Information Management and Business Review (ISSN 2220-3796)
Vol. 15, No. 1, pp. 27-36, March 2023 (SI)

A Blessing in Disguise: Covid-19 Pandemic and the Emergence of E-Payment

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Abstract: E-payment offers efficiency in terms of speed, security, convenience, and cost, especially during this pandemic. The study involves monthly data that spans from January 2016 to June 2021. This study aims to investigate selected payment channels and instruments' influence on the retail e-payment transaction. The study is also interested to examine the interaction effects of Covid-19 on the relationship between credit card usage and retail e-payment transaction. The study employs Newey-West standard error regression in achieving the objectives. It is proven that traditional e-payment channels such as ATMs do not support the emergence of e-payment development in the country. The findings reveal Covid-19 significantly influences the emergence of e-payment in various ways. Unsurprisingly, internet banking usage showed great potential during the pandemic with a substantial increment since 2020. Oppositely, a credit card gives an adverse impact on the e-payment transaction and the impact is more apparent during the pandemic. In response to the new norm post-pandemic, the study suggests emphasis should be given to crucial e-payment infrastructures, particularly internet banking and debit card to foster the harmonization of the e-payment eco-system in Malaysia. Covid-19, despite its disastrous effect on society, blesses and supports the Financial Sector Blueprint 2022–2026.

Keywords: *Payment System, Financial Institutions and Services, Central Banks and Their Policies, Money*.

1. Introduction and Background

Financial technology became a vital agenda of the financial services industry and future economy. Financial services industries grew in the year 2020 due to the emergence of Covid-19. Automatically it changed how people make their day-to-day transactions. Consumers move to a cashless payment system because it can reduce the spreading of the Covid-19 epidemic (Yakean, 2020). At once, this situation spurs fintech and the adoption of digital banking services. Covid-19 surge for digital and electronic payments and services to flourish (Mansour, 2021). Electronic payment (e-payment) is more competitive in terms of higher operational efficiency from expedient payments and receipts of funds. On top of that, e-payment represents an eco-friendlier environment and offers a lower transaction cost. According to the Financial Sector Blueprint 2011 – 2021, electronic payment is one of the nine focuses that show the importance of e-payment (Bank Negara Malaysia, 2010). Through these initiatives embarked the development of technology and innovation by offering a greater payments landscape.

E-payment usage volume per capita increased by 13.57% in the year 2020 as compared to the year 2019. Covid-19 has enhanced the digital economy and its contribution Growth Domestic Product (GDP) by 20% in 2020 (FINTECH Malaysia, 2021). According to Khan et al. (2021) pandemic Covid-19 increased limited mobility therefore it will increase the usage of e-payment methods. On top of that, these disasters also influence choices of payment mode by consumers and its effects on the supplier side. Referring to the Central Bank of Malaysia Act 2009, the payment system is defined as any system or arrangement for the transfer, clearing or settlement of funds or securities. In essence, this facilitates companies, businesses and consumers to transfer funds to one another. E-payment can be divided into two, Large Value Payment System (SIPS) that include real-time electronic transfer of funds and securities system (RENTAS). Second is Retail Payment System which can be divided into three categories is Retails Payment Systems (e.g., shared automated teller machine (ATM) network, Interbank GIRO, direct debit), Retail Payment Instruments (e.g., credit card, credit card, debit card) and Retail Payment channels (e.g., internet banking, mobile banking).

Following figures exhibit the trend of Internet banking, ATM withdrawal, ATM Payment, debit card and credit cards. Figure 1 shows that transaction value for retail payment systems for Internet banking represents an upward trend from 2016 until 2020. It proves that consumers tend to move and adapt to new ways of transaction. Internet banking remains a prominent digital payment method. According to Remolina (2020), the digital transaction is the best solution for pandemic-related challenges. Figure 2 and Figure 3 show the trend of the transaction value for ATM withdrawal and payment respectively. Both transactions show a downward slope in 2020. Consumers tend to shift to other methods. It proved that e-payment grew in 2020 when consumers tend to use more online and contactless transactions. Covid-19 surge in consumers whereby a person in Malaysia made about 170 e-payment as compared to 150 in 2019 (FINTECH Malaysia, 2021). Debit card transactions in Figure 4 show an upward trend. This situation proved that consumers have decided to use debit as one of the methods of e-payment. Due to the pandemic, consumer payment behavior changed. Consumers preferred making payments through cashless payments more frequently than in prior pandemics (Kotkowski & Polasik, 2021). Figure 5 explained the value for credit card usage downward sloping in 2020. Users are reluctant to make payments through credit cards because users fear job and income loss due to this emergence. Automatically consumers will cut back from spending more using credit cards (Kantur & Özcan, 2021).

