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MIGRATION PATTERN IN PAYMENT PREFERENCES POST COVID-19 AMONG CONSUMERS IN MALAYSIA

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ABSTRACT

This study aims to examine the patterns of migration in consumer payment preferences and analyse the changes in payment preferences for daily transactions by type and value, as well as to compare consumers' overall perception of selected common retail payment methods. A total of 407 responses were collected through an online survey. Logistic regression was employed to identify the factors that significantly influence consumers' migration of payment preferences. The study's findings indicate that the shift from cash to E-wallets is the most significant change in payment preferences. Lower-income consumers are less likely to alter their payment preferences, and the most notable change in payment preferences by transaction type occurred at food stalls and convenience stores. Furthermore, the greatest shift from cash to E-wallets happened in transactions below RM100, while a significant movement from cash to card payments was observed for transactions above RM100. Economic factors such as income and technological receptiveness, represented by age, have a significant impact on changes in payment preferences during crises. The observed shifts in preferences suggest intrinsic differences in the features and functionalities provided by various payment methods. This study provides insight into migration trends in payment preferences, emphasising the distinct characteristics of different payment methods. Understanding consumer perceptions of these methods can assist payment providers in developing and promoting targeted solutions.

Keywords: payment preferences; contactless payments; E-wallets; card payments; COVID-19

INTRODUCTION

Over the years, financial innovations, technological developments, and market competition have transformed the forms in which money is utilised as a means of payment. The evolution of payment methods has progressed rapidly, shifting away from cash in retail transactions towards cashless payment methods, including payment cards such as credit and debit cards. These payment cards have significantly changed how consumers pay for retail expenditures. According to Jonker et al. (2017), credit and debit cards have long dominated cashless retail transactions; however, their usage is

typically restricted to consumers who meet specific income requirements or have bank accounts. However, the emergence of E-wallets and mobile payments in recent years has created opportunities for those who are not eligible to own credit cards or debit cards to conduct cashless transactions as long as they have a smartphone. Although E-wallets began to emerge in the few years before COVID-19, their usage was still limited. Due to the severity of COVID-19, an economic lockdown was implemented (Arumugam, 2020; Tang, 2022). The implementation of the economic lockdown led to a shift in economic transactions from physical to remote modes (Aziz, 2022). Moreover, with the fear of virus transmission through contact in the use of cash, many economic transactions became cashless (Jonker et al., 2022; Lu & Kosim, 2022). These factors provided impetus for digital and contactless payment methods, such as E-wallets and mobile payments, to become viable alternatives to long-existing payment cards due to their convenience, speed, and perceived safety.

Table 1

Growth in the transaction volume and value per capita for selected payment methods

Payment methods	Volume per capita growth		Value per capita growth	
	2017-2019	2020-2022	2017-2019	2020-2022
Cash withdrawals	9.4	3.6	6.4	6.9
Credit card	23.7	45.9	12.8	39.6
Debit card	125.4	140.6	17.9	36.5
E-money	10.8	73.3	97.3	135.7
Internet banking	45.8	45.2	13.2	52.3
Mobile transactions	283.7	70.2	217.8	110.4

Source: Bank Negara Malaysia (2022)

Indications of changes in payment preferences are observed in the data presented in Table 1. Table 1 compares the growth in transaction volume and value per capita for cash withdrawals and selected cashless payment methods three years before and three years after COVID-19. Compared to cashless payment methods, cash usage, as proxied by cash withdrawals, exhibited the lowest growth in both volume and value per capita for the period before and after COVID-19. The growth in the volume of cash withdrawals per capita decreased by a third, from 9.4% to 3.6%. In contrast, the growth in the value of cash withdrawals per capita remained relatively stable, at approximately 6.4% to 6.9%. In terms of transaction volume per capita, before the COVID-19 pandemic, debit card and mobile transactions grew substantially by 125.4% and 283.7%, respectively. While debit cards still recorded strong growth post-COVID-19 at 140.6%, the growth in the volume of mobile transactions per capita slowed drastically to 70.2%. However, it is found that the transaction volume per capita of E-money grew sevenfold, from growth of 10.8% in the three years prior to COVID-19 to 73.3% in the three years after COVID-19. The change in the growth of transaction volume per capita of E-money is the highest among the other cashless payment methods, followed by credit cards, whose growth doubled from 23.7% between 2017 and 2019 to 45.9% between 2020 and 2022.

In terms of transaction value per capita, all cashless payment methods except mobile transactions showed an increase in growth. Payment cards, such as credit cards and debit cards, along with Internet banking, showed stronger growth in per capita transaction value compared to E-money. The differences in growth rates among payment methods, in terms of both volume and value transactions, suggest that consumers' payment preferences vary according to the type and characteristics of transactions. It is hypothesised that E-money is preferred for smaller-value transactions while card

payments are favored for higher-value transactions. Smaller-value transactions generally have higher volume or frequency.

Although there is a significant shift to cashless payments during the COVID-19 pandemic, limited research has investigated the specific patterns of consumer payment preference migration and the potential for these changes to have lasting effects on the conduct of post-pandemic financial transactions. Recent studies on payment preferences since the COVID-19 pandemic have focused on the adoption of E-wallets (Abdul-Halim et al., 2022; Karim et al., 2020; Nair et al., 2023; Teoh et al., 2020; Wong & Mohamed, 2021), neglecting a comprehensive analysis of the broader evolution of consumer payment preferences. This study aims to address this gap by analysing trends in payment preferences differentiated by transaction type and value. This offers an additional, critical dimension to understanding consumer payment preferences. Therefore, the primary objective of this paper is to investigate patterns of migration in payment preferences among consumers post-COVID-19. The paper will first identify socio-demographic characteristics of consumers who have shifted their payment preferences and then analyse migration patterns by type and value of transactions.

