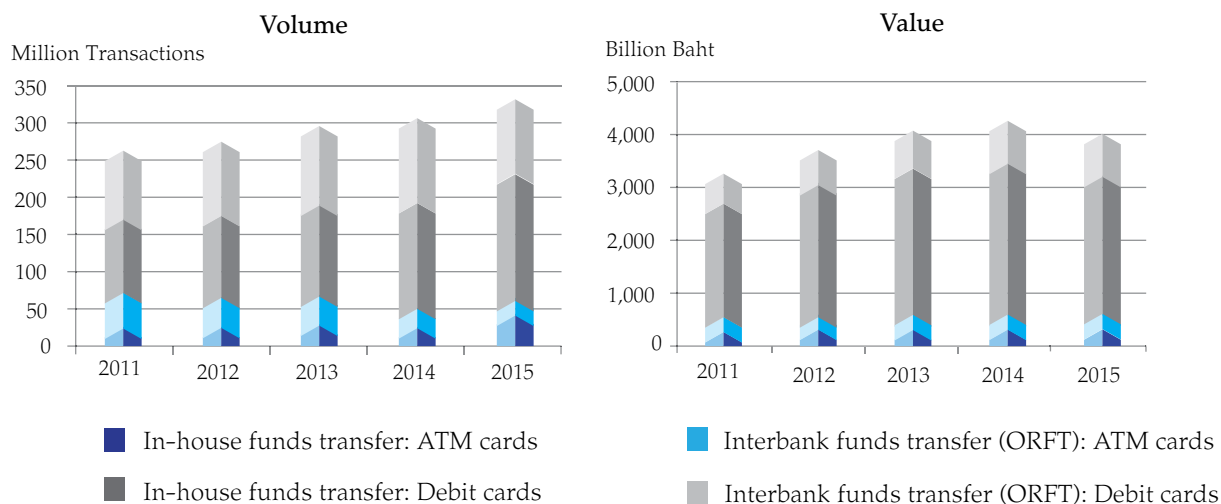
## Funds transfer

In 2015, the volume of funds transfer via electronic cards at automated machines totaled 330.9 million transactions, growing at 10 percent. In value terms, however, funds transfer dropped by five percent to register at 3,993.3 billion Baht – marking the first year of reduction in the value of funds transfer via electronic cards at automated machines.

This owed to the fact that people had other convenient and quick channels for funds transfer, including internet banking and mobile banking. Divided into in-house funds transfer and interbank funds transfer, it could be seen that most funds transfer were in-house transactions since there is no charges or service fee. In this regard, the proportions of in-house funds transfer stood at 63 and 79 percent in terms of volume and value, respectively. Nonetheless, the value of in-house funds transfer contracted marginally while interbank funds transfer (ORFT) contracted in terms of both volume and value.



Figure 33: Volumes and values of funds transfer



Source: Bank of Thailand

## Payment

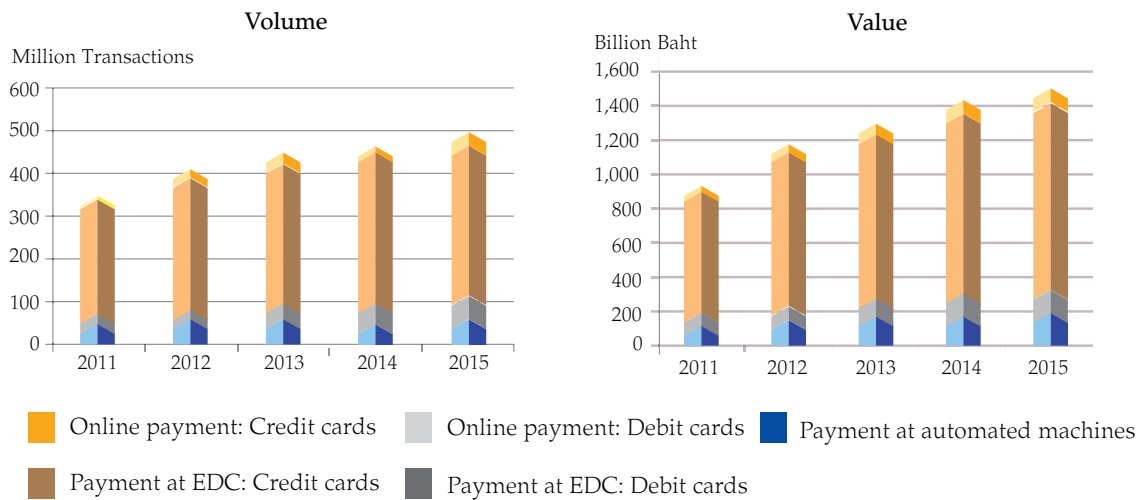
There are three main channels of payment via electronic cards – EDC, automated machines (bill payment) and online. In 2015, the volume of payment via electronic cards totaled 482.3 million transactions, equivalent to 1,521.7 billion Baht in value terms, growing at 6.5 percent from the previous year in terms of both volume and value. This reflected that Thais continually increased payment via electronic cards. The proportion of payment at EDC stood above 85 percent of all payment via electronic cards in terms of both volume



and value. This was followed by payment at automated machines at approximately 11 percent while the other four percent constituted online payment. However, the highest growing channel of payment via electronic cards was online payment which expanded at 60 and 44 percent in terms of volume and value, respectively. This trend was consistent with Thais' behavior, they have more confident and prefer to buy goods and services on e-Commerce.

