Feature Article

Transforming Mobile Phones into E-Wallets in Malaysia

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HIGHLIGHTS

- The Bank's reforms have enabled significant progress in Malaysia's efforts to migrate to e-payments. Moving forward, mobile payments have a significant potential to reduce the usage of cash. Mobile payments are at an early stage of development in Malaysia, but are gaining traction amid the entry of new non-bank players.
- To spur greater adoption of mobile payments, the Bank introduced the Interoperable Credit Transfer Framework (ICTF) that establishes a shared payment infrastructure that connects bank and non-bank accounts while managing the resultant risks.
- The Real-time Retail Payments Platform (RPP) (expected to go live by end-2018) will enable seamless and secure payments via the use of simple identifiers, such as mobile phone, IC, and business registration numbers, and the use of a common Quick Response (QR) code.

Introduction

The migration from paper-based instruments, such as cash and cheques, to cost-effective electronic payment (e-payment) alternatives has the potential to enhance a nation's competitiveness. There are two key aspects: (i) greater cost savings and efficiency gains estimated to be up to 1% of Gross Domestic Product (GDP) yearly[1]; and (ii) lower risk of leakages to the shadow economy, particularly through illicit activities such as tax evasion and corruption. This article provides a broad overview of the Bank's progress in accelerating Malaysia's migration to e-payments, with a focus on key developments relating to mobile payments and its potential to transform Malaysia's payments landscape.

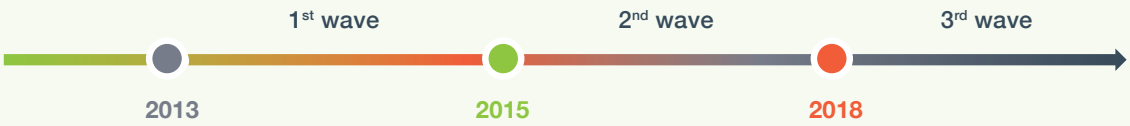
Encouraging progress made in accelerating Malaysia's migration to e-payments

The Bank has a longstanding commitment to accelerate Malaysia's migration to e-payments, which is encapsulated in the Financial Sector Blueprint 2011-2020 (FSBP). To this end, the Bank's strategy has been to optimise and strengthen existing infrastructure that support e-payments. This includes leveraging on electronic fund transfer services (such as the Interbank GIRO (IBG) and the Instant Transfer services which are accessible to 99.9% of current and savings account holders in Malaysia) as an alternative to cheques. To reduce the usage of cash, the Bank continues to promote the use of debit cards given its high penetration[2] among Malaysians. To foster an enabling environment for greater adoption of e-payments, the Bank has introduced three broad waves of reform measures (Diagram 1). Collectively, these reform measures aim to correct price distortions, 'rewire' market incentives, and improve the accessibility, quality and value proposition of e-payment services.

[1] Based on a study conducted by the European Central Bank in 2012, countries with high usage of e-payments as compared to cash and cheques incurred a lower retail payment cost of as low as 0.42% of GDP, while countries with low usage of e-payments as compared to cash and cheques incurred a higher retail payment cost of as high as 1.35% of GDP.

[2] As at end-2017, there were 44.1 million ATM cards that doubled up as debit cards for a population of 32.1 million in Malaysia.

Diagram 1: The Bank's three waves of reform measures for Malaysia's payment systems



Focus Areas	**Electronic fund transfers to displace cheques**	**Debit cards to displace cash**	**Mobile payment to displace cash and cheques**
Challenges	Price distortion between cheques and credit transfer	• High MDR[1] • Moderation in POS terminal growth	Estimated 12 mil adults without online banking services
Initiatives	**Pricing Reform Framework and ePIF[1]** • IBG (max. fee: 10 sen) • Instant Transfer (max. fee: 50 sen) • Introduction of cheque fees and ePIF[1]	**PCRF[1]** • Ceiling for interchange fees • Establishment of MDF[1] • Implementation of Chip and PIN	**ICTF[1]** • Open and fair access to shared payment infrastructure for banks and eligible non-banks • Account reachability through common identifiers • Interoperable QR scheme and common QR code • Instant Transfer transactions up to RM5k to be FOC[2] for individuals and SMEs[3]

