JOURNAL OF INFORMATION SYSTEM AND TECHNOLOGY MANAGEMENT (JISTM)
www.jistm.com

DEMOGRAPHIC AND BEHAVIORAL PROFILING OF E-WALLET USERS: A COMPARATIVE ANALYSIS OF E-WALLET PLATFORMS

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Abstract:

The revolution of the internet has given rise to the development of electronic wallets (E-Wallets). This digital version of the physical wallet has gained popularity due to its convenience, security, and ease of use. The Malaysian government has launched many campaigns and initiatives to support the transformation of traditional payment methods to cashless payment methods resulting in competitive markets within the total 42 E-wallet providers. In this study, we identify and contrast the specific demographic and behavioral profiles of users across different popular e-wallet platforms. This study was carried out quantitatively by analyzing the Google form survey data obtained from 180 Malaysian respondents based on different platforms. The analysis shows that overall Touch N Go has recorded the highest usage among the users at 51.11% followed by MAE and other platforms at 28.33% and 20.56% respectively. This result is consistent with the demography on gender, location, employment, income, and education level except in demography on age, rating of e-wallet usage purpose, and perception of the e-wallet. Our finding also addressed that a sample size of 180 respondents was not sufficient to fully represent the entire population of Malaysia. Therefore, the adoption of a stratified sampling method consisting of all states within Malaysia is more appropriate.

Introduction

Methods of payment refer to the various ways in which financial transactions are conducted and funds are exchanged for goods or services. These methods encompass traditional and digital forms of payment, each offering distinct advantages and considerations. Nowadays, methods of payments and money transfers have undergone a significant transformation to the people all around the world due to the impact of the revolution of the internet (Yusoff et al., 2019). These days, electronic transactions are essential for many purposes including shopping, bill payment, money transfers, and many more (Alam et al., 2021). Electronic transactions, also known as e-transactions, refer to the exchange of funds, data, or information through electronic means. These transactions are conducted using electronic devices and digital platforms, enabling seamless and efficient transfer of value and data. Electronic transactions encompass a wide range of financial activities and interaction (Hassan et al., 2020). E-wallets and M-wallets are examples of electronic transactions.

An electronic wallet, also known as an E-wallet, is a digital version of a physical wallet that allows individuals to store, manage, and make electronic transactions. It is a software application that securely stores payment information, such as credit card details, bank account information, and other payment methods, and allows users to make payments for goods and services online or in-store (Hassan et al., 2021). E-wallets are becoming increasingly popular due to their convenience, security, and ease of use. The difference between the e-wallet and the mobile wallet, which is also known as a M-wallet lies in the device on which they are used (Ramli et al., 2021).

An E-wallet is a digital payment system that can be accessed through a website or mobile app and is designed to be used on any device, including desktop computers, laptops, tablets, and smartphones. It allows users to store payment information, make payments, and manage their finances electronically (Hassan et al., 2021). On the other hand, an M-wallet is specifically designed to be used on a mobile device, such as a smartphone or tablet. It is a type of E-wallet that allows users to store payment information, make payments, and manage their finances directly from their mobile device. M-wallets are often used for mobile payments, which allow users to make purchases in-store or online using their mobile device (Hidayat-ur-Rehman et al., 2022).

The function of an e-wallet, or electronic wallet, encompasses several key capabilities and benefits that cater to the needs of modern consumers and businesses. E-wallets serve as secure digital repositories for storing payment card details, bank account information, and other payment methods. This eliminates the need to carry physical cards and allows users to make transactions without exposing sensitive financial data (Ramli et al., 2021). E-wallets streamline the payment process by allowing users to make quick and convenient transactions for online purchases, in-store payments, bill settlements, and peer-to-peer transfers. Users can access their stored payment information with a few taps or clicks, reducing the time and effort required for transactions (Hassan et al., 2021). E-wallets enable mobile payments, allowing users to conduct transactions using their smartphones or other mobile devices. Many e-wallets also support contactless payments, leveraging technologies such as Near Field Communication (NFC) for

seamless and secure transactions at compatible terminals (Hassan et al., 2020). E-wallets often provide users with the ability to track their transaction history, view receipts, and monitor their spending patterns. This feature can help users manage their finances more effectively and gain insights into their purchasing behavior (Rustine et al., 2021).

E-wallets, or electronic wallets, offer several advantages over traditional payment methods. E-wallets offer a convenient way to make payments, as users can store their payment information in one place and access it easily from their mobile devices or computers. This eliminates the need to carry physical cards or cash and reduces the time and effort required to complete transactions. E-wallets incorporate advanced security features such as encryption, tokenization, and biometric authentication to protect users' financial information and prevent fraud. This makes e-wallets a safer option than carrying physical cards or cash, which can be lost or stolen (Rustine et al., 2021). E-wallets enable fast and efficient transactions, as users can complete payments with just a few taps or clicks. This is particularly useful for online purchases or in-store payments, where speed and convenience are essential (Soegoto et al., 2020). E-wallets are accessible to anyone with a mobile device or computer, making them a convenient option for people who may not have access to traditional banking services or credit cards (Hassan et al., 2021). E-wallets can also help reduce the use of paper receipts and physical cards, contributing to a more sustainable and environmentally friendly payment system.

On the other hand, there are also some potential disadvantages associated with their use. Despite the security features implemented in e-wallets, there is always a risk of security breaches, hacking, or unauthorized access to users' financial information. This can lead to potential financial losses and privacy concerns (Subaramaniam et al., 2020). E-wallets rely on technology, such as mobile devices, internet connectivity, and secure platforms. Any disruptions in technology infrastructure, such as network outages or device malfunctions, can hinder the usability of e-wallets. Not all merchants or service providers accept e-wallet payments, leading to limitations in where e-wallet users can make transactions. This lack of universal acceptance can be a barrier to widespread adoption (Handayani et al., 2020). Some e-wallet providers may impose transaction fees for certain types of transactions, such as fund transfers or currency conversions. These fees can add to the overall cost of using e-wallets. Users of e-wallets may be susceptible to various forms of fraud, including phishing attacks, identity theft, and fraudulent transactions. It is essential for users to remain vigilant and adopt best practices for securing their e-wallet accounts (Nugraha, 2021).