Considering usage of each type of electronic card through various channels in terms of both volume and value, it could be observed that Thais preferred to use credit cards at EDC and online the most. This comprised approximately 90 percent of all electronic card usage through such channels. For payment at automated machines, Thais preferred to use debit cards which made up 70 percent of usage. Meanwhile, the average transaction values for all payment channels were similar, registering at 3,348 Baht/transaction for automated machines, 3,137 Baht/transaction for EDC and 3,187 Baht/transaction online, respectively.

Figure 34: Volumes and values of payment



Source: Bank of Thailand

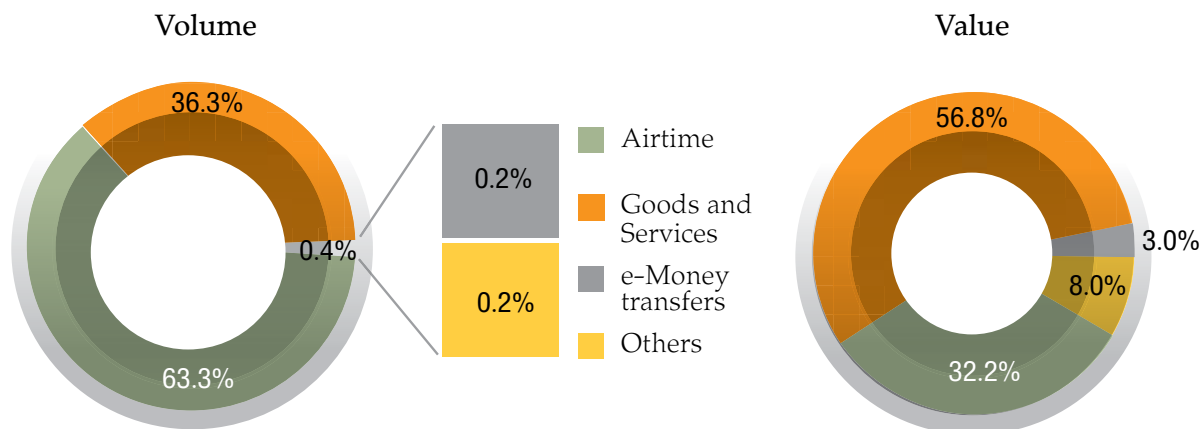
## e-Money

At the end of 2015, there were 26 e-Money service providers, increasing by five service providers from last year. Of these, eight were banks – the same as last year while 18 were non-banks. According to service provider categories as per the Royal Decree on Regulating Electronic Payment Services B.E. 2551 (2008), there was one List A service provider, five list B service providers and 20 List C service providers<sup>15</sup>. e-Money service was still dominated by non-banks whose proportion of e-Money cards or accounts stood at 94.3 percent of all cards/accounts. At the end of 2015, there were 31.7 million e-Money card/accounts in total.

The volume of e-Payment usage was predominantly e-Money service offered by non-banks, most of which were low-value transactions (< 500 Baht), constituting 98.4 percent of the total number of transactions. Comparison of e-Money service by banks and non-banks revealed that a proportion of banks' e-Money service was for corporate customers, for example, e-Money card for petrol. Meanwhile, most non-banks' e-Money customers were retail customers, including mobile phone users which were significant in number. In terms of transaction value,

<sup>15</sup> e-Money List A refers to e-Money that is used to purchase specific goods or services that pre-determined by a single service provider, excluding e-Money used specifically to provide convenience to consumers without profit-making from its issuance. / List B refers to e-Money that is used to purchase specific goods or services that are pre-determined from multi-service providers at locations under the same distribution and service network systems. / List C refers to e-Money that is used to purchase specific goods or services that are pre-determined from multi-service providers anywhere with no restriction single distribution and service network systems. List of e-Money service providers according to the e-Payment Royal Decree can be found on [www.bot.or.th](http://www.bot.or.th) under "Payment Systems".

Figure 35: Proportion of volumes and values of e-Money spending, classified by type (2015)



Source: Bank of Thailand

the average value of transaction of bank service providers stood at 1,615.1 Baht/transaction while that of non-bank service providers stood at 71.9 Baht/transaction. As for e-Money transaction purposes, most transactions were for mobile phone or airtime top-ups, representing a high 63.3 percent of total transaction volume while payment for goods and services stood at 36.3 percent. However, in value terms, the proportion of value of e-Money for payment for goods and services comprised more than half of the total value of transactions, equivalent to 38,405.0 million Baht.



Although e-Money usage in 2015 totaled 67,616.6 million Baht overall, it was still considered a low-value transaction compared to other transactions such as funds transfer or electronic card usages.

In 2015 Q4, there was an interesting development in e-Money service as e-Money service providers collaborated to allow customers to make inter-operator funds transfer. This would benefit both service providers and users in terms of operating costs and funds transfer convenience, thereby serving as a great starting point in promoting e-Commerce and e-Payment.

