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The Payment and Settlement Systems

The Payment and Settlement Systems

INTRODUCTION

An efficient, reliable and smooth functioning payment system contributes to the growth of the economy, soundness of the financial system and smooth functioning of financial markets. Given its importance, there is strong public interest in ensuring that the Malaysian payment systems operate in an effective, safe and efficient manner.

Bank Negara Malaysia performs three roles in the area of payment systems in Malaysia, namely, as the operator and overseer of the payment systems, and facilitator to the payment system services. In this regard, the thrust of Bank Negara Malaysia policies and initiatives in payment systems are aimed at **improving the efficiency and enhancing the safety** of payment systems. These include promoting the **migration from a predominantly paper-based system to electronic payments**, improving the efficiency of the payment systems, and promoting the awareness of payment system issues and the protection of consumer interests.

Bank Negara Malaysia's policies and initiatives in payment systems are aimed at improving the efficiency and enhancing the safety of payment systems, as well as promoting the migration to electronic payments.

ENHANCING EFFICIENCY

The efficiency of payment systems is characterised by the competitive price of services, availability of the various different payment modes to the consumers, and expediency of settlement undertaken within a particular system or between systems. The efficiency of a payment system is influenced by the **accessibility** of the payment system to service providers, market players and users. With wider reach to service providers, market players and users, the payment system would provide more value to the participants of the system as a whole. In 2004, the efficiency of payments system in Malaysia was further improved through wider access and enhancements made to the systems.

To achieve greater efficiency in payment systems, access to the electronic payments were addressed in several ways in 2004. The thrust in policy was to promote a fair and open access to the main payment systems in the country and minimise the industry's risk exposure. Notable developments in this area

were the revision of the access policy for the RENTAS system, the real-time gross settlement system for Malaysia, and participation of the additional members in the Interbank Giro (IBG) and the shared automated teller machines (ATM) network operated by the Malaysian Electronic Payment System (1997) Sdn. Bhd. (MEPS). Access points for businesses and consumers to make Internet-based payments were also enhanced with the introduction of the Financial Process Exchange (FPX).

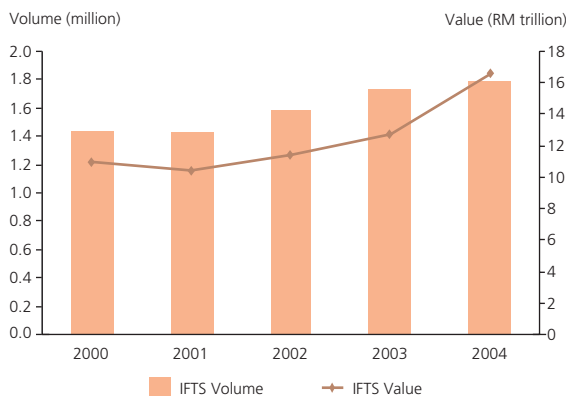
(i) RENTAS

RENTAS is the major wholesale payment system in the country, settling funds and scripless securities between participating institutions on a real-time basis. As at end-2004, there were 51 participants in RENTAS, comprising Bank Negara Malaysia, commercial banks, Islamic banks, merchant banks, discount houses, finance companies, universal brokers and Cagamas Berhad, the national mortgage corporation.

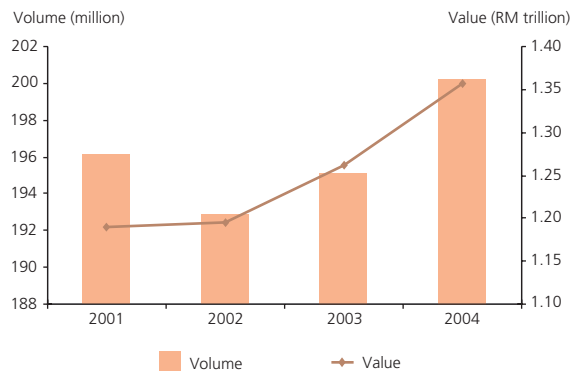
In 2004, Bank Negara Malaysia revised the access policy to the RENTAS system. The objectives of the revision was to improve operational efficiencies and to reduce settlement risk in the financial system with the major financial market participants having direct access to the central real-time payment system operated by Bank Negara Malaysia. New participants would have the same ability of settling financial obligations and receiving funds through the use of the central money, that is, the settlement account held at Bank Negara Malaysia. The revised eligibility criteria to participate in the RENTAS system are as follows:

- i. Financial institutions regulated by Bank Negara Malaysia and universal brokers regulated by the Securities Commission;
- ii. Major clearing houses that facilitate settlement in the money market and capital market; and
- iii. Institutions that are active players in the money market or capital market, and whose average share of settlement consistently exceeds 0.1% of the value of RENTAS transactions.