E-wallets in Malaysia operate as digital versions of traditional wallets, allowing users to store and use funds for various transactions. Users can add funds to their e-wallets via debit cards, credit cards, or online banking. The funds are then stored in a licensed trust account as per the requirements of Bank Negara Malaysia (BNM) (BNM, 2022). For transactions, users typically scan a merchant's QR code, with different procedures for dynamic and static QR codes. Most e-wallets in Malaysia are mobile applications like Boost, GrabPay, and Touch 'n Go eWallet, functioning on a prepaid basis.

The introduction of e-wallets in Malaysia has transformed daily transactions by offering heightened convenience and efficiency. The rising popularity of cashless transactions has led to a global surge in e-wallet usage (Singh et al., 2020). Consequently, there is a noticeable global shift from traditional payment methods to e-wallet technologies, offering speedier transactions. This shift to e-wallets thus streamlines everyday financial transactions for

Malaysian users. These e-wallets allow for swift, secure payments without the need for physical cash or cards, facilitating faster transactions, especially in retail settings.

The Malaysian government launched many campaigns and initiatives to boost e-wallet usage in the country. One of which was implemented in 2020, which is the RM 450 million e-Tunai Rakyat initiative issued by BNM. Malaysians 18 and older with an annual income below RM 100,000 were eligible for a free RM 30 through e-Tunai Rakyat, with Touch 'n Go, Boost, and Grab-Pay among the 42 non-bank e-money issuers participating (Tariq, 2020). This resulted in a significant increase in new users for these e-wallets: Touch 'n Go saw its user base grow tenfold, Boost experienced a 25-fold increase in daily registrations, and Grab-Pay reported a sixfold surge in users, many of whom had previously used cash (Tariq, 2020). On the initiative's first day, over RM 10 million was spent by 32,000 approved applicants, mainly on groceries, telecommunications, transportation, and food (The Star, 2020). The e-Penjana initiative, part of Malaysia's Short-Term Economic Recovery Plan (PENJANA), was designed to boost consumer spending and promote safety through contactless payments. It also aimed to assist public health authorities in Covid-19 contact tracing via the MySejahtera application. From July 31 to September 24, 2020, the Malaysian Government provided RM 50 e-Penjana credits to consumers earning less than RM 100,000 annually (PENJANA, 2020).

Problem Background

The emergence of digital financial services has significantly altered traditional financial models, leading to improved experiences in handling monetary transactions. E-wallets, or mobile wallets, stand out as a key innovation in this transformation. These digital wallets have reshaped not only personal finance management but also the interaction with various sectors like retail, e-commerce, and telecommunications. Despite the innovative features offered by different e-wallet platforms, there is noticeable variation in their market reach, user satisfaction, and ease of use.

With the rise of many e-wallet platforms, a competitive landscape has been created where each service strives to enhance its functionality and user experience. Although there are several options available, including Touch N Go, Boost, Grab Pay, Shopee Pay, MAE, Apple Pay, DuitNow, Big Pay, and AliPay, comprehensive research that thoroughly evaluates and compares these platforms in terms of their users' demographic and behavioral traits is scarce. Gaining an understanding of the demographic and behavioral patterns of e-wallet users is crucial for identifying their preferences, satisfaction levels, and the general attractiveness of each platform. This insight is vital for e-wallet providers to customize their offerings, improve user interfaces, and refine their features to cater to the varied needs and expectations of distinct user groups. The E-wallet sector has experienced considerable growth, with numerous platforms competing for dominance by offering varied functionalities, user experiences, and service integrations. However, there is a notable gap in the comprehensive analysis of how these e-wallet platforms differ in terms of user demographics and behaviors.

This study focuses on identifying and contrasting the specific demographic and behavioral profiles of users across different e-wallet platforms, namely Touch N Go, Boost, Grab Pay, Shopee Pay, MAE, Apple Pay, DuitNow, Big Pay, and AliPay. It aims to explore how various demographic groups, including differences in age, gender, education, and location, prefer certain e-wallet platforms. Additionally, the study intends to examine the distinct behavioral

patterns of these users, such as their spending habits, frequency of transactions, and types of transactions preferred on different platforms.

The study is driven by the following research questions:
1. What demographic characteristics define the users of various e-wallet platforms, and how do these characteristics affect their choice and use of these platforms?
2. In what ways do behavioral traits like spending habits and transaction frequency differ among users of various e-wallet platforms?

By exploring these questions, the study aims to develop a comprehensive understanding of the user dynamics within the e-wallet sector. The objective of this research is to examine and compare various e-wallet platforms, along with profiling the demographic and behavioral characteristics of their user bases. This understanding is crucial for improving service delivery, enhancing user satisfaction, and enabling e-wallet providers to position themselves strategically in the market.

Literature Review

Evolution Of Fintech: E-Wallet / History Of The Emergence Of E-Wallet
E-wallets can be regarded as a type of financial technology (fintech) tool. The establishment of fintech began in 1866, with the initial phase of its development commonly referred to by researchers as the transition 'from analogue to digital'. This phase spanned the period from 1866 to 1967 (Alam et al., 2021). It initially started with a barter system of exchanging goods for daily transactions; the method changed to be replaced by paper currencies (Das Nair & Landani, 2020). The startup phase established a global relationship between banks and financial institutions. During this phase, the first electronic fund transfer (EFT) system was established in the United States in 1918, and credit card payments were first introduced as digital payments in 1950 (Arner et al., 2015; Boamah & Murshid, 2019).

