

A Case Study in Mobile: Paving the Way for Mobile Payments in Thailand

October 2015

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Introduction

While most consumers in Southeast Asia still prefer to transact in cash, more are using credit and debit cards at a growing number of businesses, from large department stores to small street vendors that accept them. Increasing ubiquity of smartphones in the region has also led more consumers to conduct financial transactions and shopping-related activities on their mobile devices. Similar to their Southeast Asian neighbors, most Thais have typically favored cash – 68% stated that it is their preferred mode of payment in a 2013 Nielsen survey.¹ However, Thailand’s payment environment is changing as more people adopt smartphones, use online and mobile banking, and the financial infrastructure becomes more supportive of electronic payments, including mobile.² This briefing examines the mobile payment landscape in Thailand – key drivers of mobile payment adoption as well as some of the challenges. Key drivers assessed include broad smartphone adoption, developed financial infrastructure, and consumer interest in payment innovation. Although mobile payment availability is currently limited in Thailand, consumers are eager to try digital wallets and other new technologies. Barriers evaluated include preference for cash, security concerns, and consumer behavior. The paper concludes with some recommendations for increasing adoption in this market.

¹ Nielsen (2014, February 11). *Malaysian consumers prefer to pay with cash over credit cards*. Retrieved from <http://www.nielsen.com/my/en/press-room/2014/preferred-payment-methods.html#>.

² Thailand is a country with approximately 68 million people, with a median age of 36 years. (Source: U.S. Central Intelligence Agency (2015, August 11). *CIA World Fact Book: Thailand*. Retrieved from <https://www.cia.gov/library/publications/the-world-factbook/geos/th.html>). The average monthly household income was 25,403 baht (\$827) in 2013 (Source: Thailand Ministry of Information and Communication Technology National Statistical Office. See <http://web.nso.go.th/>). Thailand’s financial system is comprised of 2,020 commercial banks and specialized financial institutions (FIs) that together own approximately 9,664 branches and 61,839 ATMs nationwide as of the end of 2014. Specialized FIs serve government policies in promoting economic development and supporting investment. (Source: Bank of Thailand (2015). *Thailand’s Financial Landscape*, Retrieved from <https://www.bot.or.th/English/FinancialInstitutions/FIStructure/Pages/default.aspx>).

Key Drivers

(1) Smartphone adoption is growing

Availability of affordable smartphones in recent years has fueled a shift from feature phones to smartphones across Southeast Asia, including in Thailand.³ Smartphones are becoming an increasingly ubiquitous and essential part of daily life for Thais. In Q1 2015, 76.5% of the 4.3 million handsets sold in Thailand were smartphones.⁴ According to Nielsen's 2014 Smartphone Insights study, 58% of Thais owned smartphones in 2014, up 9% from 49% in 2013 and is projected to reach 100% by 2018.⁵ The survey by Nielsen also found that smartphone adoption is more prevalent among the affluent, younger, and urban consumer segments, not unlike adoption in the U.S. Similarly, Google found that 64% of Thais used smartphones in 2014.⁶

Thailand's mobile industry consists of three leading mobile network operators (MNOs): Advanced Info Service (AIS), DTAC, and TrueMove. Most mobile subscriptions are prepaid (85%), and a smaller percentage is postpaid (15%).⁷ Android has 74% of the smartphone operating system (OS) market share, far ahead of Apple iOS with 17%. Windows and other OSs represent less than 10% of market share.⁸ MNOs began offering 3G service in Thailand in 2013; 4G service is also available, but on a limited basis. Widespread availability of faster mobile network service has allowed Thais to use a broader range of features and capabilities on their smartphones, including mobile banking and commerce.

(2) Financial infrastructure helps to promote electronic and mobile payments

The Bank of Thailand's (BOT) objectives include developing payment systems infrastructure and formulating policies that promote safety and efficiency in the national payment systems. In conjunction with the expanding financial infrastructure in Thailand, the BOT in 2011 issued its *Payment Systems Roadmap 2012-2016* that promotes broader use of electronic payments, including mobile, as one of its key projects.⁹ The BOT has been working with financial institutions (FIs), businesses, and government

³ Yeo, M. and Putcha, S (2015, September). *The future of digital payments part 1: The Asian consumer's evolving appetite for new methods of payments*. Retrieved from <http://www.aciworldwide.com/-/media/files/collateral/executive-insights-future-of-digital-payments-part-1.pdf>.