The findings reveal the profile of consumers whose payment preferences shifted due to COVID-19 and the future of consumers' payment preferences in their daily transactions. Through migration patterns of payment preferences, the perceptions and attributes of different payment methods could be inferred. The pattern of migration of payment preferences can significantly influence both economic and social dynamics. In an increasingly digitalised economy, understanding consumers' payment preferences among various competing media of exchange is crucial for retailers. Such insights enable retailers to optimise their payment systems and adapt to evolving preferences, thereby improving business operations and profitability through offering innovative methods that enhance brand perception and increase customer loyalty. Furthermore, understanding consumer payment migration preferences enables payment service providers to support retailers with real-time processing capabilities, allowing businesses to access funds faster and improve their cash flow. Beyond commercial implications, the study also investigates the influence of socio-demographic factors on the migration of consumer payment preferences. Shifts in consumer payment preferences according to socio-demographics can indicate the extent of financial inclusion and guide governments in addressing communities at risk of exclusion within a rapidly digitalising financial ecosystem. Additionally, it will provide insights to help businesses cater to a diverse customer base and ensure inclusivity in their payment options for different demographic groups.

LITERATURE REVIEW

Cash and cashless represent two distinct types of transactions in today's world. As the study examines consumers' payment preferences between cash and non-cash payments, it draws its insights from the theory of competing media of exchange (Lagos & Rocheteau, 2008; Lagos & Wright, 2005; Santomero & Seater, 1996). The theory of competing media of exchange analyses how different assets can simultaneously serve as a means of payment within an economy, and how economic agents choose among them based on their relative efficiencies and costs. The theory extends beyond the traditional view of money as the sole medium of exchange (Kiyotaki & Wright, 1989) and acknowledges the coexistence of various payment instruments. Santomero & Seater (1996) focus on microeconomic choices of households in a transactions demand context, which extends Baumol's (1952) framework by incorporating multiple payment instruments such as cash, cheques, and credit cards. Santomero and Seater (1996) provide the microeconomic foundations for how households select the medium of exchange based on the types of goods transacted and the frequency of

transactions, taking into consideration the transaction costs following Baumol (1952) and the liquidity of the medium of exchange. On the other hand, Lagos and Rocheteau (2008) and Lagos and Wright (2005) provide insights into the double coincidence of wants, which enables various new payment instruments, such as e-wallets and mobile banking, to emerge as mediums of exchange in the economy, particularly since the COVID-19 pandemic. Both frameworks emphasise that the choice of medium of exchange is an outcome of individuals' or households' optimising behaviour when accounting for costs, benefits, and frictions in markets, which have led to the emergence and coexistence of multiple payment instruments in today's economy.

A cashless transaction does not involve or require an intermediate payment of money from the purchaser to the seller (Paul et al., 2012; Ramya et al., 2017). A transaction can be carried out by a person using a card or E-money. Credit cards, debit cards, and E-money (E-Wallets) are examples of cashless transactions. For credit card use in cashless transactions, the cardholder can make a payment based on the amount borrowed from the bank, subject to an agreement that includes interest charges and a due date for repayment to the bank (White, 2023). A debit card is issued by a bank with features combining a credit card and an ATM card (Napoletano & Strohm, 2022). The amount of money in the debit card is linked to the cardholder's bank account. The owner is allowed to make payments on any transaction based on the funds available in their bank account. Although both cards serve similar functions for completing transactions, credit cards use funds lent by the bank to pay, while debit cards use the user's own capital to make payments. Electronic money, also known as E-money, is the most recent type of cashless transaction. E-money refers to a payment instrument containing monetary value paid by the user (Bank Negara Malaysia, 2025). A user of E-money can perform transactions for goods and services only if the seller accepts E-money as the payment method instead of cash or card payments (Bank Negara Malaysia, 2025). Two types of E-money are issued by banks to users: card-based, such as prepaid cards, and network-based, such as digital wallets requiring internet and mobile phones to process payments (Bank Negara Malaysia, 2025). Digital wallets are electronic versions of physical wallets, also known as electronic wallets, E-wallets, or mobile wallets, enabling users to pay through wallet apps. Hence, there are various types of non-cash transactions as payment methods today.

Differences in socio-demographic factors among consumers can influence their decisions on payment method types. Males and females have different preferences, opinions, and perceptions toward the use of technologies and application systems (Sobieraj & Krämer, 2020; Tannenbaum et al., 2016). Several previous studies have investigated the influence of gender on consumers' actual behaviour and their perception and intention to use particular payment methods. A study on the interest in using electronic money found significant gender differences in payment method choice, where males have a higher positive and significant impact on interest in using electronic money (Ajina et al., 2023; Farida et al., 2016). Furthermore, males are more likely to adopt new payment methods because females tend to underestimate the usefulness of new technology relative to males (Nahar, 2022). Therefore, gender is included in the current study to assess its significance in migration of payment preferences during the post-COVID-19 pandemic.

Age is another factor considered in this study regarding consumers' migration in payment preferences during the COVID-19 pandemic. Research on users' payment behaviour found that consumers from different age groups have differing perceptions of payment methods. For example, younger consumers are more likely to use debit cards as payment methods, while Generation X consumers prefer credit cards (Stavins, 2016). Additionally, younger consumers show a greater willingness to adopt cashless transactions, such as E-wallets, mobile payments, and QR payments (Maulita et al.,

2022). Conversely, another study found no significant differences in cashless payment use between young and older consumers (Shaw, 2015). Therefore, people of different ages have varying perspectives on their actual behaviour. Conversely, some studies found age does not significantly impact payment preferences. Research on behavioural intention to adopt mobile payments indicated age has no significant effect on individuals' payment preferences (Abegao Neto & Figueiredo, 2022). Moreover, some previous findings suggest consumers of all age groups are now prepared to accept cashless transactions in daily transactions (Goh & Nguyen, 2022; Hirmissa et al., 2021). Nevertheless, age is included in the current study to identify factors influencing migration in payment preferences during the post-COVID-19 pandemic.