Figure 1: Transaction Value-Internet Banking

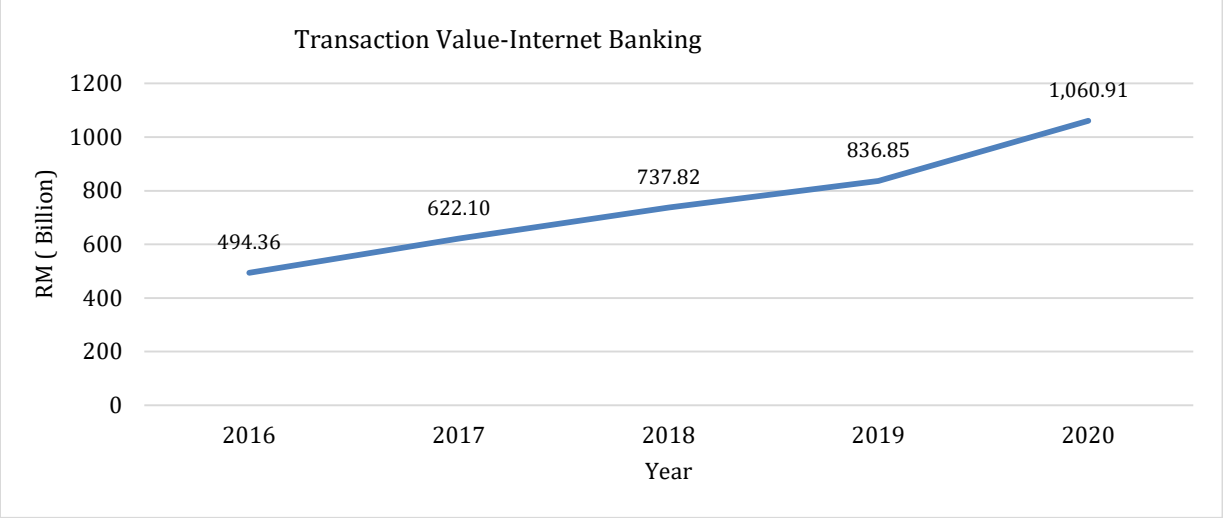


Figure 2: Transaction Value-ATM (WD)

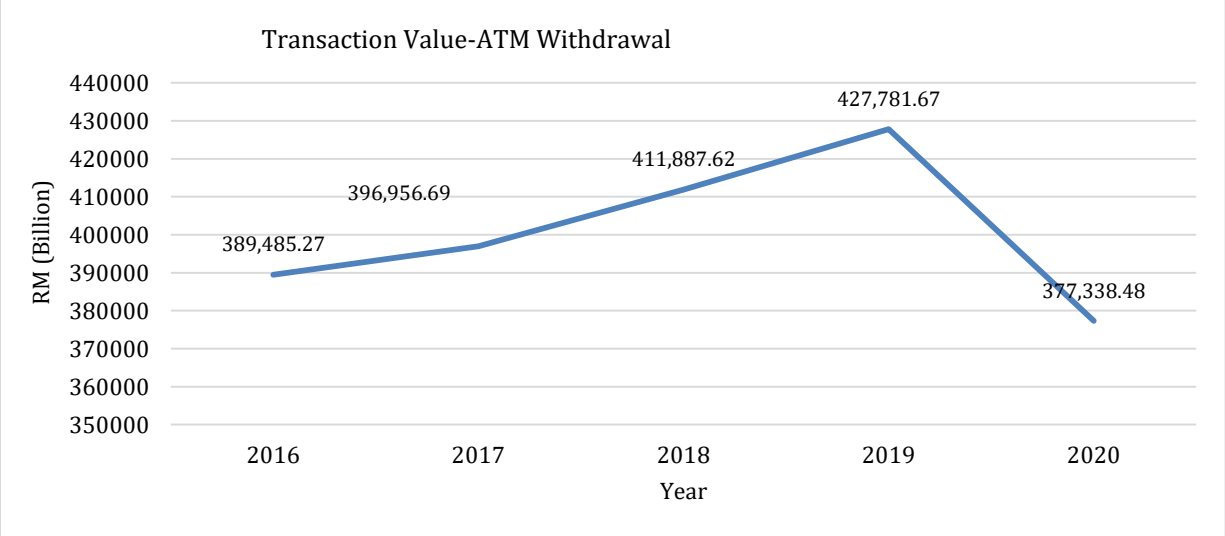


Figure 3: Transaction Value-ATM(Deposit)