⁴ Yozzo. (2015, June 7). *Thailand's telecom market Q1 2015*. Retrieved from <https://speakerdeck.com/yozzo/thailands-telecom-market-information-q1-2015>.

⁵ Nielsen (2015, April 25) *5 Trends that will shape the mobile landscape in 2015*. (Provided by Nielsen).

⁶ Google (2015). *Consumer barometer*. Retrieved from <https://www.consumerbarometer.com/en/#!/insights/?countryCode=TH>.

⁷ NBTC, http://www2.nbtc.go.th/TTID/mobile_market/market_share/.

⁸ Yozzo. (2015, June 7). *Thailand's telecom market Q1 2015*. Retrieved from <https://speakerdeck.com/yozzo/thailands-telecom-market-information-q1-2015>.

⁹ Bank of Thailand (2013). *Payment systems report 2013*. Retrieved from https://www.bot.or.th/English/PaymentSystems/Publication/ps_annually_report/Documents/Payment_2013_E.pdf.

agencies to encourage use of electronic payments in both the public and private sectors through development of standard processes, regulatory modifications, and other economic incentives.

Thailand has a highly developed financial sector with bank branches and ATMs widely available.¹⁰ According to the World Bank, 78% of the country's population over 15 years of age had a bank account in 2014.¹¹ Despite the prevalence of cash payments, the number of credit and debit cards issued has been increasing rapidly, and credit cards are beginning to penetrate the low-income market. Debit cards are replacing ATM cards. The growth in point-of-sale (POS) terminals is resulting in broader merchant acceptance of payment cards. Additionally, several large banks now offer mobile POS services that work with plug-in card readers attached to Android and iOS mobile devices (e.g., Krungri Bank's Quick Pay and Kasikorn Bank's K-Merchant on Mobile), making it easier for small businesses to accept card payments and reduce cash.

(3) Consumer interest in payment innovation

More Thai consumers use mobile banking: A growing number of Thais conduct banking transactions via the mobile channel. Mobile banking enrollment rose steadily between 2010 and 2013, representing a CAGR of 31%. Data on mobile banking activity was limited until the BOT revised its definition to distinguish between online and mobile banking in 2014, resulting in more FIs reporting their mobile banking data. Figure 1 shows that the number of enrolled bank accounts increased 435% from 1.2 million in 2013 to 6.2 million in 2014.¹² Mobile banking transaction volume and value also increased during this period. Most large banks now offer mobile banking services, and many have apps for Android and iOS devices. Similar to FIs in the United States, basic features include checking account balance and activity, fund transfers, bill payment, and branch/ATM locator. The 2014 McKinsey *Asia Personal Financial Services Survey* found that 15% of Thais used mobile banking in 2014, an increase from 9% in 2011, with usage skewing towards affluent and younger consumers.¹³ In comparison, in the U.S., use of mobile

¹⁰ International Finance Corporation (IFC) (2011). *IFC mobile money study 2011 - Thailand*. Retrieved from <http://www.ifc.org/wps/wcm/connect/b7713e804a02e4d19d2dfdd1a5d13d27/MobileMoneyReport-Thailand.pdf?MOD=AJPERES>

¹¹ The World Bank (2014). *Financial inclusion data / Global finindex* [for Thailand]. Retrieved from <http://datatopics.worldbank.org/financialinclusion/country/thailand>. In comparison, the World Bank estimates that 94% of the U.S. population (age 15+) has a bank account, and the FDIC estimates that 87% of U.S. households had bank accounts in 2013.

¹² Bank of Thailand (2015). *Use of mobile banking and internet banking*. Retrieved from <http://www2.bot.or.th/statistics/BOTWEBSTAT.aspx?reportID=688&language=ENG>.