[1] Refers to e-Payment Incentive Fund (ePIF), Merchant Discount Rate (MDR), Payment Card Reform Framework (PCRF), Market Development Fund (MDF) and Interoperable Credit Transfer Framework (ICTF)
[2] Free-of-charge
[3] Effective 1 July 2018

As a result of these reform measures, significant progress has been made in widening the adoption of e-payments in Malaysia. Since 2011, the annual cheque volume had declined by 42% while the volume of electronic fund transfers had surpassed cheques by 2.8 times in 2017. In parallel, the volume of debit card transactions had increased by more than six times from 25.1 million in 2011 to 162.3 million in 2017 while the number of point-of-sale (POS) terminals had almost doubled from 207,499 in 2011 to 407,122 in 2017.

Notwithstanding this progress, challenges remain to reduce the usage of cash, particularly among lower tier merchants which often perceive cash to be free despite hidden economic costs (Table 1). For lower tier merchants, the need to pay a transaction fee (also known as the Merchant Discount Rate or MDR) to subscribe to POS terminal facilities continues to be a barrier for such merchants to accept payment cards.[3] This is not unique to Malaysia, as cash usage remains prevalent in most countries (with Sweden being a notable exception) (Chart 1).

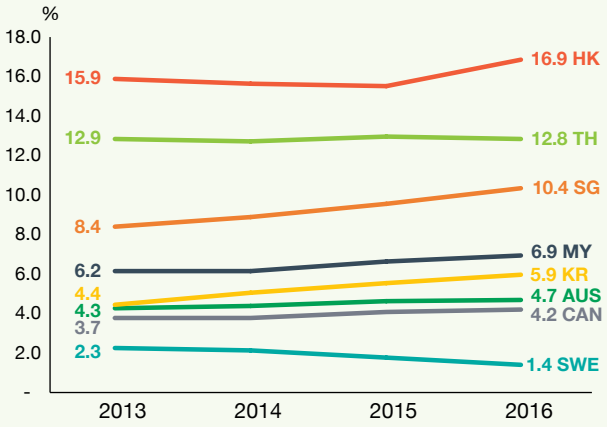
[3] This is so notwithstanding the decline in the average Merchant Discount Rates (MDR) for the period between 2015 and 2017 following the implementation of the Bank's Payment Card Reform Framework, i.e. from 0.86% to 0.56% for the domestic brand debit cards (MyDebit), from 1.39% to 0.89% for international brand debit cards (Visa, Mastercard and UnionPay) and from 1.48% to 1.33% for credit cards.

Table 1: Economic costs of using cash

Type of cost	Examples
Resource costs (Includes time-based costs, labour-based costs, travel costs, capital/technology-based costs and security costs)	• Time to get to an Automated Teller Machine (ATM) to withdraw cash or initiate a payment; • Time costs relating to preparing the cash register before opening hours and closing the cash register at the end of the business day; • End-of-day cash processing at a store or reconciliation; • Error costs relating to losses typically incurred by businesses and government agencies due to imbalances between cash registers and actual receipts; • Mileage to get to the bank branch; • Insurance costs with respect to cash, including insurance premiums paid against losses induced by activities related to the production, issuing, collecting, storing and destroying of banknotes and coins; and • Costs relating to loss, robbery, fraud and theft that are induced by the occurrence of loss, fraud and/or theft of banknotes and coins to the extent they are not covered by insurance.
Transfer costs (Includes fees paid to other stakeholders in the retail payment process for services rendered)	• Fees paid to external actors that are not generated in-house (e.g. to cash logistic companies)

Source: World Bank Group

Chart 1: Ratio of cash-in-circulation over Gross Domestic Product (CIC/GDP) of selected countries[4]