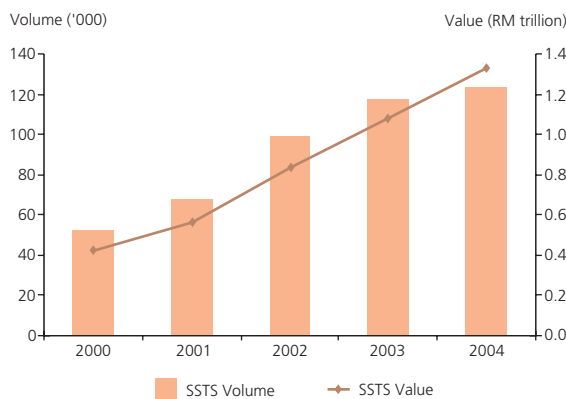
Graph 10.1
RENTAS - IFTS Turnover



Graph 10.3
Volume and Value of Cheques Processed in Malaysia



Graph 10.2
RENTAS - SSTS Turnover



The RENTAS system settled 1.9 million transactions amounting to RM17.9 trillion in 2004, an increase of 4.1% in volume and 29.8% in value of transactions from 2003, indicating its continued significance as the main payment system for financial settlement. The Interbank Funds Transfer System (IFTS) saw an increase of 4% and 30.4%, in terms of volume and value respectively, while transactions through the Scripless Securities Trading System (SSTS) increased by 5.8% and 23.1% respectively.

To improve the efficiency and resilience of the RENTAS system, the system's hardware was upgraded with the latest Tandem S Series, which offers 2.3 times additional capacity. As a result, the processing time improved by about 20% and the end-of-day batch processing cycle has been shortened by two hours.

- (ii) **Sistem Penjelasan Imej Cek Kebangsaan (SPICK)**
Besides facilitating greater flexibility in access to the RENTAS system, Bank Negara Malaysia had

also in 2004, improved the efficiency of the SPICK system. A web-based reporting system was implemented to improve processing of unpaid items (UPI) in December 2004. The new UPI system allows all participating banking institutions to quickly process the reversals of UPI.

The system was implemented at SPICK centres in Kuala Lumpur and Pulau Pinang, and will be extended to Bank Negara Malaysia's SPICK centre in Johor Bahru by March 2005. At SPICK Pulau Pinang and Johor Bahru, submission of diskettes for the UPI file will be replaced with an online submission, improving the delivery time and process cycle for cheque clearing.

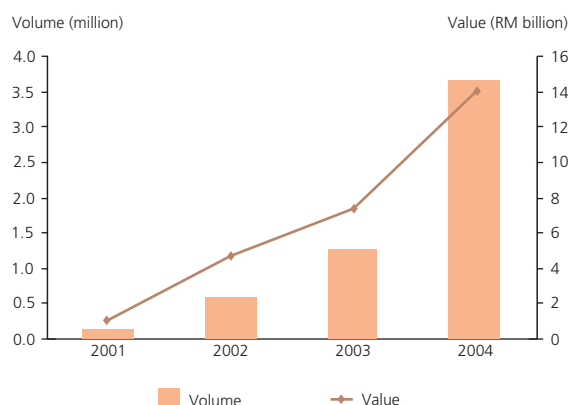
Volume of cheques processed in the country, excluding in-house cheques rose by 2.6% to 202.2 million in 2004 while the value of cheques processed rose by 7.5% to RM1.4 trillion. While concerted efforts are being undertaken in promoting the usage of electronic payment channels, Bank Negara Malaysia recognises that cheques would remain important. As such, Bank Negara Malaysia will embark on a number of initiatives in 2005 to improve the efficiency of cheques as a payment instrument, so as to reduce further the processing time.

(iii) Interbank Giro System (IBG)

In the retail payments arena, the IBG system operated by MEPS facilitates bulk credit transfers to be made between banks electronically on either a T+0 or T+1 basis. The IBG system, which is largely accessible through the commercial banks, has the potential to become a major retail payment system that would reduce the use of cheques given its increasing popularity with businesses and consumers.