Consumer ethnicity is also included in the current study because different ethnic groups have distinct preferences and perspectives regarding their intention to use specific payment methods. Some previous studies have found that respondents' ethnicities are associated with different viewpoints on the use of payment methods. Malays and Chinese hold differing perspectives on intentions to use mobile payment methods. Their intention to use mobile payments is influenced by normative beliefs and subjective norms (Ting et al., 2016). In another study, Whites were the lowest users of mobile payments, followed by Asians and others such as Hispanics and Blacks (Nam et al., 2023). Given Malaysia's multi-ethnic composition, ethnicity is included to better understand whether consumer ethnicity significantly relates to migration from previous preferred payment methods.

Education can affect consumers' payment preferences. Educational level has a significant relationship with cashless transaction use, with higher-educated consumers tending to prefer cashless payment methods (Caroline et al., 2021; Goh & Nguyen, 2022). Although some studies have demonstrated education influences payment preferences, others disagree and argue educational level does not relate to payment preference (Che Nawi et al., 2022). Nevertheless, education is included in the current study to investigate factors influencing migration in payment preferences.

Furthermore, income level, or monthly household income, significantly influences consumers' payment method choices. For example, consumers with lower household incomes are less likely to use online payment methods (Chande, 2021; Shy, 2020). Additionally, as individuals' incomes increase, they have access to more payment options, both online and offline, to complete transactions (Fujiki, 2020; See-To et al., 2014). In contrast, some scholars argue that monthly household income does not relate to payment preference migration, finding no significant impact of income on the intention to use debit cards (Agrawal, 2015). As accessibility to payment methods is influenced by income, including income in this study is important to analyse its impact on the migration of payment preferences due to the COVID-19 pandemic.

In conclusion, previous studies have primarily focused on payment preferences, while giving limited attention to migration patterns in payment preferences, particularly during the post-pandemic COVID-19 period. Hence, this study aims to identify factors influencing the migration of payment preferences and to determine the types and characteristics of daily transactions that affect this migration.

METHODOLOGY

The study is based on primary data collected through a self-administered questionnaire. The questionnaire included information on the respondents' socio-economic background, payment preferences before and after the COVID-19 pandemic, and their attitudes towards selected payment methods. Data collection was conducted between June and July 2023. The survey was carried out online using the Google Form platform so that the reach of participants was not limited to a specific

location only. The survey link was distributed through various social media platforms and personal contacts to encourage participation from individuals across different socio-demographic groups.

To determine the minimum sample size, a 5% margin of error was set, and based on Yamane (1967), the minimum sample size required for the given Malaysian population of respondents aged 18 years and above is 385. The responses were collected from individuals aged 18 years and above, as they are eligible and mature enough to use cash and cashless transactions in their daily activities (Icenogle et al., 2019). Overall, a total of 407 responses were collected and employed for analysis. Hence, the sample size of the study meets the minimum sample size required. As participation in the survey was voluntary and collected from all willing participants, the sampling method employed was a non-probability sampling approach, combining snowballing and convenience sampling.

Method of Analysis: Econometric Model

A logistic regression model is employed to analyse and identify the socio-demographic factors that influence the migration of payment preferences post COVID-19. The respondents were divided into two groups: those who exhibited a change in payment preferences and those who did not. Those who exhibited migration of payment preferences could be transitioning from cash to e-wallets or card payments, from e-wallets to cash or card payments, or from card payments to cash or e-wallets. These responses were not differentiated, but all were classified as exhibiting migration of payment preferences. Those who did not change their payment preferences imply that they continued to use the same payment method, whether it is cash, e-wallet, or card payment, as their preferred method before and after the COVID-19 pandemic. The logistic regression model can be expressed as follows:

$$\text{Log} \frac{P_i}{1-P_i} = \alpha + \beta_1 X_{1i} + \dots + \beta_k X_{1k} + \varepsilon_i \quad (1)$$

where P takes the value 1 if a respondent has changed his/her payment preferences following the COVID-19 pandemic, while P equals 0 if a respondent did not change his/her payment preferences post COVID-19 pandemic. X_k refers to the set of explanatory variables consisting of socio-demographic factors, which include gender, age, education, income, strata of residence, and location of residence. β_k denotes the coefficients that correspond with the explanatory variables, and ε_i represents the error term.

Chi-square statistics are also used in bivariate analysis to examine the relationship between socio-demographic factors and the existence of migration of payment preferences among respondents. Chi-square statistics will reveal whether a relationship exists between socio-demographic factors and migration of payment preferences.

RESULTS AND DISCUSSION

The analysis is divided into four sections. The discussion begins with an analysis of the pattern of changes in respondents' payment preferences, followed by a summary of the survey respondents' statistics. Then, a bivariate analysis is conducted to examine the relationship between socio-demographic factors and the migration of payment preferences to determine if a relationship exists between these factors and the migration of payment preferences. This is followed by a discussion of the logistic estimates and the marginal effect of migration on payment preferences. Lastly, the overall percentage change in payment preferences by type of transaction, transaction values, and overall perception of consumers toward the selected payment methods is analysed and discussed.