The second phase covered from 1967 to 2008, with a focus on the 'refinement of traditional financial services' (Alam et al., 2021), as digital finance evolved during this phase. In 1967, the first Automated Teller Machine (ATM) was launched, followed by the first digital stock exchange for trading activities, which was launched by Nasdaq Stock Market (an American Stock Exchange in New York City) in 1971 (Arner et al., 2015; Boamah & Murshid, 2019). During this time, there was a notable emergence of more financial technology (fintech) services, such as internet banking, PayPal, and mobile payments. The evolution of banking systems in the mid-1990s occurred in parallel with the emergence of the internet. As a result, traditional banking systems undergo a transformation towards being more computerized and digitalized. The adoption of fintech was not solely confined to the banking sector, financial institutions, and other businesses. Rather, the widespread use of this technology has reached all parts of the community.

The third phase of fintech begins from 2008 until 2019, as at this phase, the researcher classifies it as a 'democratizing digital world' phase (Alam et al., 2021). In 2009, Bitcoin was released, and Alibaba introduced loans to SMEs through e-commerce platforms. Even though the world is facing a global financial crisis in 2008, it does not affect the evolution of fintech. The boom in smartphone technology boosts the forms of new payment using mobile phones for e-wallet payment platforms (Teng & Khong, 2021). At this point of time, other digital payment tools

have grown rapidly on various platforms, including Google Wallet, Apple Pay, P2P money transfer services, and a lot more (Arner et al., 2015; Boamah & Murshid, 2019). The United States possesses the most extensive fintech market within the banking and finance industry (Haddad & Hornuf, 2019) followed by China through its platforms Alipay, Wechat Pay and Yu'E (Chen, 2016). The developing countries such as South Korea (Choi et al., 2020), India (Teng & Khong, 2021), Pakistan (Gomber et al., 2017), Africa (Kang, 2018), Indonesia (Tan et al., 2018) and Malaysia have no exception (Chong et al., 2019) and they have made a lot of initiatives to use this digital platform to make sure they are at the current pace and not lagging behind.

'Fintech Innovation Phase,' which continued from 2019 to date, depicts an instantaneous, expanding phenomenon of digital payment. The government is targeting all individuals equipped with phones and digital devices to employ fast money transactions with hand-in-hand and trusted fintech innovations (Alam et al., 2021). Nowadays, fintech mobile phone payment not only limited its features of transferring money but they are expanding the function for online shopping for more accessible and flexible ways of purchasing products (Gomber et al., 2017; Hung & Luo, 2016)

Government Initiatives on E-Wallet

The usage of e-wallet is increasing due to rapid changes in the whole financial technology areas and influence from other countries. In addition to this, the exponential expansion of e-wallet usage may be attributed to the influence of tourism. When tourists visit Malaysia and engage in transactions for various goods and services, e-wallets are commonly used. This, in turn, indirectly encourages local residents to recognize and adopt this technology for conducting business transactions and providing services to tourists (Alam et al., 2021). In the Financial Sector Malaysia Blueprint has set a target to increase digitalization in payment transactions from RM22 to RM200 per capita monthly (Wong & Mohamed, 2020). The emergence of e-wallet and the adoption of it widespread drastically during the pandemic and it keep rising drastically in the post pandemic era.

During Movement Control Order (MCO) enforced by the Malaysian Government, the Government provides an incentive of RM30 to all Malaysian individuals reaching 18 or above to use any e-wallet application for digital payments. After 10-months' time of implementation, the exchange value for e-cash increased to RM13.9 billion in 2019 compared to RM11 billion in 2018. In 2023, Malaysians aged 21 and above who earn an annual income of RM100,000 entitled for RM100 incentive to their E-Wallet (Ministry of Finance, 2023). To boost up public awareness on cashless transactions, Bank Negara Malaysia (BNM) also has increased cheque-related processing fees and reduced fees of instant e-payments amounted to RM5,000 (Bank Negara Malaysia, 2011).

Apart from that, the Securities Commission (SC) also has played their role to protect customer's interests, especially relating to transparency, security of customer data and financial information disclosure issues of licensed e-wallet. The government had put a strict regulation that all e-wallet vendors must be licensed and comply with SC and BNM guidelines (Andrew et al., 2019). Currently, there are 42 non-bank e-money issuers under BNM list, and the major merchants are Boost (by Axiata Group), GrabPay (by Grab), Touch'n Go e-wallet (by Alipay & Touch'n Go), Razer Pay (by Razer Inc), Wechat Pay (by Tencent Group), MAE (by Maybank) and BigPay (by Air Asia) (Alam et al., 2021; Wong & Mohamed, 2020).

Features Of E-Wallet

E-wallet is a high-tech cashless network service that facilitates cashless purchasing and shopping. It can be used to perform financial transaction services through personal computers or mobile phones (Pachpande & Kamble, 2018). The convenience, quickness, and easy features make the service become the most preferred platform for trading and services (Unting et al., 2022). However, some users resist adopting e-wallet technology due to small keypads and limited display of smartphones, and this resistance is significant among older people (Teng & Khong, 2021). According to Alam et al. (2021). Customers must register and maintain a debit or credit card account that is linked to their e-wallet platform. When customers engage in transactions, such as making a purchase or other type of transaction, the merchant will need payment verification and information in order to receive transaction approval (Pachpande & Kamble, 2018). To allow funds to be sent to a vendor, retailer, payment service provider, or other financial entity, such transactions must be completed. Furthermore, the customer can make recurring payments without requiring direct transfers from their personal accounts. This can be implemented with the simple action of clicking a button (Kang, 2018). Some of the platforms are most preferable among users if they provide a user-friendly interface and are less complicated (Teng & Khong, 2021). The customers are looking at convenience tools that can provide real time processing ability (Karim et al., 2020).

In Malaysia, e-wallet markets face extreme challenges in maintaining an increase in the number of certain e-wallet users as there are 42 e-wallet providers in Malaysia and lower switching costs. The continuance intention to use one e-wallet is directly affected by the operational constraint, habit, price benefit, satisfaction and attitude (G. A. Abbasi et al., 2022). However, the acceptance of e-wallets has recorded a higher volume of installation as well as its usage since the Covid-19 pandemic as this payment method is necessary to practice social distancing and to avoid physical money as the medium that transmits contagious disease has boosted the markets of the e-wallets (Raenu et al., 2022; Hendy et al., 2020). In addition, the Malaysian government's e-wallet initiative programme has marketed several e-wallet providers' branding causing the speed up of adoption and usage of e-wallets leading to a surge in new users (Wong & Mohamed, 2020). Nonetheless, the cheaper cost of transactions without requiring middlemen and the increased popularity of e-commerce in recent years gives markets a competitive edge for using e-wallet platforms.

