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DOES GOVERNMENT SUPPORT REALLY MATTER IN M-PAYMENT ADOPTION IN SOCIETY?

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ABSTRACT

The technological determinism theory (TDT) suggests that societal parties, such as the government significantly motivate mobile payment (m-payment) usage. Thus, government agency support and encouragement have substantially increased the m-payment adoption following the government's digital economy agenda and the fourth industrial revolution. Nevertheless, there is limited literature investigating the effect of government support on the context of m-payment adoption. This study examined the influence of government support regarding technology acceptance factors and users' m-payment adoption intention. Two hundred and fifteen valid samples from Sarawak m-payment users were collected and analysed using Partial Least Squares-Structural Equation Modelling (PLS-SEM) and Importance-Performance Map Analysis (IPMA). The results revealed that all factors significantly influenced the users' adoption intention except for effort expectancy. The IPMA result demonstrated that government support is the most decisive adoption intention of m-payment factors. Furthermore, m-payment operators should exert more effort to improve platform usefulness. Factors underpinned by the unified theory of acceptance and use of technology (UTAUT) and government support suggested by the technological determinism theory (TDT) able to provide new insight in managing technology usage such as mobile payment.

1. INTRODUCTION
Wireless communication systems have become a major global focus over the past decade. Mobile technology devices' emergence and widespread use have significantly influenced consumers' daily lifestyles. Mobile technology devices have facilitated the growth of

mobile payment or also termed as m-payment as an alternative payment mode globally (Liébana-Cabanillas *et al.* 2020). M-payment is a payment approach that initiates and authorises virtual payment transactions from mobile devices. The rising affluence of m-payment was substantially influenced by its features, such as speed, convenience, and secure payment services that can be accessed regardless of location (Leong *et al.* 2020). Therefore, m-payment would be expected to dominate the payment approach in future. In addition, m-payment is projected to impact the growth of e-commerce and market expansion (Teng *et al.* 2020).

Users' adoption of m-payment may be affected by numerous influences influencing several perspectives. For instance, extended UTAUT has been used to study the factors of mobile payment adoption in Oman (Al-Saedi *et al.* 2020), Malaysia (Tang *et al.* 2021). and the US (Martinez & McAndrews 2023). UTAUT2 is also adopted to identify the antecedents to accept and use mobile payment in India (Gupta & Arora, 2020). The Technology Acceptance Model (TAM) has also been used to study mobile payment use intention in the US (Bailey *et al.* 2017) and in Malaysia (Leong *et al.* 2020). Chen *et al.* (2019) also investigated the factors that significantly affected mobile payment adoption in China using facilitating, environmental, inhibiting, and personal factors. These studies offered a better understanding of the factors determining users' use of m-payment in different contexts. Unfortunately, these empirical studies didn't consider the role of government support on mobile payment adoption based on the UTAUT model in the context of developing markets.

The technological determinism theory (TDT) states that one such influence is societal influence, for example, government support (GS). The GS aligns with Verma *et al.* (2019), who stated that GS is crucial for innovative m-payment technology. Kumar and Pasha (2017) discovered similarly that the Indian government is proactively supporting cashless transactions in promoting the technological innovation of mobile payment services. This aligns with the Malaysian government's objectives of Budget 2021 to achieve cashless payment for all government services by 2022 to improve its public service delivery. For private-sector, government initiatives such as *the eBelia* and *PEMERKASA programme* have opened new opportunities and encouragement for small and medium enterprises (SMEs) to adopt cashless business transactions (The Edge Market 2021). Furthermore, government agencies, such as Bank Negara Malaysia (BNM), which significantly promote non-cash payment usage, also contribute to the growth of m-payment use (Moghavvemi *et al.* 2021). These initiatives accelerated the shift towards online financial services.

Despite the theoretical arguments for GS and initiatives to encourage digital business adoption, evidence of the impact of GS on m-payment usage is still under study. Moreover, the role of the GS on the four UTAUT factors remains unclear, even though the GS seems to have practically impacted the four UTAUT factors. For instance, with the initiatives and encouragement from the governments, it could be one of the social pressures that may influence user's social influence (SI). Similarly, the user's facilitating condition (FC) could be enhanced if the government provides a sufficient regulatory policy framework to protect the users and adequate facilities and infrastructures for ease of use on m-payment. Therefore, the study's main objective is to investigate the effect of GS underpinned by the Technological Determinism Theory (TDT) on technology acceptance factors of M-Payment as proposed by the unified theory of acceptance and use of technology (UTAUT) model. Specifically, the research questions of this study are twofold: (1) Does the GS significantly impact the four UTAUT's factors and m-payment

adoption intention among the Sarawak m-payment users, and (2) Does the four UTAUT's factors significantly influence the Sarawak m-payment users' intention to adopt m-payment.