Table 2 provides a breakdown of payment preferences among respondents in daily transactions following the COVID-19 pandemic. Based on Table 2, the majority of respondents have migrated to another payment method, accounting for 80.84% of the total sample of the study. Only 78 respondents, or 19.16% of the total respondents, did not migrate to a new payment method in their daily transactions post COVID-19 pandemic. The strongest migration in payment preferences among respondents in daily transactions is from cash to E-Wallet/Mobile and QR payments, accounting for 55.53% of the total sample. Conversely, the migration in payment preferences from e-wallets, mobile, and QR payments to cash is the weakest, accounting for as little as 0.49% of the total respondents. Overall, it can be concluded that most respondents have shown a shift in payment preferences, with migration from cash to E-Wallet/Mobile and QR payments in daily transactions following the post-COVID-19 pandemic.

Table 2

Breakdown of payment preferences

Migration from	Migration to	Frequency	Percentage (%)
No migration in payment preferences		78	19.16
Cash	E-Wallet/Mobile and QR payment	226	55.53
	Card payment	26	6.39
E-Wallet/Mobile and QR payment	Cash	2	0.49
	Card payment	45	11.06
Card payment	Cash	23	5.65
	E-Wallet/Mobile and QR payment	7	1.72
Total		407	100

Summary Statistics of Survey Respondents

Table 3 presents the profile of the survey respondents and the socio-demographic breakdown of respondents' payment preferences due to the COVID-19 pandemic. Chi-square statistics are also included to indicate whether a relationship exists between particular socio-demographic factors and payment preferences. Based on Chi-square statistics, among the various socio-demographic factors, only age and household income have a significant relationship with migration of payment preferences at a 5% significance level. Respondents older than 20 years are more likely to migrate to a new payment method compared to those aged 18 to 20 years. All income groups exhibit tendencies towards migration in payment preferences, except for those earning between RM3,170 and RM4,849 (the upper B40 group). Those earning RM4,850 and above show a higher likelihood of changes in their payment preferences than the other income groups. Respondents residing in the Northern region of Peninsular Malaysia and East Malaysia are more likely not to change their payment preferences, with the Northern region of Peninsular Malaysia being highest in maintaining their payment preferences, while respondents residing in the Southern and Eastern regions of Peninsular Malaysia are most likely to exhibit changes in their payment preferences.

For the other socio-demographic factors, it is found that Malay respondents are more likely to experience migration to new payment preferences due to the higher fraction (2.9%) of those who

migrated to a new payment method (34.95%) compared to those who did not migrate to a new payment method (32.05%) relative to other ethnicities. It is found that while those with pre-university and university education account for the same share of those who did not change their payment preferences, respondents with university education account for a slightly larger share of those whose payment preferences have changed compared to those with pre-university education. Unemployed respondents are less likely to migrate to a new payment method, as the fraction of those who did not migrate (20.51%) is higher than the fraction of those who have migrated (13.37%).

Table 3

Summary of statistics

	Have migration of payment preferences (n ₁ = 329)	Do not have migration of payment preferences (n ₂ =78)	Total sample (n= 407)	Chi-square statistic
Gender				
Male	46.81	43.59	46.19	0.26
Female	53.19	56.41	53.81	
Age				
Age 18 - 20	4.86	12.82	6.39	8.30**
Age 21 - 30	34.95	30.77	34.15	
Age 31 - 40	55.62	55.13	55.53	
Age 41 and above	4.56	1.28	3.93	
Ethnicity				
Malay	34.95	32.05	34.40	0.28
Chinese	38.30	41.03	38.82	
Indian and other	26.75	26.92	26.78	
Education				
Pre-university	37.39	42.31	38.33	0.90
Diploma	19.15	15.38	18.43	
University	43.47	42.31	43.24	
Employment status				
Unemployed	13.37	20.51	14.74	2.56
Employed	86.63	79.49	85.26	
Household income				
Lower B40	13.07	11.54	12.78	8.39**
Upper B40	27.36	39.74	29.73	
Lower M40	48.33	46.15	47.91	
Upper M40 & T20	11.25	2.56	9.58	
Strata				
Urban	35.87	32.05	35.14	0.62
Rural	27.66	26.92	27.52	
Semi-Urban	36.47	41.03	37.35	
Region				
Northern	29.48	32.05	29.98	6.40
Central	14.89	15.38	14.99	
Southern	23.10	14.10	21.38	
Eastern	23.71	21.79	23.34	
East Malaysia	8.81	16.67	10.32	

Note: Asterisks indicate levels of significance: *** = 1%, ** = 5%, * = 10%.

However, it is worth noting that employed respondents are more likely to migrate their payment preferences, as they account for a higher fraction of those who have migrated to a new payment method (86.63%) compared to those who have not (79.49%). Respondents who reside in urban and rural areas are more likely to adopt new payment methods compared to those who do not. Nevertheless, those who live in semi-urban areas are less likely to adopt the new payment method, with a higher proportion of non-migrants (41.03%) compared to migrants (36.47%) to the new payment method. Table 4 presents the logit regression estimates of the significance of socio-demographic factors and the likelihood of migration in payment preferences. The multivariate analysis results correspond to the bivariate results, whereby among the various socio-demographic variables, only age and household income have a significant effect on respondents' likelihood of changing their payment preferences.

Logit Regression Analysis

Several goodness-of-fit tests have been performed on the model. It was found that the model is a good fit, as the null hypothesis of the Hosmer-Lemeshow test was not rejected (Chi-square = 14.54). The pseudo R-squared value indicates that the model explains 8.86% of the variation within the dataset in this study, and the likelihood ratio is 181.24, suggesting a good model fit. The model's expected prediction accuracy is 81.82%.