## 5

Glossary and abbreviation

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ATM	Automated Teller Machine
BAHTNET	Bank of Thailand Automated High-Value Transfer Network
BCM	Business Continuity Management
BIS	Bank for International Settlements
BOT	Bank of Thailand
CDM	Cash Deposit Machine
EBPP	Electronic Bill Presentment and Payment
e-Business	Electronic Business
e-Commerce	Electronic Commerce
e-Invoicing	Electronic Invoicing
e-Money	Electronic Money
e-Payment	Electronic Payment
e-Tax invoice	Electronic Tax invoice
e-Wallet	Electronic Wallet
EDC	Electronic Data Capture
EFTPOS	Electronic Funds Transfer at Point Of Sale
ETC	Electronic Transactions Commission
FSAP	Financial Sector Assessment Program



HKMA	Hong Kong Monetary Authority
ICAS	Imaged Cheque Clearing and Archive System
ISO	International Organization for Standardization
KYC/CDD	Know Your Customer/Customer Due Diligence
m-Commerce	Mobile Commerce
NITMX	National ITMX Company Limited
Non-bank	Non-bank financial institution
NPMS	National Payment Message Standard
ORFT	Online Retail Funds Transfer
PFMIs	Principles for Financial Market Infrastructures
PIRPS	Prominently Important Retail Payment Systems
PSC	Payment Systems Committee
QR code	Quick Response Code
RTGS	Real Time Gross Settlement
SEC	Securities and Exchange Commission Thailand
SFIs	Specialized Financial Institutions
SIPS	Systemically Important Payment Systems
SRS	Securities Requirement for Settlement
STP	Straight-Through Processing
WC-PSS	Working Committee on Payment and Settlement Systems

## 6

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**Table 1: Basic statistical data**

	2010	2011	2012	2013	2014	2015
Population (millions)	63.88	64.08	64.46	64.79	65.12	65.73
GDP current price (billion Baht)	10,802.4	11,300.5	12,349.0	12,901.5	13,132.2	13,537.5
GDP per capita (Baht)	169,104.60	176,360.65	191,576.57	199,127.92	201,647.47	205,955.96
Exchange rate vis-a-vis US\$ (at year-end)	30.15	31.70	30.63	32.82	32.96	36.08

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

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

	2010	2011	2012	2013	2014	2015
<b>Total fixed network telephone subscribers (millions)</b>	<b>6.92</b>	<b>6.66</b>	<b>6.38</b>	<b>6.06</b>	<b>5.69</b>	<b>5.37</b>
<b>Total mobile telephone subscribers (millions)</b>	<b>71.62</b>	<b>77.60</b>	<b>85.01</b>	<b>92.46</b>	<b>97.68</b>	<b>83.05</b>
Postpaid	7.29	7.97	9.78	11.65	12.85	14.32
Prepaid	64.33	69.64	75.23	80.81	84.83	68.73
<b>Total Internet users (millions)</b>	<b>19.79</b>	<b>25.09</b>	<b>25.15</b>	<b>26.14</b>	<b>27.65</b>	<b>38.02</b>
<b>Penetration rates</b>						
Fixed network telephone (%)	10.84	10.40	9.89	9.35	8.74	8.17
Mobile telephone (%)	112.12	121.11	131.88	142.71	149.99	126.35

Sources: National Electronics and Computer Technology Center and TRUEHITS

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

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

	2010	2011	2012	2013	2014	2015
<b>Narrow money (1+2)</b>	<b>1,302,442</b>	<b>1,414,298</b>	<b>1,598,262</b>	<b>1,661,304</b>	<b>1,682,469</b>	<b>1,778,049</b>
1. Currency outside Depository Corp & Central Gov.	937,201	1,036,015	1,136,303	1,188,888	1,200,331	1,250,924
Banknotes in circulation	1,114,518	1,248,569	1,350,932	1,425,282	1,503,679	1,539,848
Coins in circulation	43,348	46,953	50,864	54,322	56,622	59,888
Less: currency held by Central Gov.	1,256	986	854	1,115	1,247	1,094
Less: currency held by Depository Corp.	219,409	258,520	264,640	289,601	358,723	347,718
Held by commercial banks	193,495	221,289	210,596	238,668	299,916	290,772
Held by finance companies	0	0	0	0	0	0
Held by Specialized Financial Institutions	25,737	36,905	53,602	50,538	58,385	56,544
Held by savings cooperatives	177	326	441	395	422	402
Held by money market mutual funds	0	0	0	0	0	0
2. Transferable deposits at Depository Corp.	365,241	378,282	461,959	472,416	482,138	527,125
Transferable deposits at Bank of Thailand	2,943	3,053	4,554	3,225	2,708	2,697
Transferable deposits at commercial banks	357,378	368,192	451,295	464,220	475,561	519,296
Transferable deposit at Specialized Financial Institutions	4,920	7,037	6,110	4,970	3,870	5,131

Source: Bank of Thailand

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

	2010	2011	2012	2013	2014	2015
Currency outside Depository Corp. & Central Gov. <sup>1</sup>	937	1,036	1,136	1,189	1,200	1,251
Transferable deposits at Depository Corp.	365	378	462	472	482	527
Narrow money	1,302	1,414	1,598	1,661	1,682	1,778
Broad money <sup>2</sup>	11,779	13,560	14,967	16,062	16,808	17,552

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)**

	2010	2011	2012	2013	2014	2015
Balances held at central bank	78.2	59.3	88.7	89.8	95.6	98.7
Required reserves	457.8	488.5	655.6	668.2	733.5	759.3
Free reserves	2,110.7	2,004.5	2,489.4	2,575.2	2,529.8	2,362.4
Transferable deposits at other banks	6.7	7.9	6.5	3.7	4.5	2.8
Memorandum item:						
Institutions borrowing from central bank	10.0	0.0	124.7	119.4	98.9	78.8