This study focused on Sarawak's m-payment users. Sarawak embarked on an efficient digital transformation journey in 2017, which used m-payment as the initiating platform. Parallel to the national agenda to achieve a Digital Economy Strategy (2018-2025), the Sarawak government penetrated the digital economy agenda to revolutionise and digitalise systems to enhance transactions and processes (Leong *et al.* 2020). Moreover, the Sarawak government launched the S Pay Global (previously known as Sarawak Pay) financial technology platform to support the digital economy agenda. The Sarawak government fostered digitalisation toward a cashless society. Accordingly, the location of the study could be a proxy to demonstrate that digital economy achievement, such as m-payment usage, is hindered by inadequate infrastructure and insufficient internet facilities. The results contained implications that benefit practitioners and m-payment operators in Sarawak.

Several differences are offered in this study. Firstly, the underlying model of UTAUT was extended with government support as it postulates to significantly impact the four UTAUT factors and users' behavioural intention to use m-payment. Empirical evidence in this area is still ambiguous, although GS practically impacted the four UTAUT factors. Moreover, this study focused on the m-payment user in Sarawak, the largest state in Malaysia. This may proxy that inadequate infrastructure and insufficient internet facilities are a quest in realising the mission of the digital economy, such as the usage of mobile payment. With these, this study could provide a shred of fresh evidence from different contexts and enrich the literature. The study's findings provide several implications useful for practitioners and m-payment operators in Sarawak.

2. LITERATURE REVIEW
2.1 M-Payment behaviour

M-payment is a virtual payment approach that allows users to make payments for their purchases by using their mobile devices (Dahlberg *et al.,* 2015). M-payment is an innovative and novel approach compared to traditional payment methods, as it does not require physical currency. M-payment is faster, more convenient, and more secure (Leong *et al.*, 2020). In light of the advantages and benefits of m-payment, many users tend to adopt this as their primary payment method. As a result of its improved payment approach and convenience, m-payment is widely adopted globally (Chen *et al.* 2019).

Numerous empirical studies examined the significant factors affecting users' m-payment adoption. For instance, the factors for adopting m-payment in Oman (Al-Saedi *et al.* 2020) and Malaysia (Tang *et al.* 2021) were examined with the extended UTAUT. Among the findings of these studies, the significant role of SI on m-payment adoption intention was reported (Al-Saedi *et al.* 2020). Contrastingly, Tang *et al.* (2021) reported that SI exerted an insignificant effect. UTAUT2 was also utilised to identify the factors of m-payment acceptance in India (Gupta & Arora, 2020). In addition, Technology Acceptance Model (TAM) is also widely used in previous studies to understand the determinant factors of m-payment usage (Bailey et al., 2017; Leong et al., 2020). Besides, Chen *et al.* (2019) remarked on the significant effect of facilitating, environmental, inhibiting, and personal factors regarding m-payment adoption in China. Even though a better understanding of the m-payment adoption intention has been offered in these

studies, the impact of Government Support on the m-payment adoption in the society is relatively limited in the literature.

2.2 UTAUT model

The UTAUT model underlay the proposed research framework. The UTAUT model introduced by Venkatesh *et al.* (2003) suggested that the new technology acceptance and adoption would be explained with EE, PE, SI and FC. UTAUT model has been frequently adopted to synthesise the technology adoption behaviour since their inception (Madan & Yadav, 2016; Rosli *et al.* 2024). However, some studies extended the initial UTAUT model with other factors to capture the unique features of the research context. For instance, Gupta and Arora (2020) used the extended UTAUT and found that EE, FC, habit, and PE significantly impacted m-payment adoption intention. Patil *et al.* (2020) reported that attitude (ATT), SI, and FC affect the m-payment use intention. Nevertheless, Upadhyay *et al.* (2022) revealed the insignificant effect of SI on the m-payment use intention during the COVID-19 pandemic. Nonetheless, these studies did not consider the role of GS in adopting m-payment.