Age is divided into four categories, with individuals aged 41 years and above selected as the reference group. A significant difference was observed only between those aged 18-20 years old and those aged 41 years old and above. Based on the odds ratio for age, the odds for those aged 18-20 years to migrate to a new payment method are 0.131 times lower than those aged more than 41 years old and above, assuming other factors remain constant. Based on the marginal effects analysis, it is found that individuals aged 18-20 years old and those aged 31-40 years old have a 25.3% and 13.4% lower probability of experiencing migration in payment preference, respectively, compared to those aged 41 and above. The result of the findings supports previous studies on the use of payment methods. As the age of consumers increases, they are less likely to change their payment method and more likely to carry more cash on hand than the younger generation (Davis, 2023). In contrast, previous literature on the payment methods used by Gen Z has also shown that younger generation consumers prefer to use cashless payment methods, such as e-wallets, mobile payments, and QR payments, in their daily transactions (Chande, 2021; Karim et al., 2020; Mustafa et al., 2022). Hence, younger generation consumers have a high probability of shifting their payment preferences toward cashless transactions, such as e-wallets, mobile payments, and QR payments, in the post-COVID-19 pandemic era.

The household income per month in RM is categorised into four groups: RM3,169 and below (lower B40), RM3,170 - RM4,849 (upper B40), RM4,850 - RM7,109 (lower M40), and RM7,110 and above (upper M40 and T20). Household income is found to have a significant impact on respondents' likelihood of migration in terms of payment preferences. It is found that lower income decreases the probability of migration in payment preferences. Using RM7,110 and above (upper M40 and T20) as the base variable, the odds of upper B40 respondents experiencing migration in their payment preferences were 0.177 times lower compared to upper M40 and T20 respondents. The lower M40 respondents were 0.255 times less likely to migrate to a new payment method compared to the upper M40 and T20 respondents. Based on the marginal effects of migration on payment preferences, income lower than RM7,110 (upper M40 and T20) decreases the probability of exhibiting migration in payment preferences by 12.1% to 18.3%. The findings of the paper align with past studies on the adoption of cashless payment methods, such as e-wallets, mobile payments, and QR payments. As

consumers have higher incomes, they are more likely to migrate from cash payments to other payment methods, such as cashless transactions (Abegao Neto & Figueiredo, 2022; Raj L. et al., 2023; Raya & Vargas, 2022).

Table 4

Logit estimates and marginal effects of explanatory variables on the probability of migration in payment preferences

	Logit estimates			Marginal effects	
	Coefficient	Odds ratio	Std. error	Migration in payment preferences	Std. error
Gender	-0.18	0.84	0.27	-0.03	0.04
Age 18 - 20	-2.03*	0.13	1.18	-0.25**	0.13
Age 21 - 30	-1.09	0.34	1.10	-0.09	0.06
Age 31 - 40	-1.38	0.25	1.09	-0.13**	0.06
Malay	0.06	1.06	0.35	0.01	0.05
Chinese	-0.06	0.94	0.35	-0.01	0.05
Pre-university	0.06	1.06	0.41	0.01	0.06
University	-0.10	0.90	0.39	-0.02	0.06
Employed	0.26	1.30	0.44	0.04	0.06
Lower B40	-1.35	0.26	0.85	-0.12*	0.07
Upper B40	-1.73**	0.18	0.78	-0.18***	0.06
Lower M40	-1.37*	0.26	0.76	-0.12***	0.05
Urban	-0.05	0.96	0.36	-0.01	0.05
Semi-Urban	-0.16	0.85	0.33	-0.02	0.05
Northern	0.57	1.77	0.44	0.10	0.08
Central	0.60	1.82	0.51	0.11	0.09
Southern	1.12**	3.07	0.49	0.17**	0.08
Eastern	0.72	2.05	0.45	0.12	0.08

Note: Asterisks indicate levels of significance: *** = 1%, ** = 5%, * = 10%.

The region of respondents' residence is divided into Northern Peninsular, Central Peninsular, Southern Peninsular, Eastern Peninsular, and East Malaysia (comprising the states of Sabah and Sarawak). The respondents residing in the regions of Sabah/Sarawak form the base variable for the region. No significant difference was observed in the migration of payment preferences between East Malaysia and all the other regions in Peninsular Malaysia, except for the Southern Peninsular region. The logit analysis revealed that those residing in the Southern Peninsular increased the odds of exhibiting migration of payment preferences by 3.071 times or increased the probability of having changed payment preferences by 17.2% compared to those residing in East Malaysia. Hence, the positive signs of the region of residence indicated that the respondents are more likely to adopt a new payment method compared to those who reside in Sabah/Sarawak. Based on previous studies, the authors determined that performance expectancy and facilitating conditions influence the adoption of cashless payments among consumers living in the Southern region of Malaysia (Rahman et al., 2020). In contrast, the migration of payment preferences in East Malaysia remains relatively low compared with West Malaysia, primarily due to limited internet penetration, particularly in rural areas (Gómez, 2020).

Based on the gender of the consumer, there were no significant differences in gender on the change in the current payment preferences in daily transactions. The negative sign of the coefficient indicated

that females were less likely to migrate to a new payment method compared to males. In other words, males have a higher likelihood of adopting new payment methods in their daily transactions. Although the gender effect in this study is not significant, the direction of the relationship is consistent with that of Farida et al. (2016) and Awan and Ho (2018), who also found that males have a greater interest in using alternative payment methods than females.