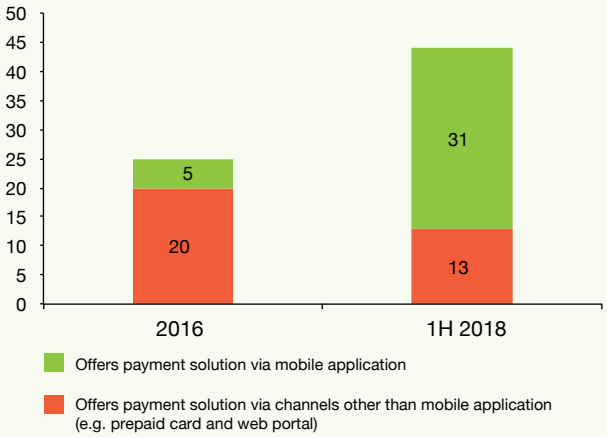
Mobile payments – the next transformative wave in payments

To accelerate the reduction of cash usage, mobile payments are expected to play a significant role going forward. Given the high mobile phone penetration rate in Malaysia[5], mobile phones can readily serve as a means of making and accepting payments with no additional infrastructure costs. For example, the use of Quick Response (QR) code payments can remove the need for POS terminals. At the same time, consumers in Malaysia are also becoming increasingly familiar with making transactions via the mobile channel. The number of mobile banking accounts had increased to 11.5 million in 2017 (2011: 1.6 million). Financial transactions via mobile banking also grew at a compounded annual growth rate of 91% over the past seven years, recording a total of 106.1 million transactions valued at RM48.3 billion in 2017 (2011: 2.2 million transactions; RM0.9 billion).

[4] Australia (AUS), Canada (CAN), Hong Kong (HK), Malaysia (MY), Singapore (SG), South Korea (KR), Sweden (SWE) and Thailand (TH)
[5] As at end-2017, there were 42.4 million mobile phone subscriptions (of which 75.9% are smartphones) for a population of 32.1 million in Malaysia.

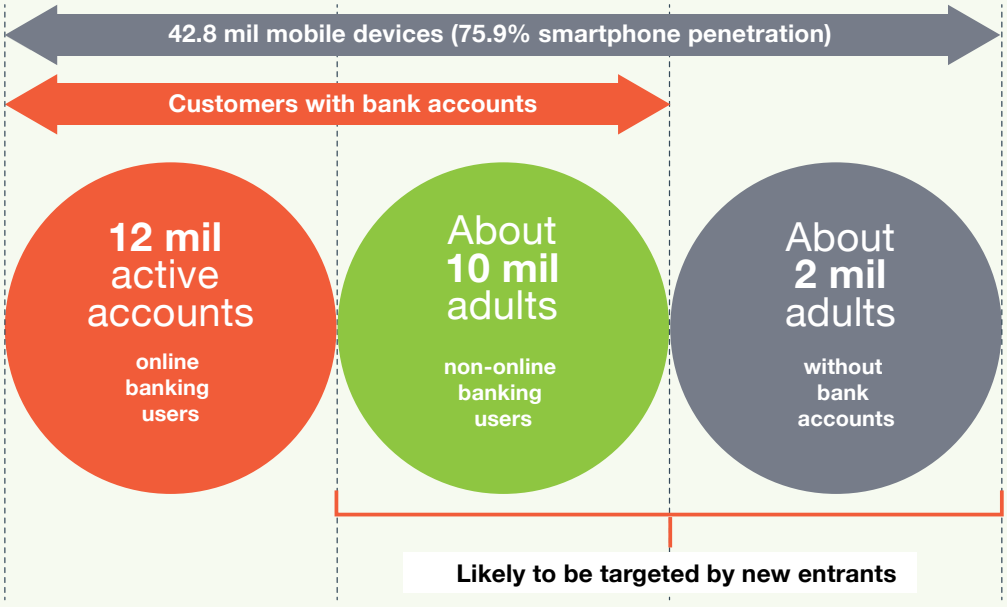
Complementing this, there has been a surge of interest to provide mobile payment services in Malaysia in recent years. The number of approved non-bank e-money issuers had increased from 25 in 2016 to 44 as at end-June 2018, with most of the new entrants offering payment solutions via mobile applications (Chart 2).