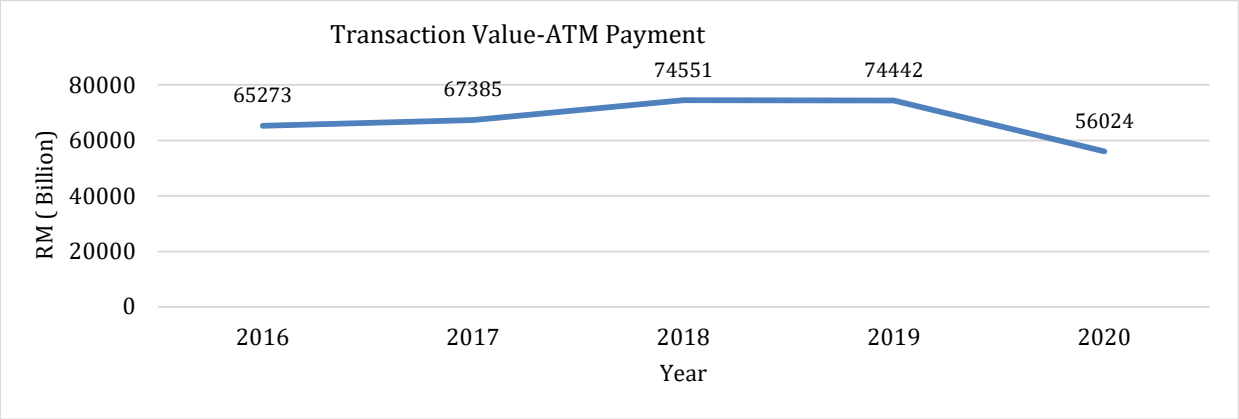


Figure 4: Transaction Value-Debit Card

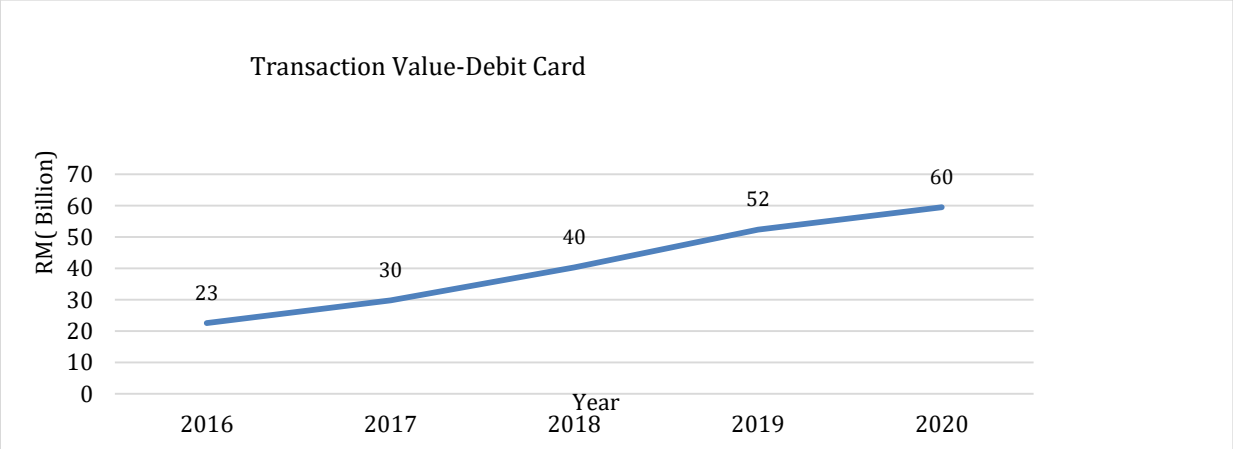
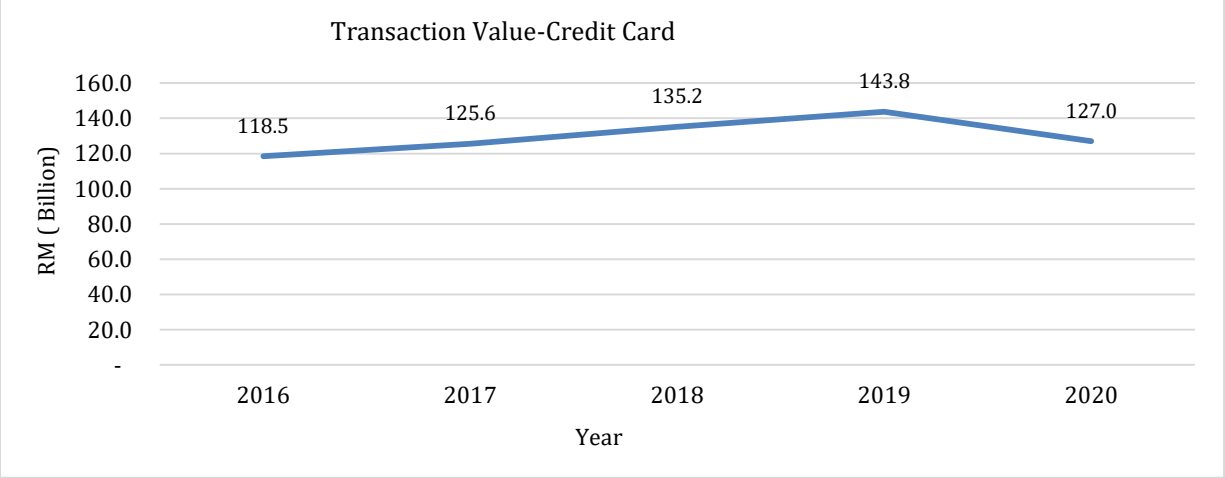