Source: Bank of Thailand

**Table 6: Indicators of the use of various cashless payment instruments - Volume of transactions (in thousands)**

	2010	2011	2012	2013	2014	2015
<b>Paper-based:</b>	<b>114,558</b>	<b>115,427</b>	<b>122,875</b>	<b>118,365</b>	<b>118,791</b>	<b>120,450</b>
In-house cheque <sup>1</sup>	39,435	41,833	48,145	44,793	46,103	49,414
Interbank cheque	75,123	73,594	74,730	73,572	72,687	71,036
<b>Electronic payment cards:</b>	<b>2,164,395</b>	<b>2,480,439</b>	<b>2,827,638</b>	<b>3,182,137</b>	<b>3,404,389</b>	<b>3,641,507</b>
ATM card	542,707	561,136	539,056	535,350	498,939	477,615
for cash withdrawal via ATM	422,546	429,288	424,354	415,872	397,356	375,426
for other purposes <sup>2</sup>	120,161	131,848	114,702	119,478	101,583	102,189
Debit card <sup>3</sup>	1,085,356	1,231,241	1,406,350	1,576,484	1,691,737	1,823,812
for cash withdrawal via ATM	828,607	920,029	1,059,075	1,165,118	1,241,829	1,365,214
for purchasing purpose via EFTPOS	13,802	25,057	30,748	37,221	43,871	56,218
for other purposes <sup>4</sup>	242,948	286,155	316,527	374,144	406,037	402,380
Credit card <sup>5</sup>	314,873	339,865	369,920	401,093	425,781	456,728
for purchasing purpose	282,597	308,212	343,346	373,046	397,697	421,201
for other purposes <sup>6</sup>	32,276	31,653	26,574	28,047	28,083	35,526
e-Money <sup>7</sup>	221,459	348,198	512,311	669,210	787,932	883,352
<b>Automated:</b>	<b>274,019</b>	<b>296,861</b>	<b>332,324</b>	<b>346,410</b>	<b>349,034</b>	<b>369,644</b>
Direct credit <sup>8</sup>	166,372	178,147	204,829	214,657	211,479	224,222
Direct debit <sup>9</sup>	80,621	88,086	93,531	93,636	96,205	100,568
ITMX Bulk Payment	24,702	27,901	31,018	34,864	37,944	41,231
BAHTNET <sup>10</sup>	2,323	2,728	2,946	3,253	3,406	3,623

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)

	2010	2011	2012	2013	2014	2015
<b>Paper-based:</b>	<b>51,698</b>	<b>56,168</b>	<b>64,832</b>	<b>64,581</b>	<b>61,595</b>	<b>61,556</b>
In-house cheque <sup>1</sup>	17,918	20,363	25,989	24,262	23,632	24,116
Interbank cheque	33,780	35,805	38,843	40,319	37,963	37,440
<b>Electronic Payment cards:</b>	<b>9,871</b>	<b>11,496</b>	<b>13,350</b>	<b>14,498</b>	<b>15,091</b>	<b>15,246</b>
ATM card	2,508	2,677	2,437	2,451	2,411	2,254
for cash withdrawal via ATM	1,721	1,804	1,852	1,846	1,775	1,659
for other purposes <sup>2</sup>	787	873	584	606	636	595
Debit card <sup>3</sup>	6,294	7,620	9,489	10,475	10,997	11,201
for cash withdrawal via ATM	3,670	4,275	5,136	5,743	6,081	6,397
for purchasing purpose via EFTPOS	30	81	94	100	107	135
for other purposes <sup>4</sup>	2,593	3,264	4,259	4,633	4,809	4,670
Credit card <sup>5</sup>	1,052	1,174	1,389	1,524	1,626	1,723
for purchasing purpose	845	964	1,157	1,282	1,384	1,465
for other purposes <sup>6</sup>	207	211	232	241	242	258
e-Money <sup>7</sup>	17.7	24.7	35.4	48.0	56.2	67.6
<b>Automated:</b>	<b>665,846</b>	<b>780,284</b>	<b>667,134</b>	<b>699,527</b>	<b>778,999</b>	<b>814,821</b>
Direct credit <sup>8</sup>	8,121	10,163	12,495	13,500	14,065	15,199
Direct debit <sup>9</sup>	2,021	3,014	3,749	4,117	4,467	6,250
ITMX Bulk Payment	1,081	1,393	1,771	2,187	2,469	2,538
BAHTNET <sup>10</sup>	654,623	765,714	649,119	679,723	757,998	790,834

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 oversea 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 oversea 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)

	2010	2011	2012	2013	2014	2015
Credit card <sup>1</sup>	3,753	4,011	4,598	4,871	5,325	5,447
Debit card <sup>2</sup>	76	181	191	194	196	248

Source: Bank of Thailand

<sup>1</sup> Domestic and oversea spending of Thai credit cards via EFTPOS and domestic spending of foreign credit cards.

<sup>2</sup> Domestic and oversea spending of Thai debit cards via EFTPOS.