To address this gap, the study extensively utilized the UTAUT model and expanded upon it to investigate the factors that influence an individual's decision to use mobile payments. By integrating the UTAUT model with TDT, the study developed a comprehensive theoretical framework for comprehending the intention to adopt technology, resulting in more inclusive and thorough results.

2.3 Technological determinism theory (TDT)

The TDT describes societal influence on technology adoption, such as m-payment adoption. Technological advancement is significant in human life and will determine societal change and, ultimately, people's selection decisions (McLuhan 1964). This influence results from how technology affects people's choices and how society is affected by technological development (Hauer 2017), which increases society's knowledge through new technologies. Other researchers considered technological development due to social order (Servaes 2014). This study postulates that GS efforts have a societal influence and might influence citizens' willingness to adopt m-payments. Few studies have utilised TDT to predict m-payment adoption with GS. The findings enhance the literature by providing new evidence on m-payment by incorporating the TDT into the UTAUT model to uncover the impact of GS on the users' BI to adopt m-payment.

2.4 Hypothesis development

The government plays a vital role in promoting or inhibiting the use of m-payment (Lau *et al.* 2021). The GS refers to government assistance and the extent to which it plays a leadership role and is involved in the diffusion of technological innovation (Tan & Teo 2000). The GS is required to cultivate technology adoption, such as m-payment, which can be done in various ways. GS could include m-payment network infrastructure, policy packages, internet speed, and security assurances (Aji *et al.* 2020). Such support could facilitate users to adopt m-payment with less effort, enhancing users' EE and PE. For example, when the government provides stable network infrastructure, reasonable internet packages, and speed, users perceive m-payment as easy and reliable. Thus, EE increased. With that, the user's EE of using m-payment is enhanced with the

government's support, whereby the users may perceive that m-payment could reduce the difficulty in the payment process and ultimately strengthen their intention to use.

Moreover, the Malaysian government has provided financial assistance through m-payment, such as *ePENJANA*, *e-Tunai Rakyat*, and *Bantuan Khas Sarawakku Sayang* (BKSS). Not only that, but the government may also provide specific support that may increase the usefulness of the m-payment, such as allowing users to pay utility bills and others using m-payment. These initiatives may increase the PE of the users on the m-payment as more and more merchants and government agencies accept the m-payment. As m-payment users would receive GS, such as initiatives and financial assistance, EE and PE would be influenced. This assumption may imply that GS would affect EE and PE.

Government agency policy initiatives are also essential to encourage social support to use m-payment. These influence from the peoples and agencies in the social context is postulated to be crucial to the users' behaviour. For example, the Malaysian government formulated laws and regulations to enhance data protection and resolve information leaking issues (Alam *et al.* 2021). Moreover, the government also argues for using m-payment in daily routines as one of the digitalisation efforts to enter the digital economy era. These initiatives serve as societal pressure and motivation for users to adopt m-payment. Therefore, GS is expected to significantly impact SI, as users perceive that GS can benefit society, which would encourage the adoption of m-payment.

Furthermore, GS could refer to the authority, actions, and policy framework that can improve the FC in m-payment adoption (Charag et al. 2020), and this is aligned with Ling *et al.* (2023), who reported that users tended to use m-payment if resources and support were available. For example, the government enacts several laws and policies related to m-payment to protect the safety and privacy of users. At the same time, the government, through their agencies such as Malaysian Communication and Multimedia Commission and BNM, is responsible for ensuring the infrastructure of the internet coverage is well covered and for taking care of the problems and issues faced by the users. Thus, GS potentially enhances the FC, as users tend to have a high likelihood of adopting m-payment if they believe that the platform or government agencies will provide technical support and aid. Therefore, the hypotheses (H_{1-4}) below are formulated.

H_1:   The relationship between GS and EE is significantly positive.
H_2:   The relationship between GS and PE is significantly positive.
H_3:   The relationship between GS and SI is significantly positive.
H_4:   The relationship between GS and FC is significantly positive.