Figure 4: Transaction Value-Credit Card



The main objective of the study is to measure the significant relationship between payment instruments and payment channels in e-payment systems. The study also motivated to examine the interaction effects of Covid-19 on the relationship between credit card usage and the e-payment system. The study structures the paper as follows. Section 2 presents the debatable arguments on e-payment. Section 3 explains the data and methodology employs to achieve the proposed objectives. Section 4 interprets the results followed by a thorough discussion. The study ends the discussion with a conclusion and recommendations in Section 5.

2. Literature Review

In this digitalization era, many countries encourage the usage of electronic payment in a day-to-day transactions regardless of the amount. The implementation of electronic payment earned a warm response during the awakening of the pandemic Covid-19. This is due to the users being aware of the importance of contactless transactions. Since the awakening of Covid-19, the electronic payment system has become an area of concern for scholars thus, leads to ongoing debates. Recent literature focus on the issue of electronic payment usage among retail users. Not to mention, there are vast studies that examine the issue from a business perspective. Some studies debate over the payment channels and payment instruments' efficiency and preferences inter alia, Daragmeh et al. (2021); Mansour (2021) and Undale et al. (2021). However, this study focuses on the emerging electronic payment given, in the pandemic era. Specifically, the study investigates to what extent the payment instruments and channels react toward electronic payment. Examples of payment instruments are credit and debit cards. Meanwhile, example of payment channels is Automated Teller Machine (ATM) payment, ATM withdrawal and Internet banking. Traditionally, consumers use cash in their daily transactions regardless of small or large transactions. Due to that reason, the consumers have to bring along the notes everywhere. This exposed them to the risk of being snatched while having a lot of notes in their purse or wallet. Those consumers that normally hold more cash are older people (Simatele & Mbedzi, 2021). This is possibly due to older people being more comfortable transacting with cash like previously. Moving forward, there are innovative ways of managing daily transactions.

The banks offer credit cards and debit cards as means of payment. Consumers can use those cards for purchasing. The former card is short-term financing. This implies that consumers purchase the item on credit and pay later. Meanwhile, a debit card is similar to cash. It uses the money available in its account. Consumers are not allowed to make transactions beyond the available account balance. However, not all businesses are ready to adopt card-based terminals. This is due to the businesses are unwilling to absorb the fees charged on the credit card (Simatele & Mbedzi, 2021). Cornea (2021) highlights that credit card users most likely do not spend for impulsive consumption because of the nature of the card which is short-term financing. The users are wise in making financial decisions. In another vein, Trinh et al. (2020) point out that credit card induces users to spend more. Despite the convenience and ease to use, users prefer credit cards and debit cards due to the cashback and reward schemes offered. To collect more points, the users tend to spend more and achieve the reward goals. A study by Abdul-Muhmin (2010) finds credit card is a substitute for large transaction of other payment methods, for instance, debit card and cash. Senali et al. (2021) reveal consumers in Sri Lanka prefer to use debit cards due to the unavailability of the facility in the rural area. Due to that reason, consumers prefer to use cash in their transactions. On the other hand, Yakean (2020) states that Thailand users opt for a debit card to pay utility bills. This is because it directly deducts from their deposit accounts. Semerikova (2020) highlights debit card usage in Russia is very popular relative to the credit card. The Russian prefers debit card because of their disfavor for being indebted.

Their assumption is living in debt is awful. Additionally, a study by Chawla and Joshi (2019) disclose consumers in India prefer debit cards as a means of payment relative to Internet banking, mobile wallet and credit card. The rapid pace of advancement introduced a non-physical wallet, which is the electronic wallet (e-wallet). It is a platform that allows consumers to store money for digital transactions. Examples of e-wallets in Malaysia are, Touch ‘n Go e-wallet, GrabPay, Boost, MAE and CIMB Pay. Aji and Adawiyah (2021) bring out that e-wallet users highly tendency to spend more than credit card users. This is due to the e-wallet is more convenient and provides a seamless transaction. According to Simatele and Mbedzi (2021), user preference depends on the retailer's supply of payment instruments. In other words, it is a two-sided market. The users can and are only able to use related payment instruments if only the retailer provides the facility. The authors find e-wallet is the second most widely accepted payment method after cash. This indicates retailers in Zimbabwe are preferred to use e-wallets rather than other instruments. This is possibly due to the e-wallet is an easier and quicker transaction (Ibrahim et al., 2021). Withdrawing cash from an ATM is costly. There is a certain amount of surcharge imposed on every withdrawal, especially at different ATM bank issuers. Simatele and Mbedzi (2021) bring out; the surcharge hinders cash withdrawal that leads to less preference for cash in payment methods. Supporting the argument, Świecka and Grima (2019) find cash withdrawal incurs a high cost which includes the fee charged and the time consuming to reach the bank and time taken for withdrawing of cash. Oppositely, Arango-Arango et al. (2018) disclose ATM surcharge is able to