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

	2010	2011	2012	2013	2014	2015
ATM card	6,767	7,711	8,265	8,381	8,229	7,586
Debit card <sup>1</sup>	8,961	9,198	9,956	10,579	10,979	10,678

Source: Bank of Thailand

<sup>1</sup> Domestic and oversea cash withdrawal of Thai debit cards via ATM

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

	2010	2011	2012	2013	2014	2015
<b>Notes and coins</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>1,719,372</b>
<b>Notes:</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>	<b>1,659,484</b>
500000 Baht	116	117	118	118	118	134
1000 Baht	889,617	1,028,838	1,102,770	1,202,441	1,282,400	1,318,903
500 Baht	113,746	119,826	128,217	138,695	124,976	140,933
100 Baht	98,235	108,220	121,358	129,095	141,047	140,768
80 Baht	0	0	149	150	151	152
60 Baht	1,166	1,173	1,175	1,178	1,181	1,187
50 Baht	12,799	9,599	13,194	13,347	19,070	18,379
20 Baht	25,134	28,045	28,840	30,801	36,884	35,372
10 Baht	3,342	3,340	3,336	3,334	3,332	3,330
5 Baht	195	196	196	196	196	196
1 Baht	121	121	121	121	121	121
50 Satang	9	9	9	9	9	9
<b>Coins:</b>	<b>43,348</b>	<b>46,953</b>	<b>50,864</b>	<b>54,322</b>	<b>56,622</b>	<b>59,888</b>

Source: Bank of Thailand

**Table 11: Institutional infrastructure**

	2010	2011	2012	2013	2014	2015
<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>	231	231	241	182	182	181
Value of Accounts (million Baht) <sup>1</sup>	422,059	353,916	381,223	439,175	310,132	533,250
<b>Thai Commercial Banks</b>						
Number of Institutions	17	16	16	16	17	19
Number of Branches	5,961	6,183	6,421	6,696	6,986	7,040
Number of Accounts	79,073,950	77,588,699	81,344,121	84,433,032	86,582,576	88,529,904
Value of Accounts (million Baht)	6,886,058	7,367,485	9,540,114	10,350,543	11,065,024	11,347,475
<b>Specialized Financial Institutions</b>						
Number of Institutions	6	6	6	6	6	6
Number of Branches	2,002	2,240	2,348	2,549	2,445	2,445
Number of Accounts	37,838,856	37,366,503	48,233,488	54,377,970	59,539,994	63,243,722
Value of Accounts (million Baht)	2,435,471	2,249,904	3,199,296	3,604,591	3,901,266	4,214,675

**Foreign Bank Branches**

Number of Institutions	15	15	15	14	14	12
Number of Branches	15	18	19	19	19	19
Number of Accounts	92,402	96,165	86,556	89,617	79,641	72,132
Value of Accounts (million Baht)	511,604	623,338	679,790	700,469	789,461	798,701

**Post Office**

Number of Institutions	1	1	1	1	1	1
Number of Branches	1,281	1,295	1,298	1303	1316	1324
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)**

	2010	2011	2012	2013	2014	2015
<b>Paper-based:</b>	<b>75,123</b>	<b>73,927</b>	<b>74,705</b>	<b>73,572</b>	<b>72,687</b>	<b>71,036</b>
Intra-provincial Cheque in Bangkok and vicinity <sup>1</sup>	53,864	52,432	53,137	52,051	50,215	48,701
Intra-provincial Cheque in Regional Area <sup>2</sup>	14,533	14,775	14,800	13,312	11,455	11,053
Inter-provincial Cheque <sup>3</sup>	6,726	6,720	6,768	8,209	11,017	11,283
<b>Automated:</b>	<b>116,249</b>	<b>130,554</b>	<b>150,961</b>	<b>170,152</b>	<b>184,270</b>	<b>192,770</b>
BAHTNET <sup>4</sup>	2,323	2,728	2,946	3,253	3,406	3,623
ITMX Bulk Payment	24,470	27,901	31,018	34,864	37,944	41,231
ORFT-ATM ( Online Retail Funds Transfer)	89,456	99,926	116,997	132,035	142,920	147,916

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

<sup>1</sup> ICAS was implemented to replace 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)**

	2010	2011	2012	2013	2014	2015
<b>Paper-based:</b>	<b>33,780</b>	<b>35,998</b>	<b>38,740</b>	<b>40,319</b>	<b>37,963</b>	<b>37,440</b>
Intra-provincial Cheque in Bangkok and vicinity <sup>1</sup>	30,247	32,053	34,445	35,980	33,530	33,063
Intra-provincial Cheque in Regional Area <sup>2</sup>	3,137	3,508	3,811	3,684	3,500	3,368
Inter-provincial Cheque <sup>3</sup>	396	438	484	655	933	1,008
<b>Automated:</b>	<b>656,242</b>	<b>767,749</b>	<b>651,660</b>	<b>682,762</b>	<b>761,411</b>	<b>794,347</b>
BAHTNET <sup>4</sup>	654,623	765,714	649,119	679,723	757,998	790,834
ITMX Bulk Payment	1,070	1,393	1,771	2,187	2,469	2,538
ORFT-ATM ( Online Retail Funds Transfer)	549	642	771	852	944	975

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

<sup>1</sup> ICAS was implemented to replace 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**

	2010	2011	2012	2013	2014	2015
<b>Bond registry system:</b>						
Government securities	6,665	7,204	7,979	4,222	2,009	1,372
<b>Book-entry system:</b>						
Equity securities (in millions)	2.83	2.66	3.09	3.72	4.09	4.72
Government securities (in millions)	0.13	0.14	0.18	0.19	0.20	0.20