Despite that, the increasing global demand for cashless payment systems has turned the consumer mindset to consider the use of e-wallets significantly (Alam, 2020P). However, their knowledge of the e-wallet is still limited, and the convenience of the e-wallet was not realized among most Malaysians (Abdullah et al., 2020). Among the most trending e-wallet platforms in Malaysia such as Boost, Grabpay, Lazada Wallet, Samsung Pay, PayPal, Touch 'n Go e-wallet, vcash, WeChat Pay, Razer Pay, BigPay, Setel, myNEWS Malaysia and AEON Wallet (Razif et al., 2020). Customer retention and satisfaction are the main marketing strategies that service providers utilise to sustain a business in a competitive Fintech market environment (Komba et al., 2021; Shamsudin et al., 2020).

Risk Related / Trust / Security

Among the perceived risks of using e-wallets are the security and confidentiality mainly from the aspect of the security and safety of bank accounts or funds as well as the security of the personal information when the mobile phone is lost or being stolen. In addition, e-wallet as a

new technology brought up new risks in cyber security as users are exposed to risks such as malware, hacking and phishing attacks when carrying out online transactions (Abdullah et al., 2020). Nonetheless, the security concerns identified from the Nielson Payment Landscape Report in 2018 were missing transactions, fake websites, card fraud and the risk of losing mobile phones (Abdullah et al., 2020). There are several risks related to the usage of the e-wallet such as financial, security, legal, performance, time, psychological, operational and social risk. Table 2.1 lists the risks possibly related to the usage of the e-wallet. All the risks related to the e-wallet usage affect the user's trust and perception of the e-wallet.

Table 2.1: Risk Associated With E-Wallet Usage, Adapted From Sentanu et al., 2020.

Risk Related	Possible Cause	Main concern
Financial	System malfunctions, financial fraud, Additional transaction cost	Fraud and monetary loss
Security	Illegal activity of hackers, Invasion of privacy, Misuse of transaction history, Hack of credit card integrated on account	Loss of control of data privacy and monetary loss
Legal	Lacking universal law, Lacking regulation of fintech	Financial loss and security issue of e-wallet account
Performance	Service that does not operate as advertised and expected, Slow system performance, unexpected system error, Wireless networks	Dissatisfaction of the users
Time	Slow access to the service, trying to operate or reinstalling the service, Time uncertainty, need of time, Excess needed in using the service	Barrier for the users in using the service
Psychological	System does not operate properly, Failure in transaction	Loss of peace of mind or self-perception
Operational	Internal issues of a company, Failed internal processes, System malfunction, Lack of operational skills	Barriers for the users and financial institutions
Social	Being judged or disagreed due to decisions they make	Loss of status in the social environment

Previous Study Related To Demographic

The demographic on the age of e-wallet users in a previous study mentioned that users with young age are more motivated to use e-wallet due to being more conversant with the technology as compared to older age users. Unlike younger users, older users are sceptical of the technology and dependent more on face-to-face transactions due to technology anxieties and lack of knowledge as well as experience with the internet and its usefulness (Faiswal & Masum, 2021). Therefore, younger users are less affected by the problems corresponding with the e-

wallet technology compared to older users. Most of the studies have observed that there is a significant difference between age and the usage of the e-wallet (Raenu et al., 2022).

Many studies have emphasized that males were always inclined to use e-wallet technology compared to females because men were charged with the duty of managing the finances of their homes (Faiswal & Masum, 2021; Raenu et al., 2022). Males are characterised to hold more positive attitudinal effects and are less anxious about technological innovations (Faiswal & Masum, 2021). Despite that, females have a higher level of caution in accepting innovative technology (Raenu et al., 2022). Hence, males tend to have an encouraging attitude to gain knowledge and explore the latest technology than females.

Users obtaining low levels of income tend to be more concerned and have high anxieties about the cost of the products and thus be more careful when purchasing products. On the other hand, high-income users usually afford high-quality products via online purchasing (Faiswal & Masum, 2021). Therefore, the usage of the e-wallet is affected by the income level in which low-income users tend to have fewer transaction amounts. In contrast, high-income users probably have high transaction amounts in the e-wallet and perceive lower risk in making online purchases. Hence, technological anxiety and perceived risk decrease as the user's income level increases. In addition, previous study findings emphasised that e-wallet usage based on race consists of a majority of Malay or Bumiputera followed by Chinese, Indian and others. Last but not least, previous studies revealed no significant differences for either gender and income levels in e-wallet usage (Faiswal & Masum, 2021; Raenu et al., 2022).

Research Methodology

The idea of this research is to profile the demographic and behavioral characteristics of their user bases. Hence, the formation of a questionnaire must be in structure. The primary purpose of the structured questionnaire is to collect e-wallet usage performance by the respondents and explore the relationship between variables. This research is a quantitative research approach. The target respondents are the residents that live in Malaysia who use e-wallet in daily life. The minimum sample size for this research is set to 150 in order to increase accuracy. The questionnaire is shared with friends and classmates through WhatsApp and social media such as Facebook, Instagram etc. A caption has been created to mention the purpose of this survey before the respondents answer it. No name or contact information are taken from this survey to protect their privacy.

Questionnaire Development

The questionnaire is designed by referring to existing material obtained from the article by Abbasi et al. (2022) and doing some modification to meet the objective. All questions were gone through by the group members so that their necessity could be effectively discussed. The structure of the questions consists of closed-ended questions and Likert scales.

The form is divided into 3 parts. The first part is to collect the general information of the respondents such as gender, age, races, employment status, area of staying, income and educational level. The second part is to acquire how respondents use e-wallets. The questions cover types of e-wallet, duration of using e-wallet, propose using e-wallet and amount used by e-wallet per month. The third part of the questionnaire focuses on the service provided by the e-wallet company.