Graph 10.4
Interbank Giro Transactions



Recognising that a widely accessible IBG is beneficial, Bank Negara Malaysia promoted an open access policy to IBG by encouraging the removal of barriers of entry to include institutions other than the domestic banking institutions. In December 2004, a locally incorporated foreign bank (LIFB) announced its participation in the IBG. This brings the number of participants in the IBG system to 13. In 2004, the IBG system recorded a significant growth in terms of volume and value of 187.6% and 88.8% respectively, compared to the previous year.

To further spur the growth of IBG usage in the country, an IBG Review Team comprising of representatives from Bank Negara Malaysia, MEPS, the banking industry and relevant Government agencies had been formed in November 2004. The IBG Review Team will formulate a five-year road map to address key issues and formulate specific strategies to encourage users of cheques to migrate to using this electronic channel.

(iv) Shared ATM Network

As at end-2004, there were 5,565 ATMs in Malaysia. Domestic banking institutions own 4,098 ATMs, Islamic banks own 280 while 327 ATMs are owned

by LIFBs. The development financial institutions (DFIs) collectively own 860 ATMs. The MEPS shared ATM network allows member institutions to leverage on each other's ATMs, resulting in cost savings in infrastructure deployment while allowing customers wider accessibility through a larger pool of ATMs. In an effort to enhance efficiency in the financial system and increase connectivity between different types of financial players, a DFI joined the MEPS shared ATM network in June 2004, facilitating customers of the participating banks to have access to an expanded MEPS shared ATM network of 4,416 ATMs.

(v) Financial Process Exchange (FPX)

The FPX was introduced by MEPS in October 2004 as an Internet-based payment system that allows participants such as corporations to make payments electronically. The FPX leverages on the banking institutions' Internet banking services to provide online payments and accompanying payment references for reconciliation purposes.

Bank Negara Malaysia has supported the development of the system, as part of the effort to elevate Malaysia's e-commerce facilities in tandem with the various private sector and Government e-commerce initiatives. The use of an industry-wide payment platform as in the FPX has a comprehensive reach of users. All banking institutions are encouraged to participate in the FPX to be able to provide efficient payment services to their corporate and retail customers, while at the same time forging alliances in a common infrastructure building effort for the benefit of the nation. Currently, there are four banking institutions and five merchants participating in the FPX. As at end-2004, the FPX processed a total of 87 transactions amounting to RM2.6 million.

ENHANCING PAYMENT SYSTEMS SAFETY

The safety and efficiency of the payment systems are important to ensure consumers' confidence in payment systems. Bank Negara Malaysia, in safeguarding the

Table 10.1
Automated Teller Machines

	2000	2001	2002	2003	2004
Number of ATMs ¹	3,944	4,161	4,213	5,241	5,565
Volume of cash withdrawals (million) ²	146.1	174.9	193.5	215.6	264.3
Value of cash withdrawals (RM billion) ²	62.0	71.8	77.6	86.3	110.8

¹ Figures in 2000-2002 comprise domestic commercial banks, LIFBs, Islamic banks and finance companies. Figures in 2003-2004 include the DFIs.

² Figures in 2000-2003 represent transactions involving the domestic commercial banks, LIFBs and finance companies. Figures in 2004 include Islamic banks transactions.

public interest, exercises its regulatory powers and oversight function through the Payment Systems Act 2003. Payment system operators are required to obtain a notification from Bank Negara Malaysia before operating a payment system while issuers of a designated payment instrument (DPI) are required to obtain the necessary approval from Bank Negara Malaysia prior to the issuance of the DPI. Bank Negara Malaysia supervises the activities of the operators of payment systems and issuers of DPI through on-site examinations, as well as off-site reviews of their financial status. In 2004, a total of 14 payment systems operators were given notification for operating payment systems and approvals were given to three issuers of DPI. Bank Negara Malaysia also conducted on-site examinations on two major payment system operators.

To enhance the safety of payment systems, measures were taken to mitigate the risk of fraud and reduce the system's vulnerabilities to operational risk. In this regard, Bank Negara Malaysia and relevant payments industry players have collaborated in a number of areas to ensure that the large value and retail payment facilities are safe and secure. Notable developments in 2004 include the continued migration to a chip-based environment for **ATM cards** and **credit cards**, aimed at reducing counterfeiting of cards by way of skimming and cloning. Measures to address **Internet banking** fraud by way of 'phishing', **security guideline on cheques** and **business continuity planning** mechanisms were also introduced in 2004.