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)**

	2010	2011	2012	2013	2014	2015
<b>Bond registry system:</b>						
Government securities	20.00	22.08	28.05	50.00	22.75	49.52
<b>Book-entry system:</b>						
Equity securities	816.31	1,028.71	839.00	1,220.0	1,027.83	1,081.33
Government securities	66,816.66	80,468.68	82,954.00	81,839.00	87,274.82	86,804.54

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

**Table 16: Number of participants in selected payment and settlement systems**

	2010	2011	2012	2013	2014	2015
BAHTNET <sup>1</sup>	66	64	65	64	64	65
Intra-provincial Cheque in Bangkok and vicinity <sup>2</sup>	38	38	36	36	36	37
Intra-provincial Cheque in Regional Area <sup>3</sup>	22	22	21	23	36	23
Inter-provincial Cheque <sup>4</sup>	37	37	35	36	36	37
ITMX Bulk Payment	33	32	32	31	30	33
<b>Bond registry system:</b>						
Equity securities	-	-	-	-	-	-
Government securities	529,237	341,968	283,597	211,631	113,842	460,436
<b>Book-entry system:</b>						
Equity securities and Government securities	89	89	86	86	38	39

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 replace 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>						
	2010	2011	2012	2013	2014	2015
<b>Total of Automated machines</b>	<b>44,468</b>	<b>47,759</b>	<b>52,242</b>	<b>56,851</b>	<b>61,614</b>	<b>63,432</b>
Bangkok	14,639	15,099	15,802	16,304	16,727	16,790
Central	15,669	16,658	18,036	19,640	21,288	21,894
Northeast	5,314	6,091	7,128	7,270	9,255	9,699
North	4,304	4,760	5,474	6,110	6,853	7,142
South	4,542	5,151	5,802	7,527	7,491	7,907
<b>Total of EFTPOS terminals</b>	<b>258,248</b>	<b>267,168</b>	<b>264,236</b>	<b>311,289</b>	<b>340,179</b>	<b>357,986</b>
Bangkok	133,353	133,712	129,777	146,012	159,800	144,730
Central	56,468	61,134	61,898	76,939	84,051	100,352
Northeast	16,387	17,751	18,926	23,937	26,687	32,787
North	24,697	25,966	24,432	30,296	33,207	38,035
South	27,343	28,605	29,203	34,105	36,434	42,082

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						
	2010	2011	2012	2013	2014	2015
<b>Total</b>	<b>72,627,280</b>	<b>77,818,347</b>	<b>83,966,632</b>	<b>87,970,298</b>	<b>93,491,615</b>	<b>93,919,633</b>
Credit card <sup>1</sup>	14,187,815	15,328,291	16,870,025	18,626,864	20,303,751	21,762,275
ATM card	24,308,945	23,756,810	24,108,467	24,101,957	25,066,799	21,743,686
Debit card	34,130,520	38,733,246	42,988,140	45,241,477	48,121,065	50,413,672

Source: Bank of Thailand

<sup>1</sup> Data include non-bank.

Table 19: Sources of payment revenues of Thai commercial banks (million Baht)						
	2010	2011	2012	2013	2014	2015
<b>Total</b>	<b>52,719</b>	<b>57,190</b>	<b>65,571</b>	<b>71,680</b>	<b>76,257</b>	<b>81,745</b>
Credit card	15,562	19,867	24,049	27,419	29,501	31,347
ATM card and e-banking	18,477	19,288	22,475	25,194	26,851	29,275
Money transfer and collection	16,516	15,937	16,875	16,944	17,896	19,208
Cheque-related fee	2,164	2,098	2,172	2,123	2,009	1,915

Source: Bank of Thailand



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

	2010	2011	2012	2013	2014	2015
<b>Total</b>	<b>3,653</b>	<b>4,153</b>	<b>3,991</b>	<b>4,428</b>	<b>4,313</b>	<b>3,979</b>
Credit card	2,564	2,945	2,653	3,011	2,838	2,781
ATM card and e-banking	47	49	50	50	48	41
Money transfer and collection	913	1,029	1,162	1,234	1,306	1,055
Cheque-related fee	129	130	126	133	121	102

Source: Bank of Thailand

**Table 21: Daily average of BOT payment services - Volume of transactions**

	2010	2011	2012	2013	2014	2015
BAHTNET <sup>1</sup>	9,600	11,180	12,025	13,278	13,901	14,787
Intra-provincial Cheque in Bangkok and vicinity <sup>2</sup>	222,578	214,885	216,886	212,433	204,961	198,779
Intra-provincial Cheque in Regional Area <sup>3</sup>	60,053	60,553	60,407	54,336	46,756	45,113
Inter-provincial Cheque <sup>4</sup>	27,795	27,543	27,625	33,505	44,966	46,052
ITMX Bulk Payment	101,116	114,346	126,606	142,304	154,874	168,288

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 replace 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 average of BOT payment services - Value of transactions (billion Baht)**