Most of the questions asked in the questionnaire are closed-ended questions except propose using e-wallet and feeling of using e-wallet which used Likert scales. The point scale used is a 5-point scales. For propose using e-wallet, the lower the score, the less used it is. For feeling of using e-wallet, the higher the score, the more the respondent agrees with it.

The total questionnaires are set to a minimum to minimize respondent fatigue and reduce the quality of the response. Strategic survey design is the foundation for the strategy of limiting the overall number of questionnaires or questions in a survey. It seeks to alleviate respondent fatigue, a prevalent issue in survey research. Long questionnaires with a lot of questions might tire out responders and make them feel overwhelmed. People may become bored, tired, or less focused as they go through a lengthy survey, which could lead to hurried, less considered answers. In severe circumstances, respondents can even give up on the survey before finishing it. Survey designers intentionally restrict the number of questions in order to maintain respondent motivation and engagement — both of which are essential for obtaining high-quality data.

Data Collection - Google Form
The structured questionnaire was administered by using google form which is an online survey. The sampling technique is random sampling. The link to the questionnaire is shared along with a caption to the outsider so that they know what the purpose of this questionnaire is. The form is created based on the questionnaire discussed above.

Data Analysis
Since the focus of the work is to find differences between e-wallet platforms, the data collected will be sorted between different e-wallet platforms. If the number of respondents for the e-wallet platform is less than 30, the e-wallet platform will be combined with another e-wallet platform which is also less than 30 respondents. Afterword, the analysis for each category will be analysed and shown with a table or graph or both at the same time.

Besides, the responses consist of likert scale. The data with likert scale are E-wallet Purpose and Satisfaction. Hence, converting the scale data to percentage allows for easier comparison and analysis of data across different scales or data sets. Firstly, it is important to find the average scale value based on the collected data. This will make the chart shorter and clearer since the data has been simplified. Besides, knowing the total range of the scale is important. The calculation of total range will be the highest scale value deduct the lowest scale value. Next, divide the difference between the scale value and the lowest value by the total range, and then multiply by 100 to calculate the percentage.

$$((\text{Scale Value} - 1) / \text{Total Range}) \times 100\% = \text{Percentage},$$

Next, the analysis also compares the gender, age range, respondent live area, employment, income, education level with different e-wallet platforms. All the data will show in percentage. Thus, the gathered value based on each e-wallet platform will be divided by the total number of respondents and multiplied by 100. (Number of respondents voted for the platform/Total number of respondents) x 100% = Percentage,

Findings and Discussion

The aim of this research is to examine and compare various e-wallet platforms, along with profiling the demographic and behavioral characteristics of their user bases. The questionnaires were randomly distributed to the users of e-wallets using Google Forms through the WhatsApp application. Our questionnaire includes nine (9) options for E-Wallet platforms: Touch N Go, Boost, Grab Pay, Shopee Pay, MAE, Apple Pay, Big Pay, Ali Pay, and others as indicated by (Abdullah et al. 2020; Razif et al. 2020). Upon analyzing the data, we discovered that just two platforms, MAE and Touch N Go, demonstrate a substantial level of preference. Conversely, the remaining platforms, consisting of Boost, Grab Pay, Shopee Pay, Apple Pay, Big Pay, and Ali Pay exhibit a minimal number of respondents respectively. Hence, we grouped the responses and categorized them as 'Others'. There were 180 respondents who responded to the questionnaire, and the demographic profiling is presented in the following section.
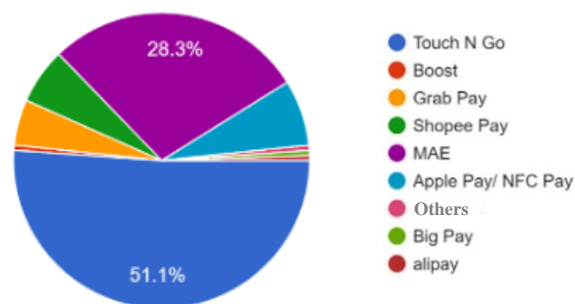
Preferred E-Wallet

Figure 4.1: Respondents Most Preferred E-Wallet Platform.

Based on table and figure 4.1, the most preferred e-wallet is Touch N Go. 51.1% or 92 out of 180 respondents stated that. The second highest e-wallet platform preferred is MAE which is 28.3% or 51 out of 180 respondents selected. The number of respondents that selected Apple Pay/NFC Pay, Shopee Pay and Grab Pay are 7.2% (13 respondents), 6.1% (11 respondents) and 5% (9 respondents). Boost, Big Pay and Alipay have the same number of respondents, which is only 1.
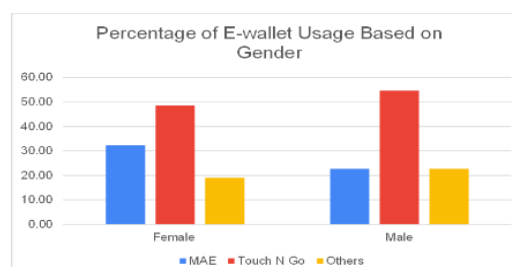
Gender

Figure 4.2: E-Wallet Usage Based On Gender.

Both males and females exhibit a similar trend in e-wallet usage, with a majority preference for the Touch N Go E-Wallet. Specifically, 48.57% of females and 54.67% of males choose this e-wallet. Among females, the second most popular e-wallet choice is MAE, representing

32.38% of preferences. The remaining 19.05% is attributed to 'other' options. On the other hand, among males, their second preferences display an equal percentage of 22.67% for both MAE and 'other' options.
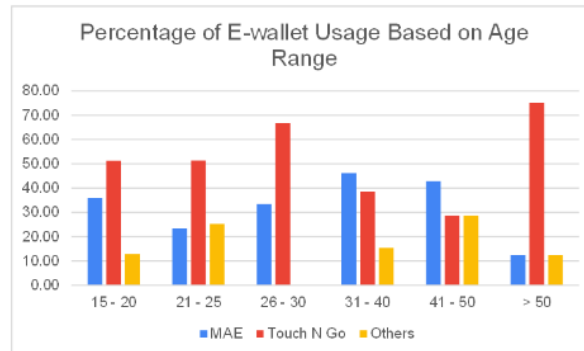
Age

Figure 4.3: E-Wallet Usage Based On Age.

