Understanding the key drivers in using mobile payment (M-Payment) among Generation Z travellers

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Abstract

Purpose – The purpose of this study is twofold. The first objective is to identify the factors that affect Gen Z tourists’ M-payment behaviour. Next, this study investigates the inter-relationship between Gen Z tourist’s perception of M-payment benefits, adoption behaviour, usage risk and future usage intention.

Design/methodology/approach – The sample comprised Malaysian Gen Z individuals (n = 326) who had experience using M-payment methods while travelling outbound. Given the complex nature of the model and the goal to predict and explain relationships within Gen Z’s M-payment usage, partial-least square-structural equation modelling was used to assess the study framework and test the proposed relationships.

Findings – This study reveals significant influences on Gen Z tourists’ behavioural intentions towards M-payment usage. Perceived benefits, performance expectancy, social influence and perceived trust positively impact behavioural intentions, while effort expectancy exhibits no significant effect. Furthermore, perceived trust is strongly influenced by perceived security, which also positively influences behavioural intentions. A mediated relationship is evident as trust mediating the effect of perceived security on behavioural intentions.

Research limitations/implications – This study’s findings contribute to understanding the intricate relationships influencing Gen Z’s M-payment behaviour and underscore trust’s pivotal role in mediating the security–behavioural intention relationship.

Originality/value – This study is among the first to consider Mental Accounting Theory and the Unified Theory of Acceptance and Use of Technology as crucial underpinning theories in comprehending the intricate relationships that influence Gen Z travellers’ perceptions and behaviours concerning M-payment systems.

Keywords Online payments, Mobile payments, M-Payment, Gen Z, Travellers

Paper type Research paper

1. Introduction

Cashless mobile payment (M-payment) has become increasingly popular in recent years, and this trend is especially evident in the tourism industry. M-payment has been widely adopted globally because of its convenience, reliability and contact-free feature, especially during the COVID-19 pandemic. The M-payment adoption reduces the direct and indirect contacts in transactions, allowing social distancing to be maintained and facilitating the stabilisation of the social economy (Behera et al., 2022). As a result, past studies have noticed that users’ payment habits have changed from traditional face-to-face transactions to contactless M-payment transactions during the pandemic (Gao and Waechter, 2015; Moghavvemi et al., 2021).

According to a WorldPay report, M-payments alone accounted for 22% of global points of sale spending in 2019, increasing to 29.6% in 2023 (WorldPay, 2020). Looking at Malaysian perspectives, the 2022 Visa South-East Asia (SE Asia) Consumer Payments Attitudes Study report claimed that up to 74% of Malaysian customers have succeeded in going cashless (The Malaysian Reserve, 2022). Similarly, according to the same reports, contactless...
payment usage increased by 75% during the epidemic, while card usage increased by up to 60%. The prevalence of mobile wallets (52%), contactless card payments (44%) and growing interest in novel techniques such as Buy Now Pay Later (BNPL) solutions (63%) are the primary drivers. Notably, most are young consumers using one or more cashless payment methods, such as cards, contactless cards, mobile wallets and QR code payments (The Malaysian Reserve, 2022).

Past studies have tried to facilitate the understanding of M-payment adoption intentions in different contexts (Alkhowaiter, 2022; Al-Saedi et al., 2020; Cao and Niu, 2019; Tang et al., 2021). They have been conducted in a variety of industries, including retail, finance and transportation, among others. These studies looked at perceived usefulness, perceived ease of use, trust, security and social influence to see how they affect M-payment adoption (Chen and Lu, 2018; Gong et al., 2018; Kim et al., 2017). They have also looked into how demographic factors like age, gender, income and education level influence M-payment adoption intentions (Gao and Waechter, 2015; Linton and Kwortnik, 2019; Zhao and Bacao, 2021). Overall, these studies have provided basic insights into the factors that influence M-payment adoption and have assisted businesses and policymakers in developing M-payment adoption strategies (Abdullah et al., 2020; Cao and Niu, 2019).

However, past studies found that M-payment adoption intentions differ across contexts, regions and cultures. In their study on mobile payment adoption in China, Liang and Turban (2011) discovered that perceived usefulness, ease of use and trust significantly influenced consumers’ intentions to adopt mobile payments. Similarly, Humbani and Wiese (2019) identified perceived usefulness, ease of use and security as key determinants of consumers’ adoption intentions in a study on mobile payment adoption in South Africa. In contrast, Gupta et al. (2022) discovered that social influence and personal innovativeness had a greater impact on adoption intentions than perceived usefulness and perceived ease of use in an Indian study on mobile payment adoption. On the other hand, Danso et al. (2019), for example, discovered that the perceived risk of fraud and scams was a significant barrier to adoption in a study on mobile payment adoption in Ghana. These disparities in mobile payment usage can be attributed to the consumers differing technological experiences and comfort levels mostly coming from their economic disparities.

Past studies also argue that mobile payment use among the age generation varies depending on the context. Gen Z, born between 1997 and 2012, is a tech-savvy and digitally native generation that has grown up with smartphones and the internet (Accenture 2019a, 2019b). They are often considered an important generation in technology adoption studies because they are the first generation to have grown up completely immersed in a digital world. They embraced technology while growing up, which enabled them to adopt online transactions quickly using multiple devices (computers, laptop, smartphones, etc.). According to researchers, Gen Z is more likely to use mobile payments because they are more accustomed to online shopping and social media platforms (Chen and Lu, 2018; Gong et al., 2018; Kim et al., 2017). They are most likely to use mobile payments for both in-person and online transactions, and their comfort with digital payments extends to travel (Khando et al., 2022). This reflects the growing popularity of mobile payments among Gen Z travellers, who prefer the convenience and security of mobile payments while travelling (Business Insider, 2019).