increase the cash usage.

This is due to the ATM surcharge is immaterialize and less significant for large withdrawals. Thus, it is not an issue for users who are highly likely to hoard a large amount of cash. According to Mansour (2021), emerging of digital payment given in the pandemic Covid-19 era caused changes in payment behavior among consumers. Despite credit cards, debit cards, ATM payments and ATM withdrawals, one of the trending payment methods is Internet banking. Internet banking is the platform that allows for Internet bank transfers. It allows the user to transfer money or transact using a smartphone, tablet or other supported devices with internet access. The users can transfer to the account in the same bank or differently. During the hit of Covid-19 pandemic, users prefer to use Internet banking which is more secure and safe as compared to other means of payment (Mihajat, 2021; Yakean, 2020). This is because the banknotes are able to transmit Covid-19. Due to that reason, the users opt for online banking than other payment methods due to online banking is contactless payment. The better response to the use of Internet banking is supported by the top-up of e-wallets (Aji & Adawiyah, 2021). The study explains the data and methodology applies in the following section.

3. Research Methodology

The study aims to investigate the development of electronic payment in Malaysia, commonly known as e-payment. The model identifies e-payment related activities as a whole in measuring the convention of e-payment in the country. Worth noting, the study limits the analysis to a retail payment system, while excluding the large value payment system (SIPS). Time series data were obtained from the central bank, Bank Negara Malaysia via the payment statistics-payment system portal to collect the main interest variable which is the monthly data of total e-payment. Specifically, the study collects the most recent 6.5-year data span from Jan 2016 to June 2021 and contains 66 observations. Selected payment channels and instruments are included in the model as the explanatory variables. Notably, the study includes the pandemic crisis of Covid-19 to explore a different insight brought into the market during the period. The study identifies the crisis period starting from January 2020 to date. The study also incorporates the interaction between credit card usage and the Covid-19 period in the model to observe if there is any different effect on e-payment during and before the crisis. One control variable which is the unemployment rate is also fused into the model. Table 1 exhibits all variables used in the model with the definition and proxy.

Table 1: Variables Definition and Proxies Measurement

	Notation	Definition	Proxy Measurement
Dependent Variable			
E-payment	EPAY	Total electronic payment systems, comprise Interbank GIRO, FPX and direct debit.	Monthly volume of total e-payment transactions (million)
Independent Variables			
Credit Card	CRC	Credit card transaction	Monthly value of credit card transactions (MYR billion)
Debit Card	DRC	Debit card transaction	Monthly value of debit card transactions (MYR billion)
ATM Payment	ATMP	Automated Teller Machine payment transaction	Monthly value of ATM Payment transaction (MYR million)
ATM Withdrawal	ATMW	Automated Teller Machine withdrawal transaction	Monthly value of ATM withdrawal transaction (MYR million)
Internet Banking	INT	Internet banking transaction	Monthly value of Internet banking transactions (MYR billion)
Covid-19	COVID	Pandemic period of Corona Virus	1 = Covid-19 period, 0 = otherwise
Control Variable			
Unemployment	UE	Malaysia unemployment level	Month over month, standardize unemployment rate (%)

Preceding the estimation, the study performs relevant diagnostic tests to ensure appropriate models and methodology were employed throughout the process. The diagnostic test utilizes the Augmented Dickey-Fuller Unit Root test to test the potential stationary issue in the time series data. The mean Variance Inflation factor (VIF) is computed to detect any serious multicollinearity issue, while Breusch-Pagan/Cook Weisberg test is employed to identify if there is any heteroscedasticity issue. Last but not least, the study uses the Breusch-Godfrey LM test for autocorrelation diagnostic. The econometric equation for the estimation is presented in equation 1 and followed by the proposed hypotheses:

$$EPAY_t = \rho_0 + \rho_z CRC_t + \rho_2 DRC_t + \rho_3 ATMP_t + \rho_4 ATPW_t + \rho_5 INT_t + \rho_6 COVID_t + \rho_7 CRC_t * COVID_t + \rho_8 UE_t + \mu_t \quad (1)$$

H1: Credit card transactions significantly influence the retail e-payment transaction volume in Malaysia.
H2: Debit card transactions significantly influence the retail e-payment transaction volume in Malaysia.
H3: ATM payment transactions significantly influence the retail e-payment transaction volume in Malaysia.
H4: ATM withdrawal transactions significantly influence the retail e-payment transaction volume in Malaysia.
H5: Internet banking transactions significantly influence the retail e-payment transaction volume in Malaysia.
H6: The retail e-payment transaction volume in Malaysia significantly differs (higher or lower) during and before the pandemic Covid-19.
H7: Covid-19 significantly affect the influence of credit card on the retail e-payment transaction volume in Malaysia.