¹³ Barquin, S. and Vinayak HK. (2015, March). *Digital banking in Asia: What do consumers really want*. McKinsey&Company. Retrieved from http://www.mckinsey.com/insights/financial_services/capitalizing_on_asias_digital-banking_boom.

banking among mobile phone users with a bank account was much higher – 39% in 2014, an increase from 21% in 2011.¹⁴

Figure 1: Thai Mobile Banking Enrollment, Volume, and Value, 2010-2014*

	2010	2011	2012	2013	2014
Enrolled Bank Accounts (Thousands)	519	706	864	1,164	6,229
Transaction Volume (Millions)	1.45	1.88	3.68	5.92	12.62
Transaction Value (Billions of Baht)¹⁵	11	20	49	75	156

*Transaction data includes internal and external funds transfers and e- payments for good and services

Source: Bank of Thailand, July 2015

Mobile technology plays a larger role in the Thai POS and online shopper experience: The physical POS and ecommerce retail channels are converging in Thailand, as they are in other developed countries. While ecommerce currently accounts for only one percent of total retail sales in Thailand, more retailers are expanding into online and mobile channels as they recognize that shoppers are using their smartphones to research products, compare prices, and make purchases.¹⁶ Large retailers, such as Big C, Tops, and Tesco Lotus, are targeting urban customers in particular.



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The Thai market is embracing multiple technologies for mobile payments, such as QR codes,¹⁷ near field communication (NFC)¹⁸ and in-app solutions. For example, Uber launched its mobile app for taxi and rideshare service in Bangkok in early 2014. Starbucks implemented its QR code mobile payment app at all 215 locations across Thailand in March 2015.¹⁹ In July 2015, LINE mobile messaging app launched a mobile

¹⁴ Board of Governors of the Federal Reserve System (2015, March). *Consumers and Mobile Financial Services 2015*. Available for download from <http://www.federalreserve.gov/econresdata/consumers-and-mobile-financial-services-report-201503.pdf>.

¹⁵ 2010-2014 Thai Baht per USD exchange rate ranged between 30.49 to 32.48 (Source: CIA World Fact Book). <https://www.cia.gov/library/publications/the-world-factbook/fields/2076.html>.

¹⁶ A.T. Kearney (2015, February). *Lifting the barriers to e-commerce in ASEAN*. Available for download from <http://www.retailinasia.com/article/tech/online-retailing/2015/02/retailwatch-lifting-barriers-e-commerce-asean>.

¹⁷ A quick response (QR) code is a machine-readable two-dimensional barcode that contains information (e.g., payment account data) which can be scanned and decoded quickly.

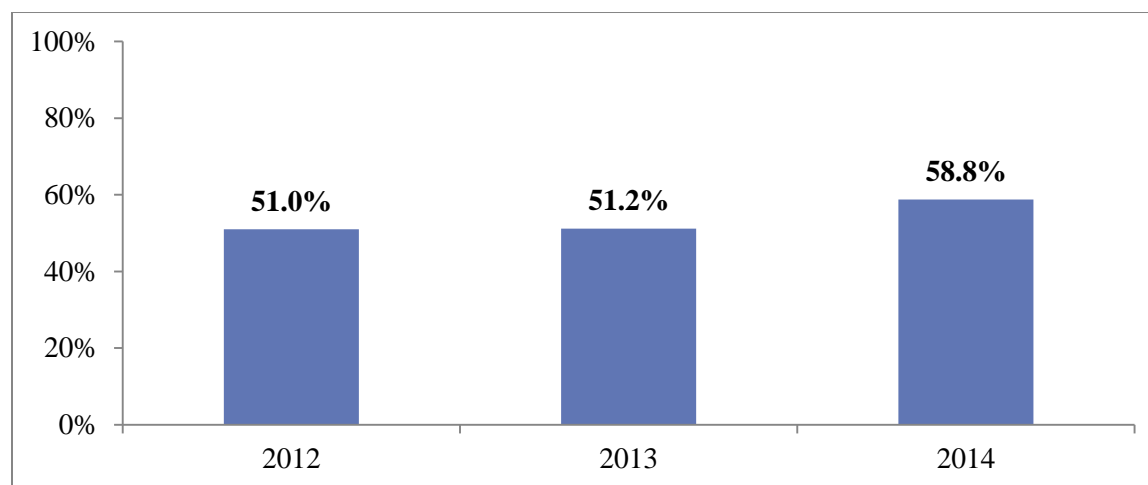
¹⁸ Near Field Communication (NFC) is a standards-based wireless communication technology that allows data to be exchanged between devices that are a few centimeters apart. NFC-enabled mobile phones incorporate a smart chip (secure element) that stores payment credentials securely to emulate a physical contactless card. NFC payment transactions between a mobile phone and a POS terminal use the standard ISO/IEC 14443 communication protocol also used by EMV.