Chart 2: Number of approved non-bank e-money issuers in Malaysia



This is expected to contribute further to a more vibrant ecosystem as mobile payment providers develop more new and innovative applications to entice users to adopt digital payment services, including in currently untapped segments. The mobile phone is thus envisioned to accelerate the on-boarding of an estimated 12 million adults (out of a total adult population[6] of 24 million in Malaysia) who currently remain underserved or unserved by existing Internet banking solutions to adopt digital payments (Diagram 2). This is also consistent with the findings made by the World Bank[7] in some countries, where mobile payments had helped to increase access to financial services for adults in lower income groups.

Diagram 2: The mobile phone as a convenient channel to on-board underserved and unserved segments



[6] Individuals aged 15 and above.
[7] Based on the World Bank's "The Global Findex Database 2017" (page 28-29).

Although Malaysia's mobile payment landscape continues to be dominated by banks – which accounted for 98.4% and 99.4% of mobile payment transaction volume and value, respectively in 2017 – mobile payment services offered by non-banks are beginning to gain traction. The number of subscribers to mobile payment services offered by non-banks had more than quadrupled from 0.8 million subscribers in 2017 to 3.4 million subscribers as at end-June 2018. In the first half of 2018 alone, mobile payment transactions processed by non-bank e-money issuers stood at 7.2 million transactions (valued at RM404.7 million), which is more than seven times higher than the 1.0 million transactions in 2017 (valued at RM240.3 million).

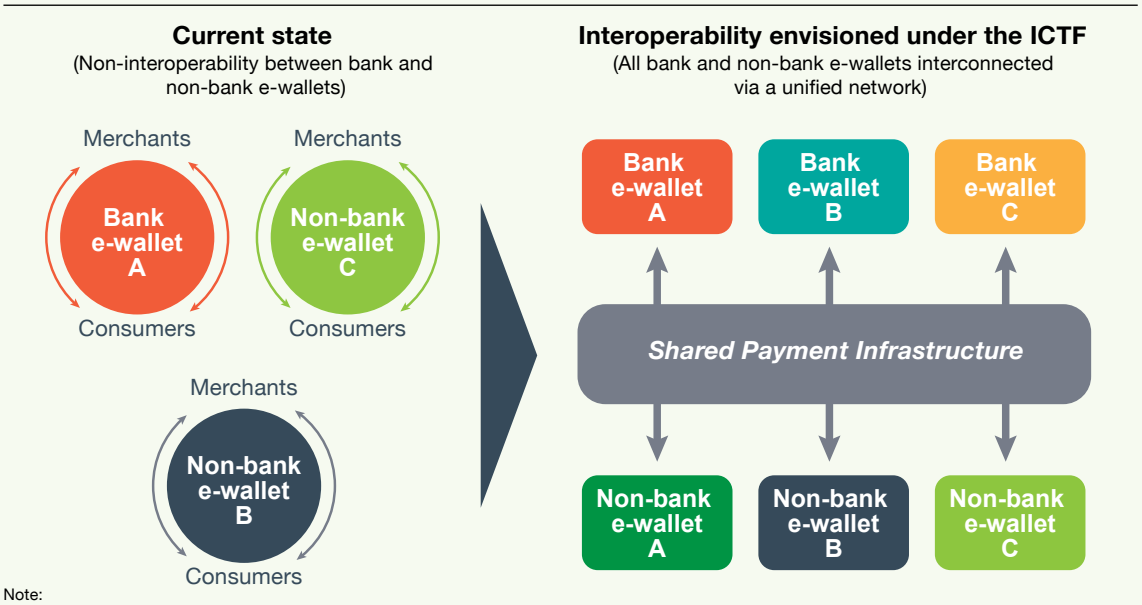
Non-bank mobile payment services also demonstrate a significant potential in reducing the usage of cash due to their usage for lower value transactions. Of note, non-bank mobile payments recorded an average transaction value of RM15 in the first half of 2018, compared to RM391 for mobile banking.