4. Results

The study diagnoses potential data issues for the proposed model. The Augmented Dickey-Fuller testing identifies all data are stationary with no unit root issue. Mean VIF is less than 10 suggests there is no serious multicollinearity issue. Though, the Breusch-Godfrey LM test and Breusch-Pagan/Cook-Weisberg test are significant at the 1 percent level indicates the potential serial correlation and heteroscedasticity problem. Subsequently, the study provides estimation with Newey-West standard errors to remedy the autocorrelation and heteroscedasticity issue. The model F-statistic is significant at the 1 percent level propose the model is fit and acceptable. Table 2 presents the Newey-West standard errors regression that contains 66 observations. The main research interest is the e-payment proxied by the total volume of retail e-payment systems. The explanatory variables encompass the e-payment instrument that is credit card and debit card transaction in value. The payment channels embrace ATM payment, ATM withdrawal and Internet banking. Covid-19 and the unemployment rate represent the dummy of the pandemic period and control variable respectively. The Covid-19 period embodies 19 percent of the overall data while the remaining data represent the period before the pandemic. The estimation recognizes credit cards and debit cards to be important determinants of the retail e-payment system volume. Similarly, internet banking is also found to be statistically significant to the retail e-payment system in Malaysia. ATM payment and withdrawal however are not considered crucial in the emergence of retail e-payment systems.

Unsurprisingly, the estimation reveals Covid-19 is statistically significant at a 10 percent level postulates the retail e-payment system is significantly higher during the pandemic as compared to before the crisis. As expected, during the Covid-19 period, retail transactions are more inclined to electronic payment systems rather than the usual traditional transaction before the pandemic. During this period, one has limited alternatives as many traditional options are not available. Access to conventional payment systems was blocked due to health and safety measures taken by the authorities. This initial reason is probably only valid until a certain extent when the new transition becomes a new norm for users. The shift from the conventional payment system to electronic payment becomes visible and the new paradigm is supported by the availability of many digital platforms to assist the payment mechanism (Mansour, 2021). The emergence of the e-payment system becomes smoother, particularly for retail transactions due to the strong support of the government in promoting a cashless society. Before the crisis, this effort is not fully braced by the merchant because of fee charges and the cost factor. Interestingly, during the crisis, most of the merchants do not have many choices, but to adapt to the new payment system, The Covid-19 pandemic, although undoubtedly damaging to the country, instead become a blessing to the emergence of the e-payment eco-system in Malaysia.

Table 2: Emergence of E-Payment Estimation

	Coefficient	t-value/z-value
Credit Card	**-4.0061****	-2.6800
	(1.4933)	
Covid-19	**36.4784***	1.7000
	(21.5181)	
Covid-19 x Credit Card	**-2.7751***	-1.7000
	(1.6364)	
Normal Period	**[-4.0061]*****	-2.6800
Covid-19	**[-6.7812]*****	-5.5100
Debit Card	**6.3787*****	2.8500
	(2.2397)	
ATM Payment	-0.0011	-1.4600
	(0.0007)	
ATM Withdrawal	0.0003	0.3700
	(0.0007)	
Internet Banking	**0.4435****	2.2900
	(0.1940)	
Unemployment	-0.4131	-1.1800
	(0.3498)	
Constant	19.9354	1.3800
	(14.4044)	

Note: *** is significant at the 1% level, ** is significant at the 5% level, and * is significant at the 10% level.

Standard errors are in parentheses and the marginal effects are in brackets. Credit Card refers to credit card transaction (monthly value of credit card transaction (MYR billion)), Covid-19 refers to the pandemic period of Coronavirus (dummy variable), Debit Card refers to debit card transaction (monthly value of debit card transaction (MYR billion)), ATM Payment refers to Automated Teller Machine payment transaction (monthly value of ATM Payment transaction (MYR million)), ATM Withdrawal refers to Automated Teller Machine withdrawal transaction (monthly value of ATM withdrawal transaction (MYR million)), Internet Banking refers to internet banking transaction (monthly value of internet banking transaction (MYR billion)), Unemployment refers to Malaysia unemployment level (month over month, standardize unemployment rate (%)). The study further investigates the interaction effect of Covid-19 on the relationship between credit card payment instruments and retail e-payment systems in Malaysia. Without the interaction, the credit card is found to be negative and significant at a 5 percent level towards e-payment. The finding implies the more credit card usage, the lower the e-payment volume. This is explicable by taking credit cards as a substitute instrument relative to other available payment instruments and channels. Unlike a credit card, other instruments and channels such as debit cards, ATM payment and withdrawal as well as internet banking require a sufficient amount of deposit before any transaction can be conducted. The credit card is a decent available payment alternative relative to others expressly for those who have a shortage of financial capacity. In this case, credit card usage is not an option but rather mediocre because of financial constraints.