The younger generation exhibits a strong preference for using the Touch N Go e-wallet. This preference is observed throughout various age groups, with those aged between 15 to 30 years old ranging from 51.28% to 66.67%. MAE is the second most popular e-wallet among youths, with a usage rate ranging from 23.36% to 35.90%. However, for users aged between 26 and 30 years old, none of them used e-wallets other than Touch N Go and MAE.

Meanwhile, for the middle age group, between 31 to 50 years old, their most preferred e-wallet is MAE, which ranges in percentage from 42.86% to 46.15%. Among those in their 30s, the second most preferred e-wallet is Touch N Go, accounting for 38.46% of the respondents. Similarly, among individuals in their 40s, both Touch N Go and 'Others' are equally favored, each representing 28.57% of the respondents. A significant percentage of 75% demonstrates how popular the Touch N Go e-wallet is among the older generation. Only 12.5% of them are utilizing MAE and 'others'.
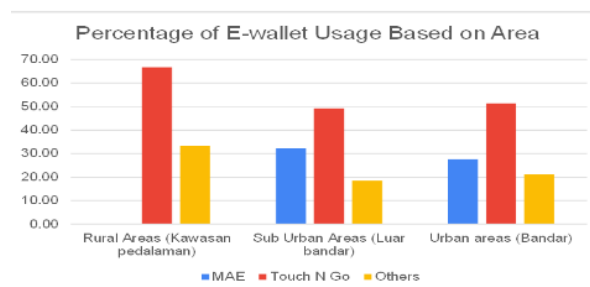
Location

Figure 4.4: E-Wallet Usage Based On Location (Area)

The usage of the Touch N Go e-wallet is maintained at the highest level, regardless of the user's location, representing 66.67%, 51.38%, and 49.23% for rural areas, urban areas, and sub-urban areas, respectively. Surprisingly, none of the respondents in rural areas are now utilizing MAE, indicating a lack of exposure to this technology in those specific regions. This phenomenon deserves further investigation in the future.

In both suburban and urban areas, the second most widely used e-wallet is MAE, with a usage rate of 32.31% in suburban areas and 27.52% in urban areas. The other options, categorized as "Others", are less preferred, accounting for 18.46% in suburban areas and 21.10% in urban area.
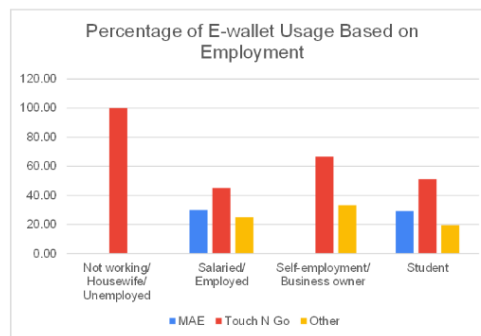
Employment

Figure 4.5: E-Wallet Usage Based On Employment.

From the employment perspective, all the categories recorded the highest usage of Touch N Go e-wallet platform compared to other platforms. None of them from housewives or unemployed category using platforms other than Touch N Go (100%). This reflects that government e-wallet initiatives are more suitable to be redeemed via Touch N Go due to its perceived usefulness and ease of use when housewives perform purchases at grocery stores. Salaried or employed respondents and students recorded MAE as the second most used e-wallet and others as the least used at 30% and 25% respectively for salaried or employed respondents and 29.32% and 19.55% respectively for students. Most of the business owners or self-employed respondents are aware that most of their customers used Touch N Go while a minimum of them are still using MAE, therefore business owners prefer to use Touch N Go at 66.67% and MAE at 33.33%. This situation drives e-wallet retention more focused on Touch N Go and MAE.

Income
Overall, Touch N Go has the most users with income with a grand total of 51.11% while MAE has the second highest grand total of users with income at 28.33% as well as other platforms recorded the least users at 20.56%. The demography based on each income range is unreliable as the sample size of respondents in each income range was less than 30 except for the income range <RM1000 with more than 30 respondents. The highest e-wallet usage based on income <RM1000 was Touch N Go with 53.23% at 66 respondents while MAE achieved the second most used e-wallet at 29.84% at 37 respondents. Other platforms have lower usage than MAE for income <RM1000 at 16.94% at 21 respondents. This has elucidated that the strategy used by Touch N Go provider was effective compared to other platforms that led to a high number of e-wallet retention. However, the level of anxieties on cost of products toward respondents based on income level mentioned in previous research unable to be determined by using small sample sizes within each range of income higher than RM1000.
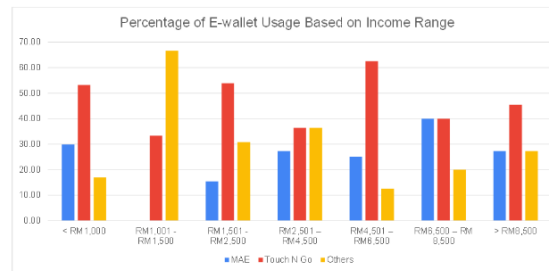
Figure 4.6: E-Wallet Usage Based On Income Range.
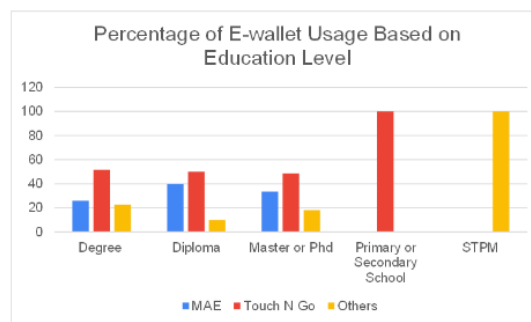
Educational Level

Figure 4.7: E-Wallet Usage Based On Educational Level.