The Bank's approach to foster an enabling environment for mobile payments

Although mobile payments are still at an early stage of development in Malaysia, the Bank expects the current trends to intensify further. To this end, the Bank seeks to foster an enabling environment for mobile payments while managing the resultant risks, such as those arising from the introduction of new payment technologies and the proliferation of players in the market.

A key initiative in this regard is the Bank's Interoperable Credit Transfer Framework (ICTF)[8], which took effect on 1 July 2018. The ICTF seeks to promote collaborative competition ('co-opetition'), namely: (i) industry players collaborate at the infrastructure level through a shared payment infrastructure, which is intended to expand network reach and avoid the duplication of resources; and (ii) competition is envisioned to take place at the product level through the development of innovative value-added features for end-users. This may include a superior user experience and seamless integration with lifestyle features, such as loyalty programmes for food and beverage (F&B), entertainment and other services. This approach reflects the Bank's objective to avoid a fragmented landscape characterised by proprietary payment networks that are not fully interoperable (Diagram 3). Such a challenge is more pronounced in markets that are experiencing a proliferation of players.

Diagram 3: Enabling interoperability under the ICTF

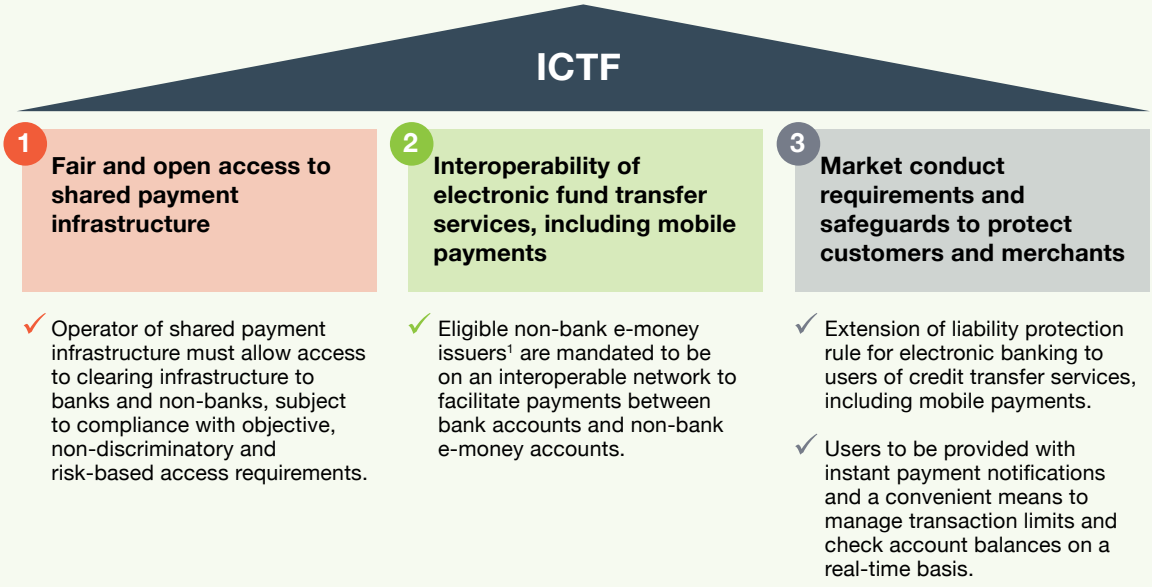


Note:
Examples of bank e-wallets include Maybank, CIMB, Bank Muamalat, etc.
Examples of non-bank e-wallets include TnG Digital, WeChat Pay, GrabPay, Boost, etc.