Due to this reason, credit card users do not have open access to use other payment instruments, channels or systems. This scenario does not promote the emergence of a retail e-payment system, although the usage of credit card transactions is snowballing. The situation has become pellucid as suggested by the interaction term between Covid-19 and credit cards. The interaction term managed to reject the null hypothesis and substantiate the alternate hypothesis 7 at a 10 percent significant level. The marginal effect presents in Table 2 postulates a negative relationship between credit card and retail e-payment systems both before and during the pandemic. The above scenario is true before the pandemic and becomes more evident during the crisis. During Covid-19, with an increase in credit card transactions, the retail e-payment system drops even more relative to before the pandemic period. During the crisis, users with more financial constrain are more prone to use a credit card, but unable to opt for other e-payment alternatives. This causes to further decline in e-payment volume during the Covid-19 pandemic. On the contrary, a decrease in credit card transactions during Covid-19 leads to a substantial increase in the retail e-payment volume that is higher than before the crisis period. This group of users is less affected by the crisis and has income stability. Hence, in its place of

using a credit card during the pandemic, for precaution and safety measures they switch to other e-payment alternatives (Mihajat, 2021; Yakean, 2020). Another payment instrument that is commonly used by Malaysian is the debit card. Unlike a credit card, debit card usage is credited directly from the cardholder's account. Therefore, the users must ensure there is a sufficient amount in the account before the usage. Different from credit card usage, a debit card is not considered a substitute for other e-payment alternatives.

It is better known as the debit card is complimentary to other available e-payment options. In other words, given the customers have an adequate amount in their account; they can opt to either use a debit card or any other electronic payment at the same time. This scenario supports the relationship between a debit card and retail e-payment in Malaysia, where greater debit card usage fosters a more e-payment system as a whole. Oppositely, customers with a lesser amount in the account need to reduce their debit card usage together with other e-payment alternatives. Indeed, these customers may need to switch to credit card transactions whenever possible. The study accomplishes the alternate hypothesis 2 while rejecting the null hypothesis. The positive relationship between the two is significant at the 1 percent level. The two retail e-payment instruments, credit and debit cards are both significant in determining the retail e-payment system, but in different ways. Debit card transaction is one of the best instruments to encourage the emergence of a retail e-payment system while credit card usage may not be a good instrument to promote the growth of the e-payment system in Malaysia. Due to this reason, commercial banks come out with solid initiatives to reassure the usage of debit cards such as by smoothing the process of debit card application when it is directly attached to the savings account offered to customers. Furthermore, unlike a credit card, there is no income level qualification for one to have their own debit card.

On the other hand, taxation imposed on credit cardholders by the government is one way to dampen the usage of credit cards and is also another measure to promote customers to switch from credit to debit cards instead. From another perspective, banks rely on the credit card to earn more income from finance charges as well as from income diversification such as late payment penalties. This justifies the need for the banks to still offer and promote the issuance of credit cards, regardless of their adverse effect on the emergence of the retail e-payment system in Malaysia. The rise of the e-payment eco-system in Malaysia, particularly in the retail system is also supported by the e-payment channels that include ATM payment, ATM withdrawal and Internet banking. Similar to arguments discussed for credit and debit cards earlier, ATM payment and ATM withdrawal are negatively and positively related to the retail e-payment system in Malaysia respectively. ATM or the Automated Teller Machine provides services including credit card and financing repayment as well as a cross-border cash withdrawal. The former refers to ATM payment while the latter refers to ATM withdrawal. As compared to other electronic payment alternatives, ATM payment is probably one of the least convenient ways of repayment (Świecka et al., 2021). Using this channel, users are required to reach the nearest ATM and to be physically present to make any transaction. Hence, ATM payment is one of the oldest and traditional ways of making payments.