	2010	2011	2012	2013	2014	2015
BAHTNET <sup>1</sup>	2,705	3,138	2,649	2,774	3,094	3,228
Intra-provincial Cheque in Bangkok and vicinity <sup>2</sup>	125	131	141	147	137	135
Intra-provincial Cheque in Regional Area <sup>3</sup>	13.0	14.4	15.6	15.0	14.3	13.7
Inter-provincial Cheque <sup>4</sup>	1.6	1.8	2.0	2.7	3.8	4.1
ITMX Bulk Payment	4.4	5.7	7.2	8.9	10.1	10.4

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 replace 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**

	2010	2011	2012	2013	2014	2015
BAHTNET <sup>1</sup>	18,542	18,581	19,303	22,190	21,820	29,033
Intra-provincial Cheque in Bangkok and vicinity <sup>2</sup>	547,686	515,908	477,396	547,406	417,618	484,821
Intra-provincial Cheque in Regional Area <sup>3</sup>	131,468	127,070	125,127	114,492	90,005	97,533
Inter-provincial Cheque <sup>4</sup>	122,979	125,934	125,189	172,463	184,197	188,315
ITMX Bulk Payment	350,156	359,198	417,015	508,748	473,040	574,555

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 replace 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)**

	2010	2011	2012	2013	2014	2015
BAHTNET <sup>1</sup>	4,193.3	5,002.9	3,597.3	8,384.9	3,877.3	4,776.2
Intra-provincial Cheque in Bangkok and vicinity <sup>2</sup>	292.8	259.1	268.2	283.4	266.0	297.5
Intra-provincial Cheque in Regional Area <sup>3</sup>	22.6	23.3	25.7	26.8	25.6	25.1
Inter-provincial Cheque <sup>4</sup>	5.9	6.5	6.8	11.0	12.4	12.6
ITMX Bulk Payment	15.7	19.2	28.8	44.3	77.8	46.4

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 replace 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**

	2010	2011	2012	2013	2014	2015
No. of agreements	519,450	706,439	864,312	1,164,796	6,229,960	10,428,721
Volume of transactions	15,884,571	19,941,530	36,285,076	57,198,604	109,349,726	248,111,728
Value of transactions (million Baht)	109,816	186,511	439,960	751,558	1,364,022	2,569,835

Source: Bank of Thailand

**Table 26: Use of internet banking**

	2010	2011	2012	2013	2014	2015
No. of agreements	4,822,947	5,626,233	6,645,161	8,033,061	10,159,971	11,964,561
Volume of transactions <sup>1</sup>	60,793,740	83,841,394	125,276,726	161,784,249	188,408,939	203,329,357
Value of transactions (billion Baht)	7,891.7	8,779.7	14,112.1	19,548.0	20,500.4	23,882.4

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)**

	2010	2011	2012	2013	2014	2015
<b>Total</b>	<b>109,559</b>	<b>124,832</b>	<b>150,440</b>	<b>173,909</b>	<b>199,633</b>	<b>235,635</b>
ATM	89,456	99,926	116,997	132,035	142,920	147,916
Counter	9,162	10,010	10,273	9,160	9,146	9,791
Internet banking <sup>1</sup>	10,941	14,896	23,169	32,714	47,567	77,928

Source: Bank of Thailand

<sup>1</sup> Data collected since 2009.

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

	2010	2011	2012	2013	2014	2015
<b>Total</b>	<b>832</b>	<b>1,014</b>	<b>1,250</b>	<b>1,399</b>	<b>1,588</b>	<b>1,819</b>
ATM	549	642	771	852	944	975
Counter	172	213	227	201	191	189
Internet banking	111	159	252	347	453	656

Source: Bank of Thailand

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

	2010	2011	2012	2013	2014	2015
<b>Total</b>	<b>264,295</b>	<b>283,786</b>	<b>323,168</b>	<b>359,423</b>	<b>435,653</b>	<b>429,287</b>
<b>Total bill payment at bank counters</b>	<b>81,941</b>	<b>83,334</b>	<b>87,425</b>	<b>87,992</b>	<b>101,821</b>	<b>107,262</b>
Cash	78,081	79,540	83,320	84,297	95,544	101,594
Cheque	1,640	1,658	1,663	1,560	1,895	2,321
Others	2,220	2,136	2,442	2,135	4,381	3,348
<b>Total bill payment at non-bank counters</b>	<b>182,354</b>	<b>200,452</b>	<b>235,742</b>	<b>271,431</b>	<b>333,832</b>	<b>322,025</b>
Cash	179,088	196,846	231,446	266,825	329,794	318,340
Cheque	277	298	351	346	333	361
Others	2,989	3,308	3,946	4,260	3,705	3,324

Source: Bank of Thailand

Table 30: Bill payment at counters - Value of transactions (billion Baht)						
	2010	2011	2012	2013	2014	2015
<b>Total</b>	<b>5,744</b>	<b>6,115</b>	<b>6,461</b>	<b>5,985</b>	<b>7,031</b>	<b>7,704</b>
<b>Total bill payment at bank counters</b>	5,296	5,604	5,855	5,278	6,250	6,886
Cash	1,856	2,057	2,133	1,933	2,400	2,696
Cheque	2,113	2,620	2,613	2,506	2,361	2,629
Others	1,326	928	1,109	838	1,490	1,561
<b>Total bill payment at non-bank counters</b>	<b>448</b>	<b>511</b>	<b>606</b>	<b>708</b>	<b>781</b>	<b>818</b>
Cash	444	507	600	700	773	810
Cheque	2	2	2	3	3	3
Others	3	3	4	5	5	4