Among the respondents based on different education levels, respondents with primary or secondary school are not compared due to very few numbers of respondents recorded for both categories of education level at 2 and 1 respondent respectively. Therefore, the result is more reliable to compare respondents with diploma, undergraduate and postgraduate education level. Within these three education levels, Touch N Go recorded the highest usage in every education, followed by MAE and other platforms. When comparing each e-wallet platform within these three education levels, the highest usage on Touch N Go and other platforms was contributed by undergraduate education level at 51.61% and 22.58 respectively while diploma has the highest usage for MAE at 40%. The results suggest that Touch N Go is easier and most convenient to use by all these education levels.
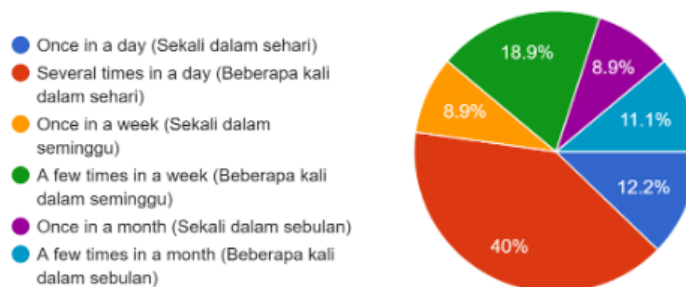
E-Wallet Usage Frequency

Figure 4.8: E-Wallet Usage Frequency Of Respondents.

According to the feedback, 40% of the respondents use e-wallet several times a day. This is the highest percentage of respondents among the other categories. 18.9% of respondents use an e-wallet a few times in a week. The third highest frequency of using e-wallet is once in a day with the percentage of 12.2%. Next, the respondent who selected a few times in a month is 11.1%. Lastly, there are two frequencies with identical percentages. There are once in a week and once in a month with a percentage of 8.9%. By looking at the pie chart, a total of 52.2% of respondents used an e-wallet at least once per day.

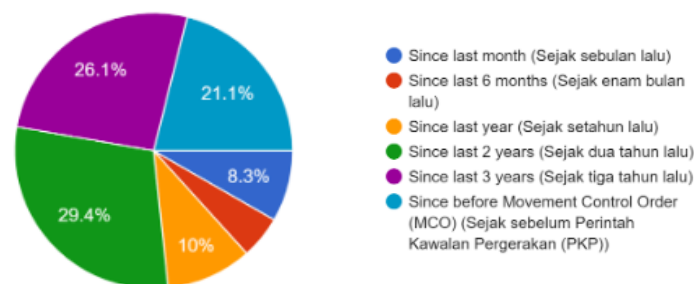*When Respondents Started To Use E-Wallet*

Legend:
- Since last month (Sejak sebulan lalu)
- Since last 6 months (Sejak enam bulan lalu)
- Since last year (Sejak setahun lalu)
- Since last 2 years (Sejak dua tahun lalu)
- Since last 3 years (Sejak tiga tahun lalu)
- Since before Movement Control Order (MCO) (Sejak sebelum Perintah Kawalan Pergerakan (PKP))

Table And Figure 4.9: Percentage On Time The Respondents Started To Use E-Wallet.

The highest percentage shown in figure and table 4.9 is 29.4%. This category of respondent's state that they started using e-wallet 2 years ago. The second highest category is the respondents who selected "3 years ago". The value is 26.1%. Next, 21.1% of respondents state that they started using e-wallet since before movement control order. The respondents who chose since last month, last 6 months and last year are 8.3%, 5% and 10%. Hence, according to the pie chart, most of the respondents started to use e-wallet after the outbreak of Covid-19.

Rating For Preferences For Purposes Of E-Wallet
Based on the information provided in the table and chart, the highest type of e-wallet used by the respondents is the "MAE," with the majority of the preferences for every purpose of e-wallet usage. This suggests that MAE has gained significant traction among the surveyed individuals, making it the most commonly used e-wallet type among the respondents.

Besides, the preferences for purposes of e-wallet usage among the respondents for MAE include transfer money, food and beverages, and online shopping. Transfer money is a popular preference for e-wallet usage, with a significant percentage of respondents (86.27%), reporting using e-wallets for transferring money. This preference reflects the popularity of e-wallets as a means of conducting peer-to-peer transfers and possibly remittances, which can be faster and more convenient than traditional methods.

Food and beverages is another popular preference for e-wallet usage, with a notable portion of respondents (82.84%) mentioning using e-wallets for food and beverages purchases. This preference reflects the utility of e-wallets, which can be done quickly and easily through e-wallet platforms. Besides, E-wallets often offer promotions and cashback incentives for transactions at food and beverage outlets, making them convenient options for such purchases. Online shopping is also a common preference for e-wallet usage, with approximately 81.37% of the respondents indicating that they use e-wallets for online shopping. This preference

highlights the convenience and ease of making purchases through e-wallet platforms, which can eliminate the need for physical cards or cash and provide a seamless shopping experience. The preferences for purposes of e-wallet usage refer to the specific reasons why individuals choose to use e-wallets for their financial transactions. These preferences can vary depending on the individual's needs, lifestyle, and financial habits.
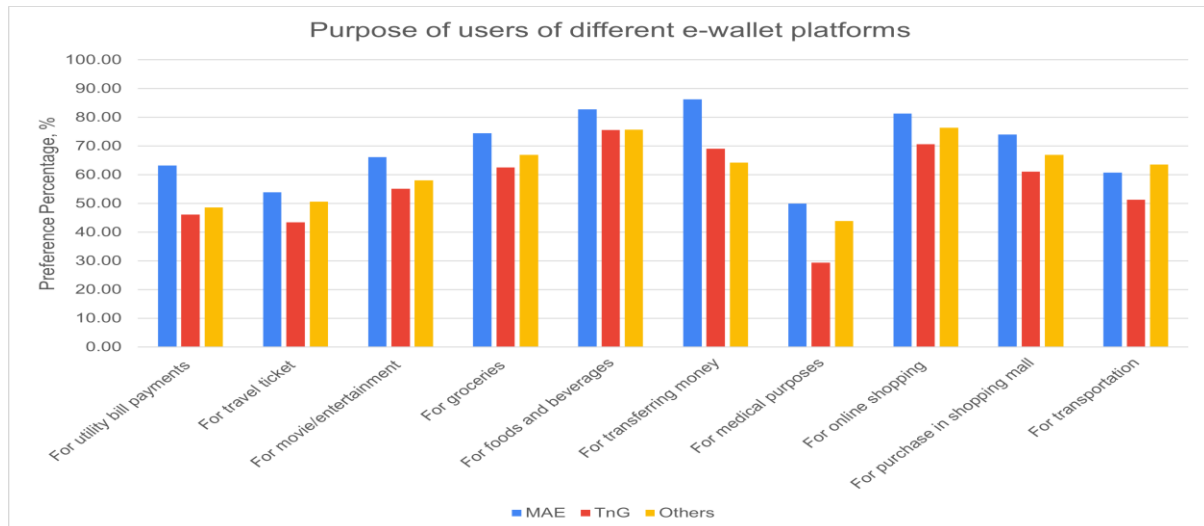