The existing literature on M-payment adoption has identified a significant research gap that underscores the critical importance of integrating trust and perceived security into the Unified Theory of Acceptance and Use of Technology (UTAUT) model and acknowledging the mediating role of trust. As M-payment adoption has gained substantial popularity, particularly within the tourism industry, the drivers behind this adoption are multifaceted and context-dependent (Behera et al., 2022; Gao and Waechter, 2015; Moghavvemi et al., 2021). Previous research has shown that M-payment adoption is influenced by factors such as perceived
usefulness, ease of use, trust and security, among others, across various industries and regions (Chen and Lu, 2018; Gong et al., 2018; Kim et al., 2017). Furthermore, differences in adoption intentions are apparent among diverse age groups, notably Gen Z travellers, who exhibit a higher propensity for mobile payment usage (Business Insider, 2019). To address this knowledge gap, past studies suggest to focus on how individuals categorise and perceive the benefits of technology adoption based on their mental accounting processes (Zhao and Bacao, 2021).

The UTAUT is a widely used model in technology adoption studies that seeks to explain user behaviour and intentions towards using technology (Dwivedi et al., 2019). It is based on the idea that the acceptance and use of technology are influenced by four key factors: performance expectancy, effort expectancy, social influence and facilitating conditions. On the other hand, the Mental Accounting Theory (MAT) proposes that individuals categorise their economic outcomes into different mental accounts based on subjective criteria (Zhao and Bacao, 2021). This means that people may perceive benefits from technology adoption differently based on how they categorise them in their mental accounting. This paper argues that MAT, though not primarily about perceived benefits, is relevant to be underpinned in this study. Understanding consumer mental accounting processes can shed light on why they prefer certain payment methods over others, how they allocate funds for travel expenses and why they may find mobile payments more convenient or efficient for their specific needs (Saif et al., 2022).

Integrating MAT with UTAUT can provide insights into the cognitive processes and decision-making strategies that Gen Z travellers use when managing their travel budgets and expenses, which, in turn, can influence their choice to use mobile payments (Boonsiritomachai and Sud-On, 2023; Lutfi et al., 2021). As such, this study offers a more holistic view of the factors influencing mobile payment adoption, including both technology-related and behavioural aspects. Gen Z, being the most tech-savvy generation, is known for their high adoption of smartphones and mobile applications. They are already familiar with technology and likely to have access to the necessary infrastructure for mobile payments. In such cases, the presence of facilitating conditions is deemed to be an insignificant differentiator (Zhao and Bacao, 2021). As such, this study revises the UTAUT model, integrating performance expectancy, effort expectancy and social influence with additional variables, perceived security, trust and perceived benefits from MAT to understand this study phenomenon.

This study objective is twofold. The first objective is to identify the factors that affect tourists’ M-payment behaviour. Next, this study investigates the inter-relationship between tourist perception of M-payment benefits, adoption behaviour, usage risk and future usage intention. This study is among the latest efforts to empirically and examine the factors affecting users’ adoption intentions of M-payments among the younger consumer perspectives. By incorporating the MAT into the UTAUT model, this study explores how different mental accounts affect the relationship between the four key factors of the UTAUT model and user behaviour and intentions towards technology adoption. The study findings can provide a more comprehensive understanding of technology adoption and inform the development of interventions and strategies to promote technology adoption, especially among the young consumers. This study also provides useful information on the phenomenon of cashless payment in Malaysia and can identify the benefits and challenges of supporting young consumer confidence using cashless payment. This study also enhances the existing knowledge of M-payments usage and enriches understanding of the changes in young travellers’ spending habits.

2. Literature review

2.1 Mobile payment adoption

M-payment, or mobile payment, is the process of conducting financial transactions with a mobile device such as a smartphone or tablet (Wei et al., 2021). Users can use this technology to pay for goods and services, transfer money and manage their finances using
only their mobile devices, eliminating the need for cash, checks or credit cards (Chen and Zhang, 2019). It was forecasted that the global M-payment market would grow at a compound annual growth rate of 16.5% between 2018 and 2023 (Global Mobile Payment Market, 2019). According to a Mastercard report, the use of mobile payments for travel has increased significantly in recent years. The company reported a 20% increase in M-payment transactions for travel-related purchases in 2018 compared to the previous year. (Mastercard, 2018). This trend is expected to continue as more people become acquainted with technology and the number of mobile payment options expands. This rapid expansion can be attributed to rising smartphone usage, increased internet penetration and increased demand for convenient and secure payment options (Wei, 2017).

Apple Pay, Google Wallet and Venmo are examples of M-payment services (Chen and Zhang, 2019). These services use near-field communication technology to enable users to make contactless payments by sending encrypted payment information from their mobile devices to a retailer’s point-of-sale terminal (Wei, 2017). Finally, M-payment provides users with a convenient and secure way to manage their finances and make payments using only their mobile devices. Its growth is expected to continue as smartphone usage, internet penetration and demand for convenient payment options increase. As a result, M-payments are changing the financial landscape by making it easier for people to access financial services while travelling abroad (World Bank, 2016). With this technology’s growing popularity, it will likely continue to play an important role in travel-related transactions in the future.

With the acceptance of M-payments globally, travellers increasingly use mobile payments to pay for travel-related services (Treiblmaier et al., 2020; Wang et al., 2016). Besides, such a phenomenon is supported by an increasing number of service providers offering mobile payment options (Moghavvemi et al., 2021). In addition, this expansion is being driven by the convenience, ease, speed and simplicity that tourism service providers value (Kim et al., 2021; Lopez-Carreiro et al., 2020). M-payments can be made easily by scanning a barcode using an app on the smartphone and is accepted by most convenience stores (Mbiti and Weil, 2015). Besides, the adoption rate of M-payments among businesses is getting bigger because the mobile service generates unique security codes for each transaction, making this payment option far safer and they will not have to deal with fraud as much (Sun et al., 2022).