The educational level is divided into three categories: pre-university, degree/master/Doctor of Philosophy and diploma (base variable). Educational level is found to have no significant effect on respondents' decision to migrate in terms of payment preferences following the COVID-19 pandemic. However, the positive sign of the coefficient for education indicates that respondents with pre-university education are more likely to migrate to new payment methods compared with those with diploma education. On the other hand, respondents who hold a degree/master's degree, or Doctor of Philosophy are less likely to migrate to new payment methods, as indicated by the negative sign of the coefficient. Although the educational level effect in this study is not significant, the direction of the relationship is consistent with the study by Caroline et al. (2021), who also found that higher educational level consumers have greater interest in using other types of payment methods than lower educational level consumers. The non-significance of education on consumers' migration in payment preferences needs further investigation in future studies.

The non-significance of other socio-demographic variables, such as gender and education, likely indicates that changes in payment preferences during times of crisis, like the COVID-19 pandemic, are significantly influenced only by economic factors, including income and differences in receptiveness towards new technology, as indicated by age.

Migration of Payment Preferences By Type and Value of Transactions

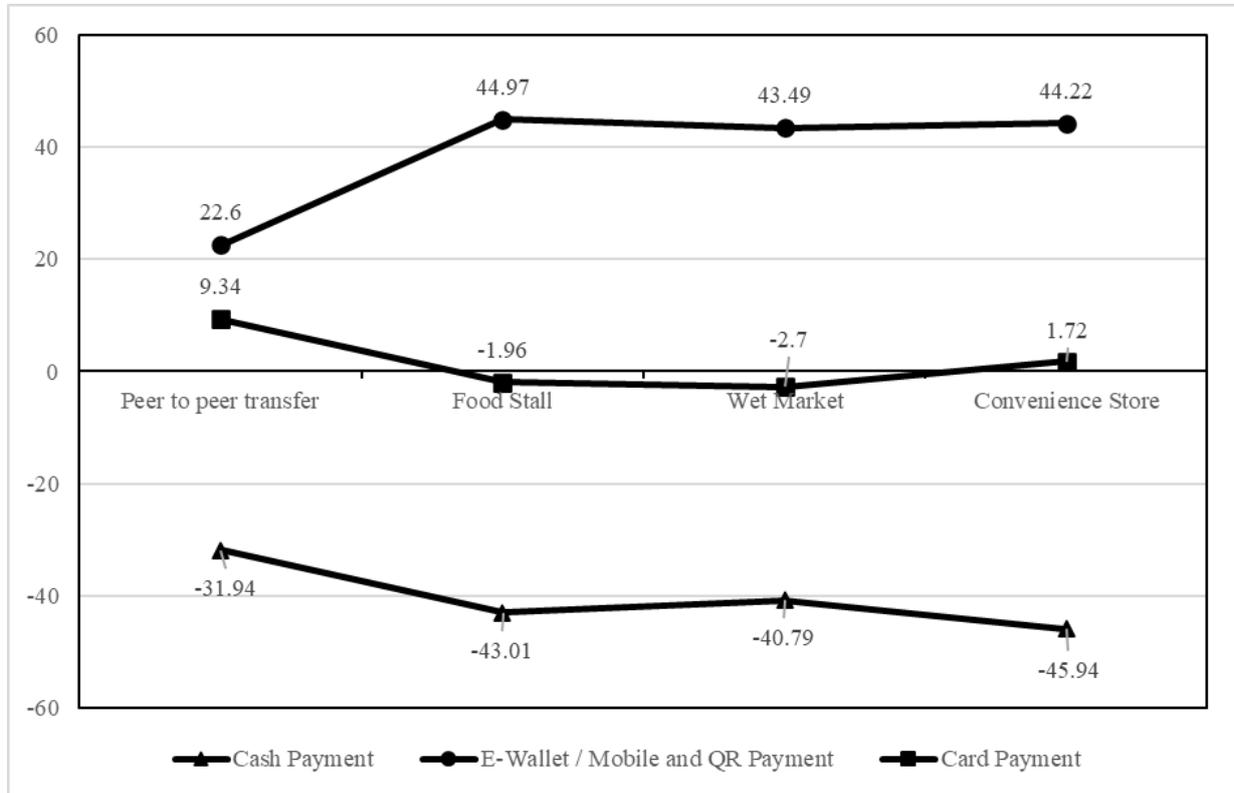
In the survey, respondents were asked to indicate their preferred payment method by types of transactions before and after the COVID-19 pandemic. From this, the extent of changes in the choice of payment method by transaction types was computed.

Figure 1 compares the changes in payment preferences by transaction type. Four types of transactions were considered: peer-to-peer transfers, transactions in food stalls, wet markets, and convenience stores. Only these transactions were considered as they constitute daily common transactions. These transaction types were generally cash-dominant prior to the COVID-19 pandemic. However, post-COVID-19, it was found that there was a strong substitution away from cash to e-wallets, mobile payments, and QR payments. Notably, the strongest migration to E-wallet/Mobile and QR payment was observed in transactions in food stalls, followed closely by transactions in convenience stores. For instance, food stall transactions witnessed an increase in the usage of E-wallet/Mobile and QR payment by 44.97% while a decrease in cash usage by 43.01%. Furthermore, E-wallet/Mobile and QR payment increased by 44.22% in convenience stores while cash usage decreased by 45.94%.

Increased usage of card payments was noted only for peer-to-peer transfers and convenience stores, with increases of 9.34% and 1.72%, respectively. There was a clear decline in cash usage for all four types of transactions, with the highest decline in convenience stores. In terms of transaction type, convenience store transactions showed the highest migration in payment preferences, with a cumulative 91.88% change in payment preferences, while peer-to-peer transfers showed the lowest migration at 63.88%.