Figure 4.10: Percentage Of Respondents On Purpose Of Using E-Wallet.
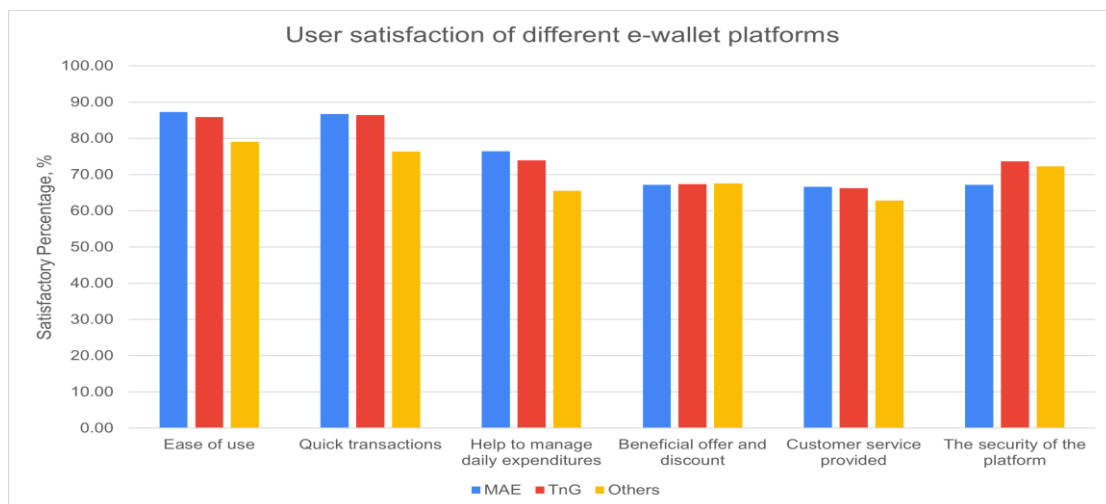
Feel About E-Wallet

Figure 4.11: Percentage Of Respondents On Satisfaction Of Using E-Wallet.

The preferences for purposes of e-wallet usage refer to the specific reasons why individuals choose to use e-wallets for their financial transactions. These preferences can vary depending on the individual's needs, lifestyle, and financial habits. The table and chart provide insights into the respondent satisfaction based on the function of e-wallet usage. It indicates that the majority of respondents are using e-wallets for various functions such as ease of use, quicker transactions, and help to manage daily expenditures. The satisfaction levels based on the purpose of e-wallet usage suggest that respondents find e-wallets to be effective and efficient

for conducting a range of financial transactions. The perception of timesaving and convenience aligns with the value proposition of e-wallets, indicating that users are satisfied with the benefits offered by these digital payment platforms.

Conclusion

In conclusion, this study has provided valuable insights into the patterns and preferences of e-wallet usage among Malaysians. However, it is important to acknowledge certain limitations that may impact the generalizability of our findings. The primary limitation of this study was the limited number of respondents, which may not fully represent the diverse demographic and socio-economic backgrounds of the entire Malaysian population. This constraint potentially limits the breadth and depth of our understanding of e-wallet usage within this demographic.

However, to enhance the robustness and applicability of these findings, future research should consider employing a more comprehensive approach. We recommend adopting a stratified sampling method that encompasses all states in Malaysia. This approach would ensure a more representative sample of the Malaysian population, capturing a wider range of socio-economic and cultural backgrounds. By doing so, future research can provide a more nuanced and accurate picture of e-wallet usage patterns across different regions and communities. This would not only validate and potentially expand upon our current findings but also offer deeper insights that could inform targeted strategies for financial technology development, user engagement, and policy formulation tailored to the needs and preferences of Malaysians.

The policy makers can gain some advantage from these findings as more accurate campaigns and incentives of e-wallet implementation can be assigned to targeted group of users. Besides, governments can allocate funding and resources directly to certain demographics or region and identify any barriers for financial inclusion. By understanding the competitive landscape among e-wallet providers, the government can regulate all these e-wallet providers to ensure fair competition and protect consumers. For example, if a certain platform dominates the market, certain measures can be taken to prevent monopolistic practices or to encourage interdependence between different platforms.

By leveraging the findings from this study, the government should refine policies and regulations surrounding the use of e-wallets. policy makers can not only improve the experience for existing users but also need to focus on the entry of new users. For example, campaigns with elements of education, incentives and rewards can be highlighted to attract the interest of individuals who have not yet adopted e-wallets. By addressing barriers to entry and promoting awareness among non-users, policymakers can expand the reach of e-wallets and promote financial inclusion on a larger scale.

In summary, while this study marks an important step towards understanding e-wallet usage among Malaysians, there is a significant opportunity for further research. By addressing the limitations of this study and employing more comprehensive sampling methods, future research can contribute to a more detailed and inclusive understanding of digital financial trends among the people in Malaysia.

Acknowledgement

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