2.2 Underpinning theory

The intricate interconnections between users’ perceptions, attitudes and behaviours towards mobile payment (M-payment) systems underscore the need to explore these relationships comprehensively. As such, this study highlights that MAT and the Unified Theory of Acceptance and Use of Technology (UTAUT) are crucial underpinning theories in comprehending the intricate relationships that influence users’ perceptions and behaviours concerning M-payment systems. The complementary nature of consumers’ technological and mental impressions on their desire to use M-payment with known risks makes it necessary to combine UTAUT with MAT (Boonsiritomachai and Sud-On, 2023; Lutfi et al., 2021; Zhao and Bacao, 2021).

According to Thaler (1985), MAT refers to the collection of cognitive processes people use to classify, arrange and assess the outcomes of their financial decision-making. More specifically, MAT states that people’s psychological processes for appreciating a particular technology should be considered in the context of voluntary usage. Their personal wants impact their cognitive processes. Therefore, based on the normative concept of fungibility at the time of purchase, decision-making is based on the appraisal of perceived advantages of the purchase activity. Hence, MAT could be used to complementarity describe consumers’ aspirations to embrace technology. According to Park et al. (2019), social pressure and technology anxiety have an impact on the multidimensional advantages of M-payment.
services, which suggests that a user’s propensity to use M-payment is greatly impacted by their impression of technology both internally and externally. As such, MAT offers a theoretical basis for explaining why clients make the choices they do while knowing it is risky.

On the other hand, Venkatesh et al. (2003) invented the UTAUT and the theory has been used in a variety of situations involving the adoption of technology. The UTAUT include performance expectancy, effort expectancy, social influence and enabling circumstances as the predictors of usage intention. However, UTAUT emphasises technology more than mental expectations, which only partially explains how users’ expectations affect their intentions while using technology. To clarify users’ behavioural goals, UTAUT has been redesigned with additional complementary variables by many current researchers. Khalilzadeh et al.’s (2017) integration of security-related aspects with the UTAUT model verified that security and trust significantly impacted consumers’ intents to use M-payments. With the addition of new variables (perceived trust and satisfaction), Marinković et al. (2020) adapted the UTAUT model to assess consumers’ use intentions for M-commerce. The development of hypotheses and research models is illustrated in the following section.

2.3 Hypotheses development

According to MAT, when customers engage in a specific behaviour, they frequently consider potential positive results (Zhao and Bacao, 2021). Users’ impressions of the practical advantages of M-payment systems, which influence their adoption choices, are represented by perceived benefits (He et al., 2022; Park et al., 2019). Perceived benefits help us understand customers’ adoption intentions for different technologies, such as mobile banking and online shopping. Notably, M-payment feature offers simplicity and utility and enables consumers to form views on the perceived mental and physical benefits of personal safety and risk (Marinković et al., 2020; Oliveira et al., 2016). For example, unlike traditional payments, M-payments’ contactless feature helps users maintain social distance to prevent direct or indirect interaction with cash or point-of-sale terminals. At the same time, a transaction is being processed (Eriksson et al., 2021). The following hypothesis is made regarding how perceived benefits may affect users’ willingness to use M-payment:

\[ H1. \] Perceived benefits of M-payments positively affect Gen Z traveller’s intention to use M-payments while travelling.

Performance expectancy is a person’s perception of how using an information system would help them complete tasks and perform at work. Attributes relating to the system’s effectiveness, swiftness and accuracy in task fulfilment have been used to conceptualise performance (Hung et al., 2019; Gupta et al., 2020). Usually, users are very concerned about the accuracy and efficiency of payments, especially using M-payment methods while traveling (Alkhowaiter, 2022; Tang et al., 2021). Past research has found that performance expectations substantially impact consumers’ intentions to use M-payments in various settings (Slade et al., 2014). They will select M-payment rather than traditional payment if they believe it to be a useful option to complete their transactions while travelling (Hasan and Gupta, 2020; Gupta et al., 2023). This study hypothesised performance expectancy to influence M-payment usage:

\[ H2. \] Performance expectancy of M-payments positively affects Gen Z traveller’s intention to use M-payments while travelling.

The ease of using the system is referred to as effort expectancy, according to UTAUT. Researchers have shown that users’ attitudes toward using M-payments are influenced more by effort expectancy than by performance expectancy (Alkhowaiter, 2022; Tang et al., 2021). Liebana-Cabanillas et al. (2018) state that effort expectancy is the most important element influencing users’ inclinations to use M-payment systems. Additionally, it has been demonstrated that effort expectancy has a favourable effect on performance expectancy in
a variety of technology adoption scenarios within the tourism realm (Hasan and Gupta, 2020; Gupta et al., 2023). The following propositions are put forth:

\[ H3. \] Effort expectancy of M-payments positively affects Gen Z traveller’s intention to use M-payments while travelling.

Social influence reflects how a significant individual could affect one behaviour. According to Slade et al. (2014), the core premise is that consumers prefer to consult their social network before making a decision. Social influence has undergone extensive testing in numerous research to determine how it affects users’ intentions to use mobile devices. Kerviler et al. (2016) showed that social influence plays a significant role in explaining users’ intent to use M-payment. Morosan and DeFranco (2016) suggested that social influence greatly impacts the intention to use M-payment. The many perceived benefits of users with regard to using M-payment services within the tourism realm are also highly influenced by social influence (Alkhowaiter, 2022; Hasan and Gupta, 2020; Gupta et al., 2023). The following pertinent hypotheses are suggested:

\[ H4. \] Social influence of M-payments positively affects Gen Z traveller’s intention to use M-payments while travelling.