Figure 1

Overall percentage change in payment preferences by type of transactions



The survey also asked respondents to choose their preferred payment method for a range of transaction values before and after the COVID-19 pandemic. Seven levels of transaction values were provided: below RM10, between RM10 and RM50, between RM51 and RM99, between RM100 and RM150, between RM151 and RM250, and above RM250. The line chart in Figure 2 illustrates the overall percentage of using different payment instruments for different transaction values.

Overall, there was a clear reduction in cash usage for all seven transaction value ranges. Both E-wallet/Mobile Payments and QR payments, as well as card payments, experienced an increase in usage across all transaction values. From Figure 2, it is clear that E-wallet/Mobile and QR payments were favoured for lower transaction values, and as values increased, there was a preference for card payments instead of E-wallet/Mobile and QR payments. It was clear that overall, there was a strong preference for E-wallet for transactions below RM200, as E-wallet/Mobile and QR payment recorded increased usage from 55.41% (for transactions above RM250) to 298.11% (for transactions below RM10). For transactions above RM200, card payment was preferred over E-wallet/Mobile and QR payment, with a 48.41% increase in card payment usage compared to a 29.79% increase in E-wallet/Mobile and QR payment. Overall, transactions below RM10 showed the strongest migration in payment preferences, while the weakest migration was found in transactions above RM250.

Figure 2

Overall percentage change in payment preferences by values of transactions

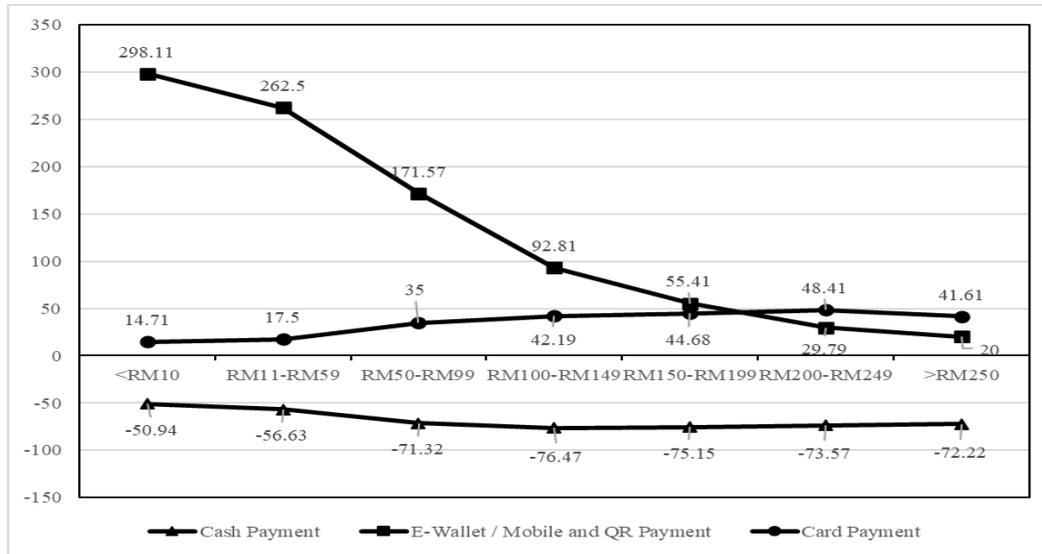
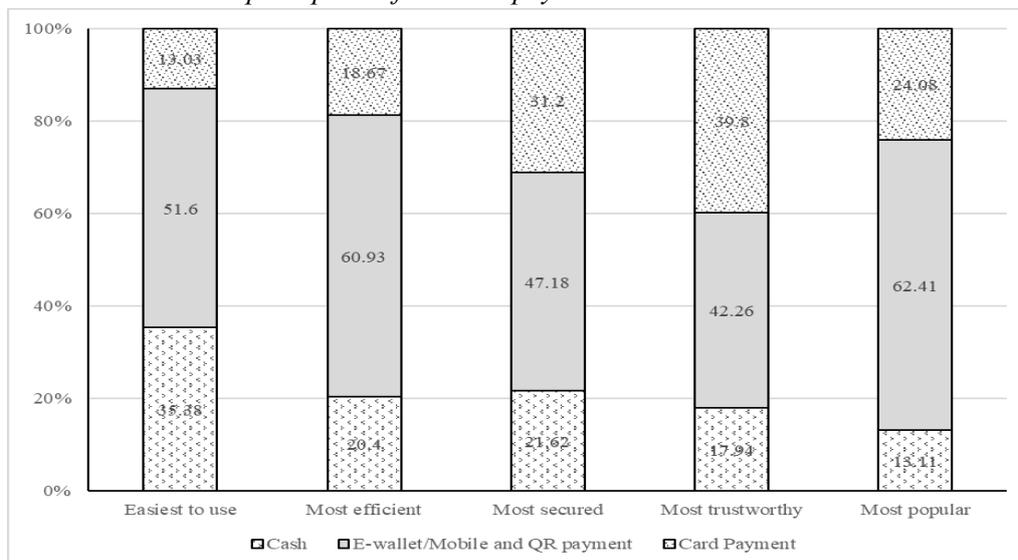


Figure 3 demonstrates the overall perception of consumers on the selected payment methods. Undoubtedly, E-wallet/Mobile and QR payment rank high in all perception features compared to cash and card payment. However, among the five perception features, E-wallet/Mobile and QR payment are most notable for being the most popular payment instruments, with 62.41% of respondents responding affirmatively to this. Among the five features, card payment stands out as the most trustworthy, with 39.8% of respondents indicating this for card payment. A total of 35.38% chose cash as their payment method, due to its ease of use, indicating a strong advantage for cash. Overall, it can be observed that E-wallet/Mobile and QR payments command favourable perceptions among consumers, suggesting that the migration of payment preferences towards these methods is likely to be long-lasting.