(i) ATM Cards

All LIFBs and two DFIs had completed the full migration of their ATMs and ATM cards to a chip-based environment in July 2004. This followed the successful adoption of the chip infrastructure by the Government for the national identity card, MyKad, which carries an ATM capability, issuance of Bankcard by domestic banking institutions and completion of the ATM upgrade in 2003. To date, the migration to a chip-based ATM infrastructure has resulted in the elimination of ATM fraud due to counterfeiting. As at end-2004, approximately 11.7 million chip-based ATM cards had been issued while 4,966 ATMs had been upgraded to a chip-based platform.

(ii) Credit Cards

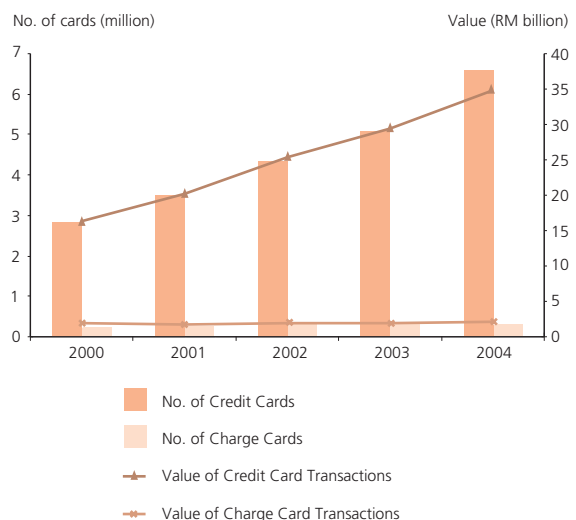
Credit card issuers and acquirers in the banking industry, under the stewardship of Bank Negara Malaysia and the Association of Banks in

Malaysia, had adopted the Europay-MasterCard-Visa (EMV) standard for credit card issuance by end-2004 and the conversion of card acceptance devices (CADs) by end-2005. The conversion of 6.2 million credit cards to the EMV chip-based cards by end-2004 has sent a strong signal that Malaysia is committed in combating credit card fraud. Banking institutions have accorded high priority in upgrading the CADs at high-risk merchant locations well ahead of the end-2005 deadline. As at end-2004, 80% of the 60,000 CADs at retail outlets were EMV-compliant.

Malaysia is one of the few countries in the region that has adopted the EMV standard in order to improve the confidence of consumers, foreign visitors and retailers in the usage and acceptance of credit cards at retail outlets. This is necessary as the number of credit cards issued in Malaysia was 6.6 million with total transactions amounting to RM34.9 billion in 2004. In contrast, charge card operations are relatively small in Malaysia, with 0.3 million charge cards in circulation and total transactions amounting to RM2 billion in 2004.

To address the high level of credit card fraud taking place at petrol stations, which constituted almost 22% of the value of credit card fraud in 2004, petrol companies had taken a positive step to convert terminals located at petrol pumps to be EMV-compliant and disabled the acceptance of magnetic stripe credit cards at self-service pumps on 31 December 2004.

Graph 10.5
Credit Card and Charge Card Operations in Malaysia



Besides skimming card information from the magnetic stripe, wire-tapping can also be used to steal cardholder's information. In this respect, Bank Negara Malaysia required the banking industry to take several preventive measures, including the implementation of a line encryption system to combat wire-tapping fraud. The Malaysian banking industry is one of the few in the Asia Pacific region to take a firm stand by investing in the necessary infrastructure to combat credit card fraud.

(iii) Internet Banking

In line with the growing prominence of Internet banking in Malaysia, efforts were made to preserve consumers' confidence in using the Internet to access banking services. In 2004, an industry-based Internet Banking Task Force was established by Bank Negara Malaysia to develop industry-wide best practices and collaborate with relevant agencies to handle security infringement incidences. Special emphasis was given to thwarting 'phishing' and other forms of identity theft fraud, that is, illegally obtaining personal information of account holders for financial gain. During the year, one bank introduced an additional password protection for their Internet banking customers through a time-limited one-time use password. This measure has been proven to be successful in countering Internet banking fraud.