Various factors influencing users' intentions to use m-payment have been empirically discovered. First, Ling *et al.* (2023) stated that EE is crucial in stimulating technology usage. For example, users might be limited by the mobile display's restricted functionality and trouble entering information (Gupta *et al.* 2019). EE and BI regarding technology were positively associated (Al-Saedi *et al.* 2020; Tang *et al.* 2021). For instance, a study by Alkhowaiter (2022) showed that EE significantly affects the intention to use mobile payment systems. Similarly, the significant effect of EE on intention to adopt technologies has also been documented in some prior studies (Ahmad & Yahaya 2023; Khashan *et al.* 2023; Le 2022; Martinez & McAndrews 2023; Negm 2023; Thaker *et al.* 2022). As a result, EE is anticipated to substantially impact a user's willingness to use mobile payment methods.

A study by Gupta et al. (2019) highlighted the significance of technology's performance benefits, also known as PE. This refers to the belief that utilizing a system can enhance job performance. This belief is paralleled with Alalwan *et al.*'s report (2017), which found that users' m-payment service adoption tendency increased when they believed the service would be more beneficial to them. In addition, the study conducted by Ling *et al.* (2023) demonstrated the positive impact of perceived benefits on mobile payment adoption and user intention. The significantly positive impact of PE on intention to use is also noted in some previous studies in different technologies (Ahmad & Yahaya 2023; Alkhowaiter 2022; Khashan *et al.* 2023; Martinez & McAndrews 2023; Negm 2023; Rahim *et al.* 2023). Therefore, it is postulated that the greater the perceived advantages of mobile payment, the higher the likelihood of users adopting it.

SI occurs when the behaviour of another influences a user's behaviour. Venkatesh *et al.* (2003) suggested that SI represented influence from the surrounding people, significantly influencing users' m-payment adoption intention. Abdullah *et al.* (2020) and Al-Saedi *et al.* (2020) supported the vital role of SI in explaining the m-payment adoption. This proposition shows that the users may be highly likely to use m-payment if the people and agencies surrounding them, such as friends and family, governments, merchants, and the like, request them to do so. Numerous studies also revealed the social context's influence as the critical determinant of technology adoption (Alkhowaiter 2022; Istijanto & Handoko 2022; Khashan *et al.* 2023; Le 2022). Thus, a similar influence was also hypothesised in this study.

In the technological adoption context, FC is defined as the level of users who believe resources and support are available when using the technology (Venkatesh *et al.,* 2003). Past studies concluded that FC substantially affects the m-payment adoption intention (Alkhowaiter 2022; Gupta & Arora 2020; Istijanto & Handoko 2022; Ling *et al.* 2023; Upadhyay *et al.* 2022). Users tended to have high intent to use m-payment when they believed in the availability of supporting resources and physical environments (Madan & Yadav 2016). Empirical evidence in other technologies adoption further revealed the significant influence of FC on BI, such as internet banking (Thaker *et al.* 2022), augmented reality apps (Khashan *et al.* 2023), electronic €-wallet adoption (Ojo *et al.* 2022), electronic payment (Negm 2023), fintech adoption (Ahmad & Yahaya 2023), and the like. With that, the significant impact of FC on BI to adopt m-payment is also proposed in this study.

Chen *et al.* (2019) concluded that the government played a role in enacting a clear law to aid retailers in encouraging the usage of m-payment and ensuring users' confidence. Such GS efforts and initiatives could promote technology adoption, ensuring that the technology is well-organised and well-managed (Ojo *et al.,* 2022). Thus, m-payment usage may become increasingly common if the government expedites it (Verma *et al.* 2019). GS has had a substantial influence on BI, particularly in the areas of online banking (Chong *et al.* 2010; Kumar & Pasha 2017), m-payment (Chen et al. 2020), e-wallets (Ojo et al. 2022), and mobile government (Mandari *et al.* 2017). Therefore, GS is postulated to influence users' m-payment adoption intention. For example, the government can stimulate technological innovation by providing assistance and support, such as financial incentives, tax breaks, and a pilot project (Lin & Ho 2009). Accordingly, the following hypotheses are proposed to examine m-payment BI:

H_5:   EE has a significant relationship with BI to adopt m-payment.
H_6:   PE has a significant relationship with BI to adopt m-payment.

H$_7$:   SI has a significant relationship with BI to adopt m-payment.
H$_8$:   FC has a significant relationship with BI to adopt m-payment.
H$_9$:   GS has a significant relationship with BI to adopt m-payment.