Trust is described as users’ propensity to anticipate favourable performance from technology in the future and a personal conviction that the service provider will uphold their end of the bargain. Trust has the most important impact on a person’s behavioural intention to use M-payment, according to Zhu et al. (2017). Users are likelier to use M-payment systems they trust to make contactless M-payments rather than more conventional payments. Numerous studies have also confirmed that trust substantially impacts users’ intentions to use M-payments (Hung et al., 2019; Hasan and Gupta, 2020; Tang et al., 2021). Furthermore, trust has been established as a further UTAUT component that positively affects performance expectancy and, as a result, user behavioural intentions to use M-payment during travelling (Eriksson et al., 2021). Consequently, the following hypotheses are proposed by this study:

\[ H5. \] Trust in M-payments positively affects Gen Z traveller’s intention to use M-payments while travelling.

One of the most common excuses given by users for not using M-payments is the lack of security or a sense of protection versus the risk involved with mobile transactions (Oliveira et al., 2016; Zhao and Bacao, 2021). Previous research has shown that a key element in users’ decisions to use M-payments is their perception of security. Perceived security refers to the degree to which a consumer believes that adopting a specific M-payment technique is secured. According to Johnson et al. (2018), a user’s inclination to use M-payment is most significantly positively impacted by their perceived security of the system, mostly from transactional risks and uncertainties. Meanwhile, Shao et al. (2019) claimed that security is the most important factor influencing customers’ trust in M-payment usage. As a result, numerous studies have integrated the perception of M-perceived payment security within the UTAUT framework (Khalilzadeh et al., 2017; Marinković et al., 2020). In light of this, this study proposed:

\[ H6. \] Perceived security of M-payments positively affects Gen Z traveller’s intention to use M-payments while travelling.

\[ H7. \] Perceived security of M-payments positively affects Gen Z traveller’s intention trust towards using M-payments while travelling.

Drawing from various literature, a mediated relationship between the perceived security of M-payment systems and users’ behavioural intentions can be hypothesised, with trust playing a central mediating role. According to the MAT, perceived benefits influence adoption choices, while performance and effort expectancy are key drivers of technology adoption (Zhu et al., 2017). Additionally, social influence significantly impacts users’
intentions. However, the linchpin appears to be trust – users’ conviction in the system’s performance and service provider’s reliability. Users’ concerns about security in M-payments have been highlighted as a hindrance (Johnson et al., 2018; Zhao and Bacao, 2021), influencing both perceived security and trust. Trust, shown to mediate between perceived security and behavioural intentions, emerges as a vital factor in adopting M-payment methods (Khalilzadeh et al., 2017; Marinković et al., 2020), reinforcing the need for secure systems and credible service providers in the technology adoption process (Johnson et al., 2018; Oliveira et al., 2016). Consequently, the following hypotheses are proposed by this study:

H8. Trust mediates the relationship between the perceived security of M-payments and Gen Z traveller’s intention to use M-payments while travelling.

3. Methodology

This study uses a cross-sectional survey approach to assess Gen Z’s use of M-payments based on the positivism paradigm. This study’s sample inclusion criteria include:

- Malaysian individuals who are at least 18 years old and above;
- they are Gen Z (born 1997 until 2012); and
- have experience using M-payment (e.g. QRpay, GrabPay and ApplePay) while travelling outbound.

The survey instruments used in this study were adapted from Kang and Nyang (2017), Zhou and Lu (2011) and Lin (2011) study (Appendix). The survey used a five-point Likert scale (1: Strongly Disagree; and 5: Strongly Agree).

A pilot test involving 30 respondents was conducted to validate the research instruments, and subsequent reliability analysis affirmed their reliability and dependability. To assess internal consistency, Cronbach’s (1951) alpha metric was used, where all study constructs yielded a value of > 0.70. This high-reliability score is consistent with similar studies in the mobile payments field (Kim and Park, 2018), reinforcing the robustness of the instruments for capturing meaningful data.

The online questionnaire link was distributed via social media platforms (WhatsApp, Facebook and Instagram) from November 2022 until January 2023. In all, 326 Gen Z respondents were gathered for this study based on the pre-determined inclusion criteria:

- 18 years old and above; and
- have used online payment platforms while travelling abroad for the past year.

The sample’s demographics showed 68.0% female and 32.0% male. Additionally, 76.0% of participants were in tertiary education, which increased their likelihood of responding to the survey because they were more active online. The majority of them used M-payment four to nine times a week (61.9%), and 21.4% of the respondents used it more than ten times a week. According to data, the most popular app among users is their Bank QR Pay (100.0%), with Apple Pay coming second (56%).

SPSS version 25 was used for data entry and descriptive analysis. Next, SmartPLS 4.0 was used to assess the study framework and analyse the hypothesised relationship between the proposed variables in this study. Notably, partial-least square-structural equation modelling (PLS-SEM) is particularly well-suited when dealing with complex models. In this study, multiple constructs are being assessed with potential interrelationships, making the model relatively intricate. Besides, given that the study aims to assess Gen Z’s use of M-payments and understand the relationships between various factors, such as demographic variables, usage frequency and app preferences, the primary goal is to predict and explain relationships, making PLS-SEM a suitable choice.
4. Study findings

4.1 Measurement model assessment

The first step in assessing the reflective measurement model is examining loads of indicators (Figure 1). Based on the results shown in Table 1, the range of loading indicator scores between 0.752 (TR2) and 0.956 (EE2) exceed the recommended value. Consequently, the second step is evaluating the internal consistency using composite reliability. The composite reliability values of the seven constructs are between 0.908 and 0.961, exceeding the acceptable value of 0.70 (Hair et al., 2019). Next, convergent validity was assessed by examining the average variance extracted scores. All constructs of convergent validity were deemed acceptable according to Fornell and Larcker (1981) because the average variance extracted values ranged between 0.664 and 0.890, higher than 0.50.