[8] https://www.bnm.gov.my/index.php?ch=57&pg=543&ac=692&bb=file

Through a shared payment infrastructure, the ICTF aims to ensure that all customer accounts (bank accounts and e-money accounts) are made reachable via an interoperable network to facilitate seamless payments which may in turn drive the adoption of mobile payments to reduce the usage of cash. In achieving these outcomes, the ICTF builds on three key pillars as illustrated below (Diagram 4):

Diagram 4: Three key pillars of ICTF



[1] Non-bank e-money issuers that have a substantial market presence

The Bank's focus on promoting interoperability is highlighted in the ICTF's approach to Quick Response (QR) code payments. In recent years, QR code payments are increasingly being seen as an affordable alternative to cash payments, particularly in Asia where mobile phone penetration is relatively higher. Across different jurisdictions, regulatory approaches have varied. Some authorities have opted for a 'light touch' regulatory environment, thereby allowing for market forces to freely shape the QR payments landscape. Other authorities have sought to organise the industry towards QR code standardisation, with some jurisdictions considering allowing the usage of only a single QR code standard.

Considering Malaysia's market characteristics, the Bank has adopted a unique approach that aims to ensure a unified and interconnected network amid the proliferation of QR code payment providers. More specifically, the ICTF requires banks and eligible non-bank e-money issuers[9] to be connected on a common platform for QR payments, otherwise known as an "interoperable QR payment scheme". The scheme thus enables customers and merchants to make and receive payments seamlessly between one another at the point-of-sale, regardless of the participating QR code payment provider where their accounts are maintained.

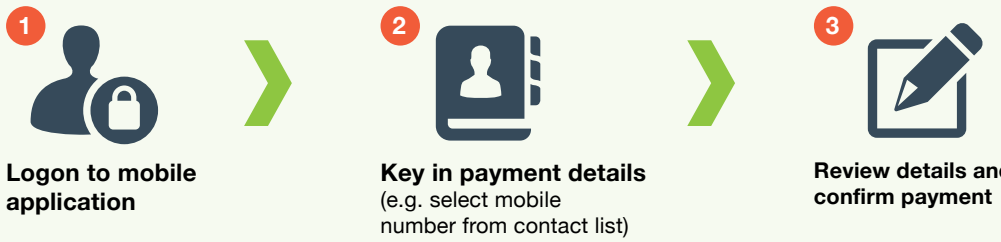
Notwithstanding the requirement for an interoperable QR payment scheme, the Bank does not seek to mandate for only a single QR code standard to be used for Malaysia's mobile payments landscape. Merchants have the discretion to choose whether to use the common QR code standard or a proprietary QR code standard for purposes of accepting payments, depending on their unique business needs. This reflects the Bank's intention to foster market dynamics that do not stifle innovation, given that certain proprietary QR codes may offer distinct value propositions to the merchant.

[9] Eligible non-bank e-money issuers refer to non-bank e-money issuers that have substantial market presence as defined under ICTF.

Implementation of the Real-time Retail Payments Platform (RPP)