BI measures an individual's intention to execute a specific behaviour and predicts possible action in the future (Fishbein & Ajzen 1975). Mouakket (2020) noted that a satisfied m-payment user might ensure continuous mobile payment usage. Numerous studies examined the effect of BI on an individual's technology adoption usage behaviour (Gupta & Arora 2020; Ling *et al.* 2023). Shin and Lee (2021) reported that BI enhanced NFC mobile wallet users' usage behaviour. Similarly, Patil *et al.* (2020) and Upadhyay *et al.* (2022) identified the substantial influence of BI on user behaviour in India. The significant role of BI on the use behaviour is also reported in other contexts (Ahmad & Yahaya 2023; Thaker *et al.* 2022; Rahim *et al.* 2023). BI acts as a dependent variable on m-payment user behaviour. Hence, the hypothesis below is suggested:

H$_{10}$:   BI is positively significant with user behaviour.

In this research, we aim to investigate the impact of GS and analyze the factors that drive the intention to adopt m-payment and related behaviour. To assess the potential influence of GS in promoting m-payment usage, we have extended the UTAUT framework with the TDT. Figure 1 presents the research framework.
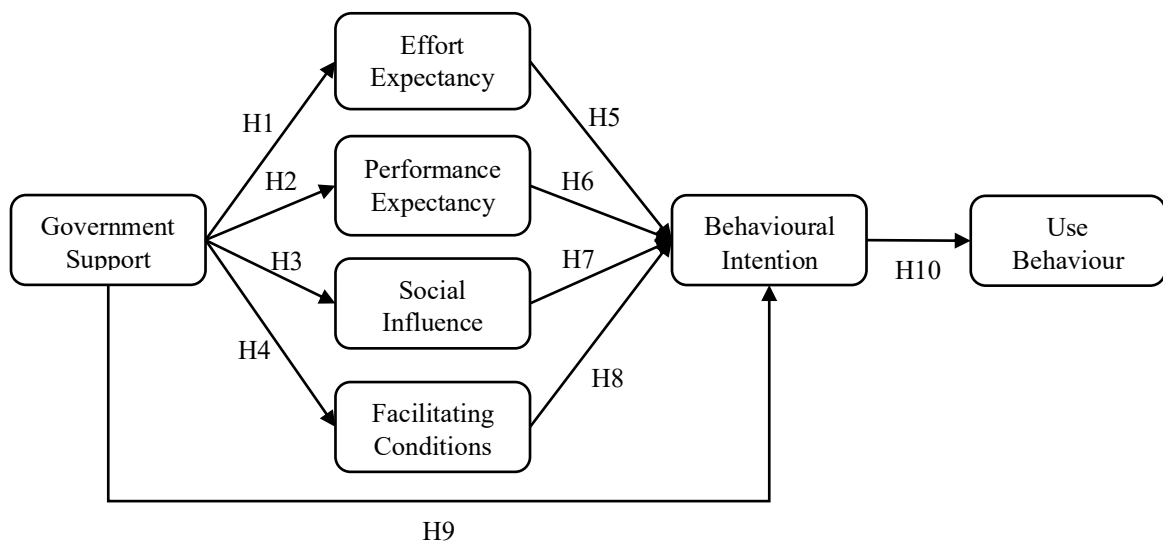

Figure 1: Research framework.

3. RESEARCH METHODOLOGY

Data from m-payment users in Sarawak were collected via quantitative methods. This study used purposive sampling, where only m-payment users were eligible. A screening question has been asked to verify and ensure the selected respondents are suitable for this study, as only the m-payment users can continue to provide their responses at the beginning of the survey. Sarawak was chosen as its government was the first in Malaysia to introduce its fintech platform that can be used to perform m-payment. The Sarawak

government also took the initiative to support the digital economy agenda by investing in infrastructure and establishing an authority agency to spearhead, supervise, and facilitate digital economy development.

Data were collected via Google Forms, the most convenient way to obtain the participants' responses without physical contact. The final and valid sample of the study, 215, was gathered from the targeted population, and this number of samples is sufficient for this study as it is greater than the suggested minimum sample size (138) calculated in the power analysis. The measurement items of the involved factors were adapted from previous studies such as Akbar (2013), Chen *et al.* (2019), Patel (2016), and Yan *et al.* (2021). Twenty-eight measurement items were adapted to develop the questionnaire. The five-point Likert scale was adopted in this study to measure the agreement levels on the respective items.