The discriminant validity is established based on the Heterotrait–Monotrait Ratio of Correlations (HTMT). Henseler et al. (2014) claimed that the HTMT values should not be high, and values above 0.90 would suggest that discriminant validity is absent. The HTMT analysis could not identify any collinearity problems among the latent constructs (all items with <0.90 value), which indicates that the discriminatory validity of the model is confirmed. Results of the HTMT are shown in Table 2.

4.2 Structural model assessment

The collinearity test was first conducted to determine the multicollinearity issue among the independent variables. The results indicate the VIF values for the structural model are between 2.448 and 4.130. It shows the absence of a strong indication of multicollinearity among predictors (Hair et al., 2019). Next, the proposed hypotheses of the study are tested by examining the path coefficient (β) from a bootstrapping with 5,000 subsamples. As summarised in Table 3, the results show that six hypothesised paths in our research model are significant and supported.
### Table 1: Measurement model assessment

<table>
<thead>
<tr>
<th>Items</th>
<th>Mean</th>
<th>SD</th>
<th>Loadings</th>
<th>Cronbach’s alpha</th>
<th>Composite reliability</th>
<th>AVE</th>
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<td>EE1</td>
<td>4.17</td>
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<td>0.925</td>
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<td>PB1</td>
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</table>

**Note:** $N = 326$

**Source:** Authors’ own work

### Table 2: Heterotrait-monotrait ratio of correlations

<table>
<thead>
<tr>
<th>Heterotrait-monotrait ratio of correlations</th>
<th>BI</th>
<th>EE</th>
<th>PB</th>
<th>PS</th>
<th>PE</th>
<th>SI</th>
<th>Trust</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioural intention</td>
<td>0.815</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effort expectancy</td>
<td></td>
<td>0.805</td>
<td>0.855</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived benefits</td>
<td></td>
<td></td>
<td>0.844</td>
<td>0.789</td>
<td>0.596</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived security</td>
<td></td>
<td></td>
<td></td>
<td>0.644</td>
<td>0.663</td>
<td>0.830</td>
<td>0.513</td>
</tr>
<tr>
<td>Performance expectancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.828</td>
<td>0.875</td>
<td>0.789</td>
</tr>
<tr>
<td>Social influence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.826</td>
<td>0.640</td>
</tr>
<tr>
<td>Trust</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.882</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.779</td>
</tr>
</tbody>
</table>

**Source:** Authors’ own work

### Table 3: Results of hypotheses testing

<table>
<thead>
<tr>
<th>Relationship</th>
<th>Beta value</th>
<th>t-statistics</th>
<th>p-values</th>
<th>$t^2$</th>
<th>$R^2$</th>
<th>$Q^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H1$. Perceived benefits → Behavioural intention</td>
<td>0.286**</td>
<td>3.254</td>
<td>0.001</td>
<td>0.061</td>
<td>0.804</td>
<td>0.609</td>
</tr>
<tr>
<td>$H2$. Performance expectancy → Behavioural intention</td>
<td>0.106**</td>
<td>2.029</td>
<td>0.043</td>
<td>0.015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$H3$. Effort expectancy → Behavioural intention</td>
<td>-0.111</td>
<td>1.430</td>
<td>0.153</td>
<td>0.012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$H4$. Social influence → Behavioural intention</td>
<td>0.473***</td>
<td>8.293</td>
<td>0.000</td>
<td>0.292</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$H5$. Trust → Behavioural intention</td>
<td>0.273***</td>
<td>5.388</td>
<td>0.000</td>
<td>0.107</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$H6$. Perceived security → Behavioural intention</td>
<td>0.166**</td>
<td>2.751</td>
<td>0.006</td>
<td>0.039</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$H7$. Perceived security → Trust</td>
<td>0.767***</td>
<td>4.712</td>
<td>0.000</td>
<td>1.408</td>
<td>0.585</td>
<td>0.375</td>
</tr>
<tr>
<td>$H8$. Perceived security → Trust → Behavioural intention</td>
<td>0.210***</td>
<td>5.263</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** $p$-value $< 0.001$***; $p$-value $< 0.05$**

**Source:** Authors’ own work
Firstly, the perceived benefits of using M-payment positively influenced behavioural intention ($\beta = 0.286^{***}$, $t = 3.258$ and $p$-value = 0.001); $H1$ is supported. In addition, performance expectancy significantly influences behavioural intention ($\beta = 0.106^{*}$, $t = 2.209$ and $p$-value = 0.043), supporting $H2$. Interestingly, effort expectancy shows insignificant influences on the behavioural intention of Gen Z tourists on M-payment usage ($\beta = -0.111$, $t = 1.430$ and $p$-value = 0.153). Hence, $H3$ is not supported. Social influence significantly affects tourists’ behavioural intention, strongly supporting $H4$ ($\beta = 0.473^{***}$, $t = 8.293$ and $p$-value = 0.000). Meanwhile, perceived trust positively influenced behavioural intention $H5$ ($\beta = 0.273^{***}$, $t = 5.388$ and $p$-value = 0.000). Therefore, hypotheses $H4$ and $H5$ are supported.

On the other hand, perceived trust was significantly influenced by perceived security ($\beta = 0.767^{***}$, $t = 41.712$ and $p$-value = 0.000), which reflected the strongest effect among Gen Z tourists in the proposed research model. Similarly, perceived security significantly influenced behavioural intention ($\beta = 0.166^{*}$, $t = 2.751$ and $p$-value = 0.006). Hence, hypotheses $H6$ and $H7$ are also well supported. Results of the path of coefficient ($\beta$), $t$-value and significance level ($p$-value) are presented in Table 3.