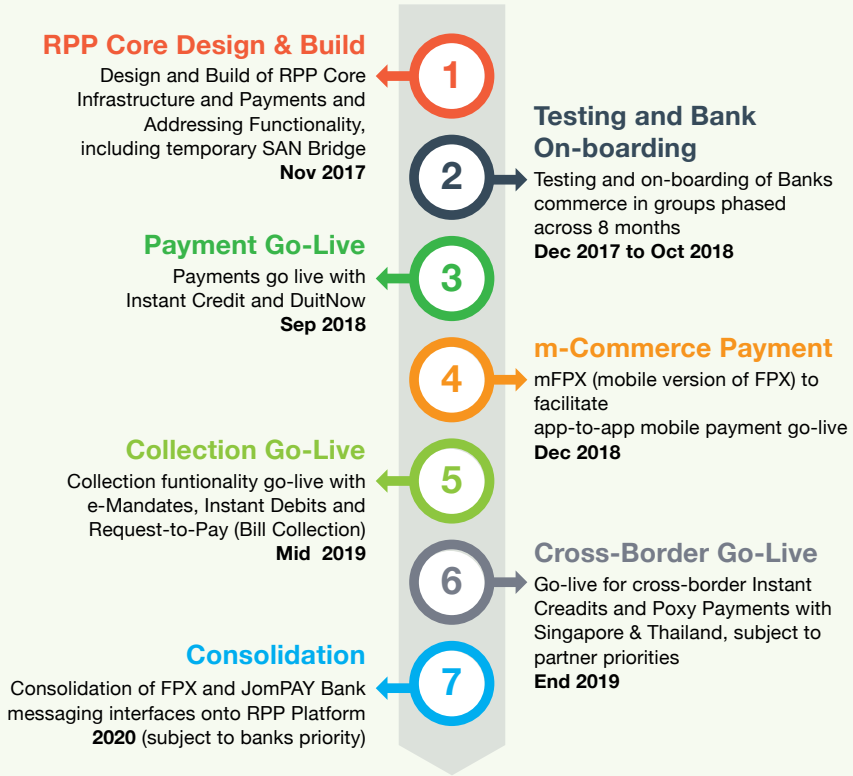
PayNet, as an operator of the shared payment infrastructure, is expected to play a key role to facilitate seamless and secure mobile payments to be made via the new Real-time Retail Payments Platform (RPP). The RPP represents the next phase in enhancing existing real-time fund transfer services, which have been available in Malaysia since as early as 2010. Under the RPP, a National Addressing Database (NAD) will be established to enable payments to be made conveniently using the recipient's mobile number, National Registration Identity Card (NRIC) number or business registration number (Diagram 5). In addition, an interoperable QR payment scheme will also be established under the RPP to facilitate payments to be made through the use of a common QR code standard. In line with the ICTF's principle of 'co-opetition', the RPP will serve as an interoperable network connecting bank accounts and non-bank e-money accounts, including for QR payments.

Diagram 5: Seamless payments enabled via the NAD



The RPP is expected to be launched later this year. To ensure that risks of market fragmentation are well managed, PayNet has been engaging with key non-bank e-money issuers to facilitate a smooth and timely participation in the RPP. Looking ahead, the implementation of the RPP will be supplemented by a series of initiatives outlined in the RPP Technology Roadmap (Diagram 6).

Diagram 6: PayNet's RPP Technology Roadmap[10]



[10] The proposed timelines indicated are tentative and may be subject to change.

The path ahead for mobile payments

Although mobile payments are still at a nascent stage of growth in Malaysia, it is expected to gather momentum moving forward. Consequently, the landscape for mobile payments is likely to continue its rapid evolution. From this, new opportunities will emerge, including a greater potential for collaborative opportunities whether at the industry-wide level or between incumbent players and new entrants. However, shifts in the business model and consumer behaviour towards greater usage of e-payments will also lead to new risks, particularly in relation to cyber security.

In this regard, the Bank in collaboration with the industry will continue to be vigilant in safeguarding the stability and reliability of Malaysia's payment systems, while promoting greater market competition and payment efficiency. For mobile payments in particular, the Bank will focus on the following priority areas moving forward:

- Ensure the timely and effective implementation of the RPP to facilitate interoperable mobile payments to reduce the usage of cash;
- Strengthen security controls and risk management of mobile payment providers to complement existing supervisory expectations in respect of managing cyber security risks; and
- Ensure that financial institutions' customer education measures remain effective and are in line with evolving fraud modus operandi to foster confidence in the use of mobile payment services.

References

Bank Negara Malaysia (2011): 'Recommendations 5.1.1 - 5.1.5', Financial Sector Blueprint 2011-2020, Page 151-161.

Bank for International Settlements (2017): 'Comparative Tables: Banknotes and coins in circulation', Statistics on payment, clearing and settlement systems in the CPMI countries, Page 422.

European Central Bank (2012): 'Costs of Retail Payment Instruments', The Social and Private Costs of Retail Payment Instruments: A European Perspective, Page 25.

Malaysian Communications and Multimedia Commission (2017): Hand Phone Users Survey 2017, Page 11.

World Bank Group (2016): Retail Payments: A Practical Guide for Measuring Retail Payment Costs, Page 20.

World Bank Group (2018): The Global Findex Database 2017, Page 28-29.