The multivariate normality test was performed to select the most suitable analysis technique, and it found that the dataset is not normally distributed as the kurtosis coefficient value (84.9256) exceeds the threshold value of 20 (Byrne 2013). This finding showed that the Partial Least Squares-Structural Equation Modelling (PLS-SEM) is the more suitable technique for this dataset. In addition, the Importance-Performance Map Analysis (IPMA) was also adopted to analyse the collected responses as supporting findings. IPMA offer more valuable information than PLS-SEM as it provides the relative performance values of each predicting construct on the same outcome construct. It is important to indicate the priority of the improvement with their importance level provided in PLS-SEM. Besides, the results of the importance and performance level of each construct could be further divided into four quadrants based on the average values of the importance and performance level (Martilla & James 1977), namely "Keep up the good work", "Concentrate here", "Possible over skill", and "Low priority" (Phadermrod et al. 2019). Each quadrant of this matrix represents the current position of the predicting constructs in terms of their level of importance and performance in achieving the outcome construct (Ling et al., 2020). Therefore, the respective implications could be drawn from the IPMA results, and the stakeholders could utilize them in formulating effective policies and strategies for cultivating m-payment usage.

4. RESULTS

4.1 Demographic profile

Based on the data presented in Table 1, the majority of the participants were female, with a total of 137 respondents, while the remaining 78 were male. The sample consisted mainly of younger individuals, with around 69% of them aged below 35 years old, while only 4.65% were above 56 years old. In terms of marital status, 38% of the respondents were married, while 60% were single. The occupational distribution showed that 74 participants worked in the private sector, 56 were students, 47 were public servants, and the rest were self-employed, retired, or had other occupations. Additionally, about two-thirds of the respondents earned less than RM 3,719 per month, while 32% earned between RM 3,720 and RM 8,649, and only nine participants earned more than RM 8,650. In terms of education, 14% of the respondents attained education up to Form Five (Sijil Pelajaran Malaysia, SPM), while 62% had at least a certificate until a bachelor's degree. Lastly, 23% of respondents held a postgraduate degree, indicating a significant number of highly educated individuals in the sample.

Table 1: Demographic profiles of respondents.

Profiles	Frequency	Percent
Gender		
Male	78	36.28
Female	137	63.72
Age		
25 year old and below	80	37.21
26 – 35	69	32.09
36 - 45	35	16.28
46 - 55	21	9.77
56 year old and above	10	4.65
Marital Status		
Single	130	60.46
Married	82	38.14
Others	3	1.40
Occupation		
Public Servants	47	21.86
Private Servants	74	34.42
Self-Employed	19	8.84
Students	56	26.05
Retiree	6	2.79
Other	13	6.04
Monthly Income Range		
Less than RM2539	111	51.63
RM2540 – RM3719	26	12.09
RM3720 – RM5479	35	16.28
RM5480 – RM8649	34	15.81
More than RM8650	9	4.19
Highest Education Level		
SPM and Below	31	14.42
Certificate, Diploma, or Bachelor Degree	134	62.33
Master or PhD	49	22.79
Other	1	0.46

Besides that, Harman's single-factor test further revealed that the common method bias did not occur in the proposed model as only 39.23% of the variation of these items was explained in a single latent factor, which was lesser than the level of 50% (Podsakoff *et al.* 2003). Table 2 shows that the variance inflation factor (VIF) results indicate that the CMB issue is not present in the study. The VIF value for all factors in the full collinearity test is lower than the suggested value of 3.30 (Kock 2015).

4.2 Measurement model assessment

The assessment of the measurement model results is presented in Table 2. To determine the convergent validity, the outer loading of each item was examined. The analysis revealed that all items had loading values higher than 0.7080 (Hair et al. 2017). However, due to low loading values, one item for EE, SI, and GS, and two for FC were removed. Besides, the average variance extracted (AVE) was used to measure the convergent validity, and all AVE values were between 0.6481 to 0.9319, higher than 0.5000 (Hair *et al.* 2017). Thus, convergent validity was established at both the item and factor levels. The composite reliability (CR) was then used to evaluate the reliability. The result

determined that all factors had high internal consistency, as the CR values were greater than the standard level of 0.7000 (Gefen *et al.* 2000). In addition, as presented in Table 3, the Heterotrait–Monotrait ratio (HTMT) further used to evaluate the discriminant validity. The discriminant validity was also established, as all ratios were less than 0.85 (Kline 2011).