In the proposed research model, 80.4% of the variance in the intention to use M-payment was explained by the tourist perception of M-payment benefits. Meanwhile, the perceived security of the M-payment explained 58.5% of the variance in the Gen Z tourist’s trust. Hair et al. (2019) claimed that $R^2$ values of more than 50% are considered moderate and substantial, indicating a greater explanatory power. In terms of effect size, the changes in perceived benefits ($f^2 = 0.061$), performance expectancy ($f^2 = 0.015$), effort expectancy ($f^2 = 0.012$) and perceived security ($f^2 = 0.039$) have a small effect on behavioural intention of Gen Z tourists on M-payment. On the other hand, social influence ($f^2 = 0.292$) and trust ($f^2 = 0.107$) have a medium effect size on the behavioural intention. This study also discovers that perceived security influences trust in the large value of effect size ($f^2 = 1.408$). The results are based on the Cohen (2013) rule of thumb: the effect size is 0.02, 0.15 and 0.35, indicating small, medium and large effects.

Hair et al. (2019) stated another analysis that can be used to evaluate the predictive accuracy by assessing the $Q^2$ value of the inner model. The $Q^2$ values should be greater than zero for a particular endogenous construct, as it indicates the path model’s predictive relevance for the particular construct. This study found the $Q^2$ value for the behavioural intention is 0.609, while the $Q^2$ value for trust is 0.375. The result indicates these factors on using M-payment have a large prediction power of 60.9% on behavioural intention. Meanwhile, trust as the endogenous variable has a moderate $Q^2$ value, with 37.5% predictive power or relevance from the perceived security of M-payment.

### 4.3 Mediating effect of trust

A mediated relationship has been hypothesised between the perceived security of M-payment systems and users’ behavioural intentions, with trust playing a central mediating role. Hence, the sampling distribution of the indirect effect via bootstrapping analysis is considered a powerful method to check the mediation effect (Memon et al., 2019). Ringle et al. (2015) suggest researchers should refer to specific indirect effects rather than total indirect effects. For the interpretation, this study adopts the reporting approach by Sarstedt and Cheah (2019) and Hashim et al. (2017), where they only report whether there is a mediation effect rather than reporting the size of the mediation effect.

Similarly, previous researchers suggest that researchers should avoid using complete and partial mediation when interpreting the effects (Rungtusanatham et al., 2014). This study tested the mediating role of trust between perceived security and tourists’ behavioural intention using the specific indirect effect analysis. The results of the mediation analysis of trust on the relationship between perceived security and behavioural intention are exhibited in Table 3. This study discovers trust mediates the relationship between perceived security...
and behavioural intention ($\beta = 0.210; t = 5.263; \text{and} \ p-value = 0.000^{***}$). Hence, $H8$ is supported.

5. Study discussion

According to the data analysis’s findings, benefits felt by tourists are the second most important factor influencing their behavioural intention to use mobile payments when travelling. These findings show that the perceived benefit matches the person’s mental expectations for M-payment contributions under the technique. Particularly, perceived benefits, such as the effectiveness of M-payment, not only impact consumers’ perceptions of technology, convenience and usefulness, but also heighten them in terms of security advantages provided by M-contactless payment’s capabilities. The usage of mobile payment, or “m-payment”, has grown in popularity among younger generations, particularly Gen Z, as technology progresses. M-payment is a great alternative for this demographic when travelling because they are renowned for their reliance on cell phones and their need for ease.

In addition, social influence, the third important factor, has a statistically significant impact on the behavioural intention to adopt M-payments while travelling, indicating that opinions, recommendations and support from close relationships of users are crucial in forming the behavioural intention of consumers to accept the use of M-payment while travelling. Previous research under typical circumstances lends weight to these findings. People rely more on the advice and support of significant others in their lives, such as their family and friends than ever before, especially in the current scenario, which makes this dependence more plainly observable. According to Visa (2018), Gen Z travellers may easily conduct purchases using their mobile phones instead of paper money or credit cards. This lessens the possibility of misplacing or losing these goods while you’re on the run. Additionally, M-payment enables quick and simple transactions, enabling tourists to make purchases more quickly and effectively while saving time. Because of the influence of the present globalisation period, it is believed that the reputation of M-payment and word-of-mouth effects are crucial to entice consumers to accept M-payment and create new payment habits.

This study also supports perceptions that security and trust affect the tourist’s behavioural intentions to use mobile payments when travelling. Users are less concerned about financial risks to maximise their usage of the service, as they have grown to trust the M-payment platform’s dependable functioning and the protection of an established legal framework (Business Insider, 2020). As a result, both technology security and privacy, as well as user attitudes from a technological and mental standpoint, affect users’ intentions to adopt new technologies. Furthermore, the fact that several different platforms support M-payment is another factor in its broad adoption. Travellers in Gen Z can use whichever mobile payment app they feel most at ease with, and that is generally recognised in the destination nation by doing so. Travellers may buy things more easily abroad because of the widespread acceptance of popular mobile payment programmes like Apple Pay, Google Pay and PayPal by retailers worldwide (Lisana, 2022). In this way, user perceptions of security may lessen uncertainty while also ensuring the effectiveness of M-payment, which fosters user confidence in the M-payment platform. According to Lian and Li (2021), as M-payments deal with sensitive and private information, it is crucial to guarantee the legitimacy and dependability of the M-payment platform to secure transactions and safeguard user data. Furthermore, based on the M-payment platform’s security, dependability and trustworthiness, users may obtain a record of the time and location of their transactions while on the road for use by the government in tracking the link between payment processes, monitoring and updating.