Ignoring other new and innovative e-payment channels, these users stick to their conventional ways of dealing with banking transactions. This behavior does not support the arrival of other sophisticated electronic payment systems. Thus, the more ATM payment transaction, the lesser it will contribute to the development of the e-payment system in Malaysia. On the other hand, the acceptance of the more advanced retail e-payment system resulted from the least favorable preference for ATM payment relative to other available e-payment systems. As for ATM withdrawal, the positive relationship with the retail e-payment system in the country is explicable because Malaysia is still emerging in promoting a cashless society. Regardless of government efforts to create a cashless ecosystem in the country, many other factors hinder the process and progress. Among other, the reluctance of merchants to convert into a cashless transaction in avoiding registration and terminal fees and charges (Simatele & Mbedzi, 2021). Due to this reason, ATM withdrawal is still one of the desirable channels to obtain cash, even though there are many other electronic payment channels. Whenever possible, users would also choose other instruments and channels in parallel to ATM withdrawal, thus boost up the retail e-payment volume in Malaysia. This is predominantly true during the flourishing economic condition where the income level is stable. The relationship between both ATM payment and ATM withdrawal is however found to be insignificant as the study fails to reject the null hypotheses 3 and 4.

The study, however, managed to find significant evidence of the crucial relationship between another e-payment channel, internet banking and retail e-payment system in Malaysia. Internet banking is found to positively influence the e-payment system and is significant at a 5 percent level. The more users' preferences use Internet banking, the greater potential for the e-payment system in the country to grow. Internet banking which started in Malaysia more than two decades ago since 2000 provides many services as offered by other e-payment instruments and channels. Inter alia, internet banking delivers common banking transactions as well as utility, card and loan repayment platforms. As the Internet banking system in the country is becoming more stable and secure, this e-payment channel turns out to be one of the most desirable electronic payment options. This is particularly the reason that Internet banking is a fast and convenient way to perform transactions virtually. In the early inception of Internet banking in 2000, the main hindrance to promote Internet banking is trust and security issues (Kim et al., 2010). As time goes by, this issue is diluted with more evidence of the existence of stable and secured Internet banking transactions. In recent years, the acceptance of Internet banking becomes vibrant and thus directly promotes the emergence of the e-payment system in the country. The control variable, unemployment is negatively related to the retail e-payment system in Malaysia. Although the study did not manage to find any significant evidence, the negative relationship indicates that greater unemployment causes lower individual income levels, thus impede the emergence of the retail e-payment system.

5. Conclusion and Recommendations

The main objective of this study is to analyze the way forward to support the Malaysian retail e-payment ecosystem. The study includes selected important e-payment instruments and channels to investigate the influence of each medium in promoting electronic payment in Malaysia. Critically, the study incorporates the recent unfortunate event of the Covid-19 pandemic in the proposed model. As Malaysia is dynamically heading towards a cashless society, Automated Teller Machine (ATM) payment and withdrawal are becoming less favorable channels for the development of the retail e-payment system. Many banks have decided to minimize their investment in the ATM as an investment now is diverted to other financial technology initiatives. Debit cards and Internet banking are adjudged to be vital in supporting the emergence of the retail e-payment system in Malaysia. A top-down approach from the regulator is explicit in promoting debit card and internet banking usage with numerous initiatives channelled via banks to consumers. This resurgence is aligned with the focus areas of the Malaysian Financial Sector Blueprint 2010–2020, particularly in accelerating the electronic payments eco-system to improve economic efficiency as well as to assure financial inclusion for all Malaysian. Persistence with the agenda, the effort continues with Financial Sector Blueprint 2022–2026. The Blueprint, in the effort to modernize the key infrastructures in managing the shock of the pandemic, accelerates the adoption of e-payment in the country.

Oppositely, credit card portrays an adverse effect on the development of the retail e-payment system in Malaysia. With significant influence from credit cards, the volume of retail e-payment may be obstructed by the surge of credit card transactions. The effect is more apparent during the Covid-19 period. Fortuitously, during this period, there are significant growth in retail e-payment volume with the new norm of promoting contactless payment and transactions. React as a blessing in disguise, the Covid-19 period is the finest time to encourage e-payment among Malaysian. To observe a greater impact on the emergence of the e-payment eco-system in Malaysia, regulators and banks may need to minimize the usage of credit cards, especially during the crisis period. To sum up, the Covid-19 pandemic does leave a black mark and dark history in Malaysia and the globe. Nevertheless, the pandemic gracefully embraces the e-payment system in the country with new norms and practices. The regulator and banks need to exploit the pandemic as a stepping stone in accelerating a comprehensive electronic payment ecosystem in Malaysia. Among others, by facilitating and giving more incentives to both banks and consumers to use the debit card and internet banking.

Acknowledgment: The authors extend their appreciation to Arshad Ayub Graduate Business School, Universiti Teknologi MARA (UiTM), and Research Management Centre of UiTM for a “Geran Penyelidikan AAGBS” [600-RMC/DANA 5/3/AAGBS (001/2020)] provided which enable them to conduct the research. The authors alone are responsible for any error.

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