¹⁹ Starbucks Thailand has over 450,000 registered My Starbucks Rewards members since the loyalty program launched in March 2014. The Nation. (2015, March 14). *Starbucks Thailand offers mobile application with loyalty programme*. Retrieved from <http://www.nationmultimedia.com/business/Starbucks-Thailand-offers-mobile-application-with--30255987.html>.

payment feature called LINE Pay that allows users to register their credit and debit cards to make payments at affiliated online and physical POS stores.²⁰ Some retailers, including Tesco Lotus, Big C, Family Mart, Tops, and Starbucks, are equipped with contactless POS terminals that can accept mobile NFC payments, although not all are NFC-enabled yet.

Thai consumers are interested in mobile payments: Consumers are interested in making mobile purchases and trying new technologies, such as digital wallets and contactless mobile payments using NFC. The data in Figure 2 from the *MasterCard Mobile Shopping Survey* show that 59% of consumers reported making mobile purchases in 2014 compared to 51% in 2013, and an additional 14% said they intended to do so in the next six months. The top reasons cited for shopping via mobile were convenience, availability of more apps, and the ability to shop on the go.²¹

Figure 2: Percentage of Thai consumers who made a mobile purchase (in the last 3 months)



Source: 2014 MasterCard Mobile Shopping Survey, 2015

Thais are open to trying new mobile payment technologies. More than half (57%) of respondents in Deloitte's *2014 Global Mobile Consumer Survey* said they would use an in-store mobile payment solution if available.²² Additionally, over three-quarters of the same respondents indicated they would be "somewhat" or "definitely" likely to use digital wallets (77.4%) and mobile NFC payments (76.4%) if the technologies were available, even though fewer than 7% of respondents currently use either method.

²⁰ Leesa-Nguansuk, S. (2015, July 15). Line pay debuts in Thailand, *Bangkok Post*. Retrieved from <http://www.bangkokpost.com/tech/local-news/622716/line-pay-debuts-in-thailand>. Smartphone payments using Line Pay require authentication using a 7-character password (different from Line password), or using the iPhone Touch ID. Line Pay can be used to pay for digital content via the app and online and POS purchases at affiliated merchants. Thailand is Line's second-largest market, comprising 33 million of the company's 205 million users globally.

²¹ MasterCard (2015, June). *MasterCard mobile shopping survey 2014 country report: Thailand*. (Provided by MasterCard).

²² Deloitte (2015). *Mobile multiplies: Global mobile consumer survey infographics, Southeast Asia edition 2014*. Available for download from <http://www2.deloitte.com/content/dam/Deloitte/sg/Documents/technology-media-telecommunications/sg-tmt-global-mobile-consumer-survey-noexp.pdf>.

According to Visa's *2014 Consumer Payment Attitudes Study*, 61% of Thai consumers are "aware of" and 66% "prefer" to use contactless payments,²³ indicating a strong consumer desire to use new payment technologies. However, less than one percent of credit and debit cards are contactless and only two percent of POS terminals are NFC-enabled, limiting consumer opportunities to make NFC payments in Thailand.²⁴ Visa has been working with FIs and merchants to expand contactless issuance and acceptance, and partnered with McDonald's in 2014 to launch contactless readers in their restaurants across Thailand.