Currently, there are 14 banking institutions providing Internet banking services to 2 million

subscribers. The number of subscribers increased by 15.4% from the previous year, reflecting the growing acceptance of Internet banking as a convenient and safe delivery channel for accessing banking services.

The use of the Internet as a delivery channel should become more pervasive in the future, as more Internet-based systems and payment gateways are introduced. Besides the MEPS payment gateway, one bank had implemented its own payment gateway in 2004 and three others are making similar arrangements in order to enhance their services to customers. The number of transactions processed by the MEPS payment gateway increased by 650% from 0.2 million in 2003 to 1.5 million in 2004 while the value of transactions processed rose by 1,219% to RM663.3 million. The surge in the use of the MEPS payment gateway was due to the participation of several major merchants active in online offerings.

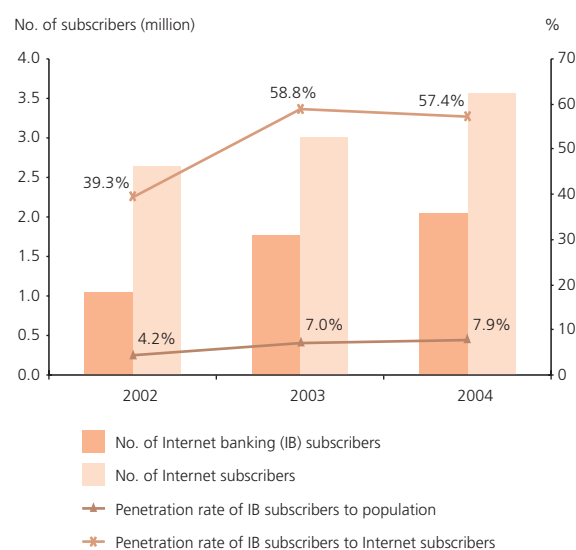
(iv) Minimum Security Standards for Cheques

In July 2004, Bank Negara Malaysia issued the 'Guideline on Minimum Security Standards for Cheques' to reduce incidences of counterfeiting and fraudulent alteration on cheques, and to facilitate detection of such cheques. The Guideline specifies minimum requirements for banks in their roles as paying or collecting banks. The Guideline provides specific requirements on governance arrangements, physical security features on cheques, cheque fraud detection facilities, security management in cheque printing and consumer protection.

(v) Business Continuity Planning

Bank Negara Malaysia places high priority on Business Continuity Planning (BCP) to provide uninterrupted availability of the payment systems through contingency procedures at its recovery centre for the RENTAS and SPICK systems. Apart from conducting monthly live runs for the two payment systems, a review of the financial institutions' BCP arrangements was also conducted in 2004 to identify the strengths and weaknesses of the arrangements in the event of a crisis. Financial institutions have been advised to regularly test their BCPs and several procedural requirements had been put in place to strengthen recovery strategies and minimise disruptions.

Graph 10.6
Internet Banking: Growth and Penetration



Source: Bank Negara Malaysia and the Malaysian Communications and Multimedia Commission

MIGRATION TO E-PAYMENTS

The migration to electronic payments, while requiring investments in infrastructure development, will facilitate cost savings by being able to leverage on new cost effective infrastructure and to continuously meet consumers' payment needs through innovative facilities and products. The relatively faster settlement cycle of electronic payment systems as compared to paper-based systems improves the efficiency of the financial system and the economy.

The overall increase in the usage of non-paper based payment facilities was encouraging in 2004. As a percentage of the total payment instruments volume (excluding cash), the usage of the credit transfers such as IBG, and e-purse for toll payments expanded in 2004 compared to 2003. Payment cards, particularly credit cards, are becoming a convenient alternative to cash and cheques, since auto-debit facilities for paying basic utility bills and Internet payments are commonly offered through credit cards. Cheque as a mode of payment saw a decline in its share of value and volume as other payment instruments became more widely used. However, due to its wide reach, cheque issuance remains popular and its value constitutes 95.7% of total non-cash payments in 2004.

Financial institutions are therefore, encouraged to support the migration efforts by intensifying development and adoption of various electronic payment mechanisms and addressing specific impediments that hinder the adoption of electronic payments. These include promoting their delivery channels in **mobile banking**, and payment instruments such as the **debit card** and **electronic purse**.