Figure 3

Consumers' overall perception of selected payment method



POLICY RECOMMENDATIONS

First and foremost, the information and findings of this study can serve as guidelines and references for developers to gain a better understanding of the different perceptions of consumers that should be considered when developing or improving E-wallet services. The findings of this study have shown that consumers place considerable emphasis on the usefulness and ease of use of E-Wallets because over half of the respondents in this study, who have a favourable perception of these two perspectives towards E-Wallets, are frequent users of E-Wallets. Given that consumers' perceived usefulness of E-wallet is a key factor in attracting more potential users, developers need to design more useful features that people expect to make E-wallet multi-functional. For instance, the developers could implement a financial analytics dashboard and diagrams in their E-wallet app. This could help consumers have a clearer view of analysing and managing their finances through the diagrams or figures provided.

On the other hand, businesses could explore collaborations with E-wallet providers to generate new business models and increase their level of profits simultaneously. Hence, retailers may refer to the findings of this study to consider which type of E-wallet should be one of their payment methods instead of just using traditional cash-based instruments. Based on the findings, retailers can observe that approximately 70% of respondents own two to three E-wallet accounts. This result indicates a positive opportunity for retailers to collaborate with E-wallet service providers, offering consumers a wider range of payment methods. Furthermore, this study found that the most popular types of E-wallet among respondents during the COVID-19 pandemic are Touch 'n Go eWallet, GrabPay Wallet, Boost eWallet, and Maybank E-Wallet (MAE), with 71.6% and 14.0% of E-wallet user respondents' accounts in the total sample, respectively. From the data shown, it can be inferred that retailers may consider these E-wallet services as payment methods to attract more potential customers to the market.

Lastly, this study will benefit policymakers by providing a better understanding of the trend of usage frequency among Malaysians, particularly students, which in turn enables the government to develop appropriate strategies to boost the usage frequency among these students further even though it is found students are frequent users of E-wallet, which is consistent with Malaysia's goal in accelerating the usage of E-wallet among consumers. Furthermore, the findings of this study show that respondents residing in urban areas have a lower usage frequency of E-Wallets compared to respondents residing in other locations. As is well known, urban areas are more advanced, and a higher usage frequency of E-Wallets is expected; however, the results found are contrary. Policymakers in urban areas should offer some incentives through an E-wallet to attract more consumers who stay in the urban area to use it. Overall, policymakers should develop proactive policies to promote the cashless payment system in Malaysia through E-wallets.

LIMITATION OF THE STUDY

As the study employs a single cross-sectional design, it limits our understanding of the evolution of payment preferences migration. To capture the dynamics of migration of payment preferences, longitudinal data could be used. Furthermore, convenience sampling used in this study limits generalisation due to potential bias. Stratified sampling could be used in the future to ensure the sample is representative based on relevant characteristics, such as gender, age, and ethnicity. Additionally, since the data is collected online, it was challenging to control the data of respondents based on their characteristics. Consequently, the samples collected skewed towards respondents aged between 21 and 30 years old, and Chinese respondents.

SUGGESTIONS FOR FUTURE RESEARCH

Several suggestions are proposed for those who may conduct similar research as a reference to overcome the study's weaknesses. First, the duration of E-wallet use is not studied in the current research. This aspect could be included in future studies to provide a comprehensive understanding of the behavioural intention of E-wallet users. Furthermore, apart from the survey, a focus group discussion could be conducted to facilitate triangulation of the data. This will provide richer insights and validate the survey data collected. Lastly, the UTAUT components of this current study are limited to four constructs. Different constructs such as trust, hedonic motivations, price value, and habit could be added to the model.

CONCLUSION

The paper explored the pattern of consumers' payment preferences before and after the COVID-19 pandemic. It was found that most consumers have changed their payment preferences following the COVID-19 pandemic. The prolonged economic lockdown has inadvertently changed the way economic transactions are conducted, shifting from physical to remote transactions, and thus, this has catalysed the use of cashless payment methods. The shift in payment preferences clearly favours contactless payments, such as e-wallets, mobile payments, and QR payments, and a significant shift away from cash usage in daily transactions. The migration of payment preferences is likely to take place among consumers who are 40 years old and above, higher-income groups, and those residing in Southern Peninsular Malaysia compared to those residing in East Malaysia.

In other words, economic factors and receptiveness towards new technology are key variables in consumers' payment preferences. Additionally, this study highlights different payment methods catering to different transaction types and values. With the acceptance of E-Wallets/Mobile Payments and QR codes by street vendors, such as food stalls and wet markets, as well as small retailers like convenience stores, a significant shift from cash to E-wallet/Mobile and QR payments was observed. The low value of transactions conducted in food stalls and wet markets, which were generally less than RM100, also showed a significant increase in the usage of E-Wallets/mobile payments and a substantial reduction in cash usage.

Preferences for card payment were noted in transactions above RM200. Overall, based on consumers' perception, E-wallet/Mobile and QR payment are the most popular payment methods. In fact, this payment method is found to have a favourable perception in all aspects, such as ease of use, efficiency, trustworthiness, security, and popularity. While there is a strong shift away from cash, cash remains a payment method that is still the easiest to use. The strong popularity of E-Wallets/Mobile and QR payments suggests that their usage will rise in dominance, particularly for micropayments and less formal business transactions. Lastly, this study sheds light on the migration trends in payment preferences, highlighting the unique characteristics of the various cashless payment methods. Understanding consumers' perceptions of the various cashless payment methods can help payment providers to develop and promote targeted solutions.

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