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How to overcome the barriers to mobile payments

(1) Most Thais still have a **preference for cash**, despite growth in alternative payment methods, especially credit and debit cards. Three-quarters of consumers indicated that they prefer cash for low-value purchases in RFi Group's *2014 Global Payment Evolution* study.²⁵ Only recently have FIs replaced ATM cards with debit cards. However, many Thais still use debit cards primarily for ATM cash withdrawals, and cash for retail purchases. Some consumers perceive debit cards as less secure and more difficult to manage because funds are debited directly from their bank accounts. If not using cash, they prefer to use credit cards and pay later. Incentives to make mobile and other electronic payments more attractive may help change consumer behavior and reduce use of cash. FIs and retailers could offer promotions and loyalty programs similar to those used to incent credit and debit card adoption to boost usage. They could also encourage mobile payments by offering location-based promotions and mobile-based loyalty rewards.

(2) **Payment security** continues to be a top concern for Thai consumers, as it is in other countries.

Payment fraud (e.g., identity theft, phishing, and malware) is a significant threat that deters many

²³ Visa (2014, July). *Visa consumer payment attitudes study 2014*. Retrieved from <http://visaapnews.asia/post/95809391462/contactless-payment-across-southeast-asia-see>.

²⁴ Visa. (2015, February 4). *Visa in Thailand: 20 years of growth and innovation*. Retrieved from <http://www.pata.org/visa-in-thailand-20-years-of-growth-and-innovation/>. Some of the contactless card issuers include Thai Military Bank (TMB), Kasikorn Bank, Siam Commercial Bank, and Tesco Card Services.

²⁵ RFi Group. (2014). *2014 Global payment evolution study*. Retrieved from http://www.rfintelligence.com/downloads/RFi_Global%20Report%20May%202014%20-%20FINAL%20VERSION.pdf. For insights into the survey results, see Tang, K. (2015, May 8). Cash is king? Not in this part of the world, *CNBC*. Retrieved from <http://www.cnbc.com/id/102657227>.

from using electronic payments in general, not just mobile. According to a 2014 study by A.T. Kearney, 62% of online shoppers in Thailand are reluctant to provide their credit card information online.²⁶ Although actual losses from payment fraud are not high, media reports about their occurrences create consumer distrust and reluctance to make e-payments.²⁷ In response, Thai authorities and FIs have been working together to strengthen payment security measures and to regularly inform customers about fraud prevention. To enhance payment security and reduce card fraud, the BOT worked with card networks over the past decade to migrate from magnetic stripe credit cards to EMV²⁸ chip technology and meet the 2010 liability shift deadline. Today, most POS terminals and credit cards issued in Thailand support EMV chip technology. The BOT is now working with FIs to convert ATM terminals and debit cards to EMV to meet Visa's October 2017 liability shift deadline. To further enhance security and build consumer adoption of digital and mobile payments, the BOT might consider more education on the security aspects of mobile/digital processes and encourage implementation of tools such as geolocation, biometrics, and tokenization.²⁹

- (3) **Consumer behavior**, including payment habits, is difficult to change.. Education helps inform consumers of the potential value, ease, and convenience afforded by electronic and mobile payments. The BOT launched a nationwide education and marketing campaign for e-payments in 2013, and could create a similar initiative for mobile payments. Authentication for most EMV transactions requires chip and signature in Thailand. POS terminals are not customer-facing, which means that in most retail locations, a customer must hand his credit/debit card to a cashier, who swipes or dips the card at the POS terminal, removing control from the consumer. EMV cards are also contact-only, and FIs may want to upgrade their terminals to accept contact and contactless (dual-interface) payments and prepare consumers for the arrival of NFC contactless mobile payments. This would provide the opportunity for consumers to habituate themselves with customer-facing terminals and tapping to pay for purchases.

²⁶ A.T. Kearney (2015, February). *Lifting the barriers to e-commerce in ASEAN*. Available for download from <http://www.retailinasia.com/article/tech/online-retailing/2015/02/retailwatch-lifting-barriers-e-commerce-asean>.

²⁷ Bank of Thailand (2014, May 9). *Payment systems report 2013*. Retrieved from https://www.bot.or.th/English/PaymentSystems/Publication/PS_Annually_Report/Pages/default.aspx.