Additionally, M-payment was adopted at such a high rate during travel, consistent with the majority of earlier studies that performance expectations, in particular, have a favourable impact on behavioural intention to embrace M-payments when travelling (Business Insider, 2019). It is
undeniable that M-payment technology may increase payment efficiency in urgent circumstances by being useful and practical. M-payment offers a quick payment procedure without direct or indirect interaction between individuals, which greatly impacts the tourist’s travel-related intentions. Gen Z can conduct purchases fast and conveniently without carrying cash or credit cards. Similarly, a TD Bank survey found that 57% of Gen Z respondents preferred using digital wallets for payment because of their ease (TD Bank, 2019).

The study showed performance expectations for M-payment adoption while travelling are consistent with past study findings. This study first established the influence of effort expectation and trust on the expected performance of using M-payment methods while travelling. This explains the absence of verification of simplicity and dependability, which affect perceived functional value while using M-payment in emergencies. As a result, the findings show smartphone users are rapidly adopting M-payments to enable daily transactions. Besides, they also support the accessibility and operability of technology interfaces and functions, as well as positively shaping user performance expectations; at the same time, the dependability and trustworthiness of technology services are critical in forming a high use of technology in emergencies while travelling. According to Mercator Advisory Group (2020), the widespread Gen Z use of M-payment is its availability across various platforms. With many mobile payment apps available, Gen Z travellers can use the one they are most comfortable with, which is widely accepted in the country they are visiting. Popular M-payment apps like Apple Pay, Google Pay and PayPal are widely accepted by merchants worldwide, making it easier for travellers to purchase in a foreign country.

Looking the study impact on society, this study reveals that mobile payments provide Gen Z travellers with a convenient and secure way to make transactions while on the go. This has a direct impact on society by reducing the reliance on physical currency and credit cards, potentially lowering the risk of theft and loss during travel. The research also underscores the importance of social influence in shaping behavioural intentions for M-payment adoption. This reflects broader social trends where people rely on the advice and support of their close relationships. The positive word-of-mouth effect can lead to the widespread adoption of mobile payments and further strengthen social connections within Gen Z. Finally, the study demonstrates that trust in the reliability of M-payment platforms and the protection of user data has a significant impact on the adoption of new technologies. This has broader societal implications by encouraging users to trust and embrace digital payment systems, ultimately contributing to the ongoing transition from traditional to digital payment methods.

6. Study implication
This study demonstrates notable major study implications. First, the study contributes a more nuanced understanding of the factors influencing tourists’ behavioural intentions to use mobile payments while travelling. The research enriches existing theoretical models by highlighting the significance of perceived benefits, social influence, security, trust and performance expectations. It provides a comprehensive framework for studying technology adoption in the tourism context. On the other hand, the study’s findings indicate that trust is a mediating factor between perceived security and behavioural intentions. This insight advances the understanding of the underlying mechanisms connecting these variables and underscores the pivotal role of trust in facilitating technology adoption. Future studies could delve deeper into how trust mediates the relationship between perceived security and intentions.

This study emphasises the importance of perceived benefits as the second most critical factor influencing the behavioural intention of Gen Z travellers to use M-payment when travelling. This aligns with the UTAUT-MAT model’s focus on the perceived benefits of using a technology. Perceived benefits, such as the effectiveness of M-payment, not only impact
consumers’ perceptions of technology but also enhance perceptions of convenience and security advantages. This suggests that M-payment adoption is driven by the positive experiences and outcomes it offers to users. The study also highlights the role of social influence as the third important factor affecting behavioural intention. This aligns with the UTAUT-MAT model’s consideration of social influence as a significant determinant of technology adoption. In the case of Gen Z travellers, opinions, recommendations and support from close relationships play a crucial role in forming the behavioural intention to accept M-payment. This is in line with the broader societal trend of relying on the advice and support of significant others, especially in a globalised world.

On the other hand, this research reinforces the UTAUT-MAT model’s emphasis on security and trust as factors influencing M-payment adoption. Users’ reduced concern about financial risks is attributed to their trust in the M-payment platform’s reliability and the existence of a legal framework. This highlights the critical role of security and trust in shaping user intentions to adopt new technologies. This study also underscores that performance expectations, especially the perceived performance of M-payment, have a favourable impact on Gen Z travellers’ intention to embrace M-payment. The UTAUT-MAT model considers performance expectations as a key determinant of technology adoption. In the context of travel, the ability of M-payment to offer quick and efficient payment procedures, even in urgent situations, significantly influences adoption. This aligns with the idea that Gen Z travellers prefer digital wallets for their ease and efficiency.

Based on practical implications, businesses in the tourism sector can leverage the findings to tailor their marketing strategies toward Gen Z travellers. The research sheds light on the preferences of Gen Z travellers for mobile payments because of their reliance on technology and need for convenience. This generational perspective adds to the understanding of technology adoption and usage patterns among different age groups, contributing to a better understanding of how technological advancements are received across generations. Emphasising M-payment systems’ perceived benefits, ease and security can attract this demographic, who value technological convenience and are open to adopting innovative payment methods. As such, tourism service providers using the mobile payment industry should prioritise enhancing security measures and communicating them to users. Addressing security concerns and ensuring reliable functioning can reinforce users’ trust in the platform, positively influencing their behavioural intentions to use mobile payments during travel. Besides recognising that Gen Z travellers value accessibility and convenience, collaborations among various M-payment platforms could be explored. Collaborative efforts that ensure compatibility and interoperability across different payment apps can enhance user experience and adoption rates among travellers, regardless of their preferred platform.

7. Conclusion

The study’s findings highlight the intricate interplay of factors influencing tourists’ behavioural intentions to use mobile payments while travelling. It emphasises the importance of perceived benefits, social influence, security, trust and performance expectations in shaping users’ decisions. The insights from this research have both theoretical and practical significance, offering a deeper understanding of technology adoption in the tourism context and informing strategies for businesses and service providers to enhance user adoption of M-payment systems among Gen Z travellers.