(i) Mobile banking

Mobile banking services provide an innovative and convenient way to access banking facilities. The current range of services offered include balance inquiry, funds transfer, bill and financing payments, mobile prepaid airtime reload, and requests for statements and cheque books. The range of mobile banking services can be further expanded to take advantage of the increasing number of mobile phone users in recent years. As at end-2004, the mobile phone subscriber penetration rate in Malaysia was 55.9% of the total population. However, mobile banking is still in its infancy with only six banks currently offering the services with a subscriber base of approximately 25,000. Nevertheless, the banking industry is confident that mobile phone subscribers will be attracted to mobile banking as more services are added to the current suite of facilities.

(ii) Debit cards

While there is a potential for debit cards to be a viable alternative to cash, its adoption in Malaysia is still low. Debit cards offer benefits particularly to consumers who are not comfortable with paying by credit or are not eligible for credit card facilities such as students. With debit cards, the cardholder's account will be directly deducted when making purchases, benefiting the cardholder who needs to carry less cash and able to enjoy the efficiency and security offered by debit card payments. Retailers would benefit from lower fees compared to the fee that is being charged through credit card payments. With 10.8 million Bankcards in circulation, there is a potential for debit payments to grow once the benefit of using this electronic payment mode is fully appreciated by consumers.

Table 10.2
Non-Cash Payments in Malaysia

	2003		2004	
	Value (%)	Volume (%)	Value (%)	Volume (%)
Cheques	96.67	34.04	95.65	28.75
Credit cards	2.48	27.68	3.03	25.74
Credit transfers (IBG)	0.63	0.24	1.10	0.57
Charge cards	0.16	1.42	0.16	1.03
E-purse - Toll payments	0.05	36.40	0.06	43.69
E-purse - Retail	0.01
Debit cards	0.01	0.22	...	0.21

... Negligible.

(iii) Electronic Purse

The MEPS Cash electronic purse, which is incorporated in the Bankcard and MyKad, is an alternative electronic payment mode to using cash for making retail payments. As at end-2004, banking institutions and third party acquirers had deployed more than 16,000 CADs at various merchants to accept MEPS Cash. The volume of MEPS Cash transactions increased from 0.02 million in 2003 to 0.09 million in 2004, while the value of transactions increased from RM0.1 million to RM0.3 million during the same period. While the usage of MEPS Cash is still low compared to other electronic payments, continuous efforts are being made to promote MEPS Cash usage. Since early 2004, payments using MEPS Cash are accepted at various closed communities such as Bank Negara Malaysia, Universiti Utara Malaysia, Cyberjaya and Putrajaya.

The use of another electronic purse, the Touch 'n Go card in the transportation sector will facilitate the reduced use of cash and coins in the sector. Following the Government's decision to designate Touch 'n Go cards as the only electronic payment method at toll plazas, the volume and value of Touch 'n Go transactions increased by 45.2% and 29.6% respectively in 2004 compared to the previous year.

National Payments Advisory Council (NPAC)

As part of the efforts to promote a vibrant financial system and robust payment systems architecture, Bank Negara Malaysia held two NPAC meetings in 2004, to facilitate discussions on major payment systems issues. The first NPAC meeting was held on

20 July 2004 where issues relating to the migration to electronic payments and the proposed steps to build an effective e-payment infrastructure were discussed. Following the deliberations, the Interbank Giro Review Team was formed to provide direction in promoting the use of IBG in the country. The meeting also deliberated on measures to promote responsible lending and borrowing in credit card usage and measures to enhance consumer confidence in the use of credit cards as a non-cash payment instrument.

The second meeting was held on 8 December 2004, in which the NPAC deliberated on the appropriate regulatory approaches to address alternative remittance systems and measures to promote the use of formal channels for remittances. The NPAC agreed that the banks should make their remittance services more accessible, convenient and cheaper to migrant workers to encourage migration to the formal remittance channels. The NPAC also discussed the measures in managing and reducing foreign exchange settlement risk in Malaysia and to improve the access for international investors to settle their trading of Malaysian papers.

Moving forward, Bank Negara Malaysia will work together with financial institutions to offer efficient and secure payment transactions at lower cost so as to enable more extensive utilisation of electronic payments channels. Bank Negara Malaysia, together with the banking industry and support from the Government sector, will continue to promote efficient and effective delivery channels and electronic payments, in line with enabling the payment systems to facilitate economic activity and contribute to financial stability.