²⁸ EMV (Europay, MasterCard, and Visa) is a global specification for credit and debit payment cards based on chip card technology that defines requirements to ensure interoperability between chip-based payment cards and terminals. The primary use for these chip-based cards is to perform payment transactions. The encrypted dynamic data supplied by the chip provides a higher level of protection against counterfeiting than magnetic stripe cards. See <http://www.emvco.com>.

²⁹ Tokenization generates a substitute value for real payment credentials to use in a mobile or digital financial transaction, therefore reducing the opportunity for fraud.

Building Adoption via Transit Mobile Payments in Bangkok

Transit presents a major opportunity to build consumer experience in making mobile payments in Thailand, where many people use public transportation daily. Transit riders see value in using their mobile phones to pay for fares and avoid waiting in ticket lines or carrying cash or a fare card. Commuters and visitors regularly travel around Bangkok via different modes of mass transit – bus, elevated railway, subway, and ferry.

Bangkok’s current transit fare systems are primarily cash-based and fragmented. Different modes and agencies make it costly and inconvenient for both riders and operators. Thailand’s Office of Transport and Traffic Policy Planning (OTS) is leading the effort to create a “common ticket” – a standards-based contactless payment system, interoperable across all transport services (e.g., public buses, skytrain, subway, ferries, and toll roads) in the greater Bangkok area. A pilot of the common ticketing system is planned for early 2016. While implementing a unified ticketing system will create a more efficient travel and transfer process between transit modes, an ideal option Bangkok should consider is an account-based, open payment system that could accommodate contactless EMV and NFC technology, and foster growth in mobile payments. Transit agencies would be able to use mobile technology to reduce costs associated with fare collection, increase customer ridership, and improve operational efficiency (e.g., route planning).³⁰

In the interim, riders can use the contactless reloadable stored value Rabbit card for fare payment on the BTS (skytrain) and BRT (bus) today, and on MRT (subway) in the future. Similar to Hong Kong’s Octopus card, the Rabbit card can also be used for payments at participating retailers.³¹ Rabbit’s loyalty program, Carrot Rewards, allows registered users to earn points and other benefits for card reloads, transit fare, and purchases. Mobile network operator AIS piloted the mPAY Rabbit SIM, which allows an NFC-enabled mobile phone to emulate a Rabbit card for payment. While the Rabbit card is a positive effort towards a multi-modal, multi-agency ticketing system, greater consumer awareness and broader acceptance across transit operators and retailers is required to achieve similar ubiquity as that of the Octopus card in Hong Kong.

³⁰ For more information about transit mobile payments, see Tavilla, E. (2015, February). *Transit mobile payments: Driving consumer experience and adoption*. Federal Reserve Bank of Boston. Retrieved from <http://www.bostonfed.org/bankinfo/payment-strategies/publications/2015/transit-mobile-payments.htm>.

³¹ See <http://www.rabbitcard.com/en>.

Conclusion

While mobile payments are still nascent in Thailand, market activity and consumer adoption are evolving. The central bank (BOT) plays a key role by prioritizing the promotion of greater use of electronic and mobile payments. Its involvement provides credibility to the move to electronic and mobile payments. Industry stakeholders have been collaborating on infrastructure development and policy modifications to facilitate broader use and acceptance of electronic payments. Increased smartphone penetration has helped mobile technology play a larger role in consumers' banking and shopping experiences. Based on survey data noted earlier, many Thais are eager to make in-store mobile payments when the technology becomes more readily available. Until then, cash continues to be the preferred payment method, with card payments growing, particularly in urban areas.

Implementation of enhanced security will increase consumer confidence in using digital and mobile payments. Broader education and marketing programs can build consumer awareness of the value and convenience afforded by mobile payments. Retailer incentives, such as promotional offers and loyalty rewards, can play an instrumental role in boosting adoption as well. There are promising opportunities for mobile payments growth in Thailand as the industry matures globally and expands to Southeast Asia. Similar trends in neighboring Singapore and Malaysia may help support broad mobile payments adoption across the region.