While the study provides valuable insights into the influence of perceived benefits, social influence, security, trust and performance expectations on travellers’ intentions to use mobile payments, it is essential to acknowledge its limitations. First, the fluctuating travel restrictions and recommendations during the COVID-19 pandemic constrained the study’s data collection. As a result, the findings may not fully represent typical travel behaviour, and the temporal limitations could impact the generalizability of the results. On the other hand, the study’s data collection focused on a particular nationality – Malaysian, potentially
limiting the applicability of the findings to a broader international context. Future studies should aim for greater diversity in participants’ nationalities to ensure a more comprehensive understanding of technology adoption behaviour. Moreover, the study did not differentiate between various mobile payment patterns, platforms and methods, potentially overlooking important user preferences and behavioural nuances. Future research should explore the distinctions between different mobile payment options to grasp their effects on travel behaviour better.

Future research should address these limitations by adopting a comparative approach, considering interconnections among variables and exploring the diversity of mobile payment methods to offer a more comprehensive understanding of technology adoption and its impact on travel behaviour. To understand the impact of the pandemic on travel behaviour, future research could compare travel trends before and after COVID-19, analysing changes in consumer preferences, attitudes and behaviours over a defined period. This approach would provide insights into evolving travel habits in response to the pandemic. Besides recognising the interplay between variables like social influence, security perceptions and health-related behaviours, future studies should develop comprehensive frameworks that capture the intricate relationships among these factors. Incorporating technology indicators could further enhance understanding of risk factors and health behaviours.

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Conflict of Interest: The authors declare that they have no conflict of interest.

Consent to participate: Written informed consent was obtained from the respondents before the interview.

Consent for publication: The participants consented to the submission of the data to the journal.

Ethical Statement: The research reported in this paper is conducted in accordance with general ethical guidelines in psychology-related research and obtained approval from Research Ethics Committee Universiti Teknologi MARA. This material is the authors’ own original work, which has not been previously published elsewhere. The paper is not currently being considered for publication elsewhere. The paper reflects the authors’ own research and analysis truthfully and completely.

References


Table A1 | Survey instruments

<table>
<thead>
<tr>
<th>Code</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB1</td>
<td>I agree there are several advantages to using cashless mobile payment while travelling</td>
</tr>
<tr>
<td>PB2</td>
<td>I believe using cashless mobile payment is the most convenient and secure travel approach</td>
</tr>
<tr>
<td>PB3</td>
<td>I feel using cashless mobile payment is a beneficial payment method among people when conducting a financial transaction while travelling</td>
</tr>
<tr>
<td>PE1</td>
<td>Cashless mobile payment is a practical choice and payment method while travelling</td>
</tr>
<tr>
<td>PE2</td>
<td>Using cashless payments facilitates my purchasing activities while travelling</td>
</tr>
<tr>
<td>PE3</td>
<td>Using cashless payments increased my payment efficiency while travelling</td>
</tr>
<tr>
<td>EE1</td>
<td>Learning how to use cashless mobile payment is easy</td>
</tr>
<tr>
<td>EE2</td>
<td>It is easy to follow all the steps of cashless mobile payments</td>
</tr>
<tr>
<td>EE3</td>
<td>It is easy to become skillful at using cashless mobile payments</td>
</tr>
<tr>
<td>EE4</td>
<td>Interaction with cashless mobile payment is clear and understandable</td>
</tr>
<tr>
<td>SI1</td>
<td>People who are important to me (e.g., family members, friends, and colleagues) recommend me to use cashless mobile payments while travelling</td>
</tr>
<tr>
<td>SI2</td>
<td>People who are important to me view cashless mobile payments as beneficial while travelling</td>
</tr>
<tr>
<td>SI3</td>
<td>People who are important to me think using cashless mobile payments while travelling is a good idea</td>
</tr>
<tr>
<td>SI4</td>
<td>People who are important to me support using cashless mobile payments while travelling</td>
</tr>
<tr>
<td>TR1</td>
<td>Cashless mobile payment methods are competent and effective in handling contactless transactions while travelling</td>
</tr>
<tr>
<td>TR2</td>
<td>I believe cashless mobile payment methods keep customers’ interest in while travelling</td>
</tr>
<tr>
<td>TR3</td>
<td>I believe cashless mobile payment methods are trustworthy while travelling</td>
</tr>
<tr>
<td>TR4</td>
<td>I believe cashless mobile payment methods are honest to society while travelling</td>
</tr>
<tr>
<td>TR5</td>
<td>I believe that legal frameworks for cashless mobile payment provisions sufficiently protect me as a consumer</td>
</tr>
<tr>
<td>PS1</td>
<td>I feel secure using my banking information through cashless mobile payments while travelling</td>
</tr>
<tr>
<td>PS2</td>
<td>I feel secure when transmitting sensitive information while the cashless mobile payments are secure while travelling</td>
</tr>
<tr>
<td>PS3</td>
<td>I feel secure providing personal information when using cashless mobile payments while travelling</td>
</tr>
<tr>
<td>BI1</td>
<td>Given the opportunity, I will continue using cashless mobile payments while travelling</td>
</tr>
<tr>
<td>BI2</td>
<td>I am willing to use cashless mobile payments in the near future continuously</td>
</tr>
<tr>
<td>BI3</td>
<td>I am open to using cashless mobile payment as my main payment method</td>
</tr>
<tr>
<td>BI4</td>
<td>I intend to urge my family and friends to use cashless mobile payments in the future</td>
</tr>
</tbody>
</table>

Source: Authors’ own work

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