Source: Bank of Thailand

Table 31: Use of e-Money <sup>1</sup>						
	2010	2011	2012	2013	2014	2015
No. of cards/accounts	11,483,751	13,804,287	20,220,438	24,286,746	26,852,975	31,070,380
Volume of transactions	221,458,769	348,197,980	512,331,773	669,210,802	787,932,371	883,352,315
Value of transactions (million Baht)	17,742.9	24,732.8	35,375.8	48,031.9	55,801.7	67,616.6

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)						
	2010	2011	2012	2013	2014	2015
<b>Total fraud</b>	<b>186</b>	<b>150</b>	<b>179</b>	<b>204</b>	<b>355</b>	<b>2,319</b>
Payment channels <sup>2</sup>	44	34	51	79	48	2,018
Payment instruments <sup>3</sup>	142	116	128	125	307	301

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.

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## 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	<ul style="list-style-type: none"> <li>- Gross Domestic Product expressed in current prices</li> <li>- Using the average foreign exchange rate</li> </ul>
Tables 6-7	<ul style="list-style-type: none"> <li>- Data on cheque includes both in-house and interbank cheques and is compiled from all commercial banks as well as Specialized Financial Institutions</li> <li>- Data on volume of credit card transactions includes bank cards, affinity cards, non-bank cards/affinity cards, and foreign credit cards used in Thailand</li> <li>- Data on credit card spending includes information on non-bank credit cards</li> <li>- Data on e-Money excludes pre-paid card for mobile phones</li> <li>- Direct credit refers to pre-authorized in-house direct credit funds transfers</li> <li>- Direct debit refers to pre-authorized in-house direct debit funds transfers</li> <li>- BAHTNET data consists of data relating to interbank funds transfers, third party funds transfers and multilateral funds transfers</li> </ul>
Table 8	<ul style="list-style-type: none"> <li>- Average value of monthly transactions by debit cards and credit cards via EFTPOS terminals within and outside the country</li> </ul>
Table 11	<ul style="list-style-type: none"> <li>- Excludes data on the number of accounts and outstanding amounts held by Bank of Thailand's regional offices</li> </ul>
Tables 14-15	<ul style="list-style-type: none"> <li>- Equity securities settlements are processed via scripless book-entry system only</li> </ul>



- Table 17 - Include ATMs and CDMs
- Data on the number of EFTPOS terminals represents information consolidated from commercial banks and some credit card companies
- Table 18 - Data on the number of credit cards includes non-bank credit cards
- Tables 21-24 - BAHTNET data includes data relating to interbank funds transfers, third-party funds transfer and multilateral funds transfer
- Table 26 - Excluding enquiry transactions
- Table 31 - Electronic money data does not include data on top up of mobile cards

## 8

## Bibliography

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- Bank for International Settlements, Principles for Financial Market Infrastructures, <http://www.bis.org/cpmi/publ/d101.htm>
  - Bankgirot, Annual Report, 2014, [http://www.bgc.se/globalassets/dokument/arsredovisning--rapporter/2014\\_annualreport\\_en.pdf](http://www.bgc.se/globalassets/dokument/arsredovisning--rapporter/2014_annualreport_en.pdf)
  - CPMI-IOSCO, Guidance on Cyber Resilience for Financial Market Infrastructures, 29 June 2016, <http://www.bis.org/press/p160629.htm>
  - Electronic Transactions Commission, Notification of the Electronic Transactions Commission on National Payment Message Standard (Mor.Tor.Or. 1-2558), 2015, <https://standard.eta.or.th/wp/wp-content/uploads/2012/10/20150306-ETS-1-2558-NPMS.pdf>
  - BPAY, QR Code Standards for Payment in Australia, <http://www.bpay.com.au/Personal/Paying-with-BPAY.aspx>
  - European Payments Council, QR Code Standards for Payment in the European Union, <http://www.europeanpaymentscouncil.eu/index.cfm/knowledge-bank/epc-documents/quick-response-code-guidelines-to-enable-data-capture-for-the-initiation-of-a-sepa-credit-transfer/>
  - Nacha, QR Code Standards for Payment in the United States, <https://www.nacha.org/programs/qr-bill>
  - European Central Bank, Recommendations for the Security of Mobile Payments (draft), <https://www.ecb.europa.eu/paym/cons/pdf/131120/recommendationsforthesecurityofmobilepaymentsdraftpc201311en.pdf>
  - Hong Kong Monetary Authority, Guidelines for Mobile Payments in Hong Kong, <http://www.hkma.gov.hk/media/eng/doc/key-information/speeches/20131125e2.pdf>
  - Canadian Bankers Association, Guidelines for Mobile Payments in Canada, [http://www.cba.ca/contents/files/misc/msc\\_20120514\\_mobile\\_summary\\_en.pdf](http://www.cba.ca/contents/files/misc/msc_20120514_mobile_summary_en.pdf)

## Payment Systems Report

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Enquiries can be addressed to:

Payment Systems Policy Team 2, Payment Systems Policy Department, Bank of Thailand

Telephone: 0-2356-7067-8, 0-2356-7783 or Facsimile: 0-2282-7717

E-mail: PSD-PaymentSystemsPolicyTeam2@bot.or.th

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Bank of Thailand  
273 Samsen Road, Watsamphraya, Phra Nakhon District, Bangkok 10200  
[www.bot.or.th](http://www.bot.or.th)