Table 2: Assessment of structural model.

Factors	Measurement Items	Outer Loading	AVE	CR	VIF
EE	EE 1	0.8104	0.6481	0.8804	1.843
	EE 2	0.8049			
	EE 3	0.7697			
	EE 4	0.8339			
PE	PE 1	0.7883	0.7199	0.8849	1.875
	PE 2	0.8974			
	PE 3	0.8561			
SI	SI 1	0.9201	0.7550	0.9247	1.245
	SI 2	0.9256			
	SI 3	0.8248			
	SI 4	0.7977			
FC	FC 1	0.9166	0.8139	0.8974	1.548
	FC 2	0.8875			
GS	GS 1	0.7666	0.6576	0.8847	1.833
	GS 2	0.8259			
	GS 3	0.8162			
	GS 5	0.8332			
BI	BI 1	0.8785	0.7511	0.9235	2.715
	BI 2	0.8565			
	BI 3	0.8877			
	BI 4	0.8434			
UB	UB1	0.9661	0.9319	0.9648	1.997
	UB2	0.9646			

Table 3: Discriminant validity using HTMT.

Factors	EE	PE	SI	FC	GS	BI	UB
EE							
PE	0.6448						
SI	0.3141	0.4030					
FC	0.6703	0.4183	0.2332				
GS	0.5940	0.5953	0.4000	0.5545			
BI	0.5558	0.7180	0.4228	0.5369	0.7166		
UB	0.5355	0.5914	0.2535	0.4737	0.5379	0.7435	

4.3 Structural model assessment

The hypotheses were tested using bootstrapping in SmartPLS after establishing and confirming the reliability and validity. The results of the path coefficient assessment are summarized in Figure 2 and Table 4. They indicate that all hypotheses were supported except for H5. This means that GS played a crucial role in promoting m-payment adoption, as it had a significant impact on the four UTAUT factors. The results also demonstrated that PE, SI, FC, and GS significantly influenced m-payment use intention, while BI significantly influenced m-payment user behaviour. Furthermore, PE had the highest coefficient (0.3525), followed by GS (0.3268), SI (0.1541), and FC (0.1043).

The effect size (f^2) values (see Table 4) demonstrated that GS exerted a moderate to large effect on the four UTAUT factors, as the f^2 values were > 0.15 (Gefen & Straub, 2005). Furthermore, the f^2 value revealed that SI, FC, and GS exerted a small effect, while PE exerted a medium effect size on BI (Gefen & Straub 2005). Nevertheless, EE did not affect BI, as the value was < 0.02 following Gefen and Straub (2005). The BI effect size value substantially affected use behaviour (Gefen & Straub 2005).

Table 4: Bootstrapped path coefficient assessment.

Hypo.	Path Coef.	Coefficient	Std. Dev.	T-stat.	P-values	f^2	Results
H_1	GS - > EE	0.4927	0.0603	8.166	0.000	0.3206	Support
H_2	GS - > PE	0.4876	0.0539	9.0447	0.000	0.312	Support
H_3	GS - > SI	0.3616	0.0573	6.3094	0.000	0.1504	Support
H_4	GS - > FC	0.442	0.067	6.5968	0.000	0.2427	Support
H5	EE - > BI	0.0184	0.0672	0.2733	0.392	0.0004	Not Support
H6	PE - > BI	0.3525	0.0758	4.6522	0.000	0.1682	Support
H7	SI - > BI	0.1541	0.0686	2.2449	0.012	0.0192	Support
H8	FC - > BI	0.1043	0.0551	1.8922	0.029	0.0342	Support
H9	GS - > BI	0.3268	0.0731	4.4702	0.000	0.1429	Support
H10	BI - > UB	0.6793	0.0418	16.2318	0.000	0.8567	Support

Table 5 depicts the study's coefficient of determination (R^2) and predictive relevance (Q^2). The GS predicted approximately 13.08% to 24.28% of the variance in the four UTAUT factors. The five factors explained 53.38% of the variation in BI, while BI explained 46.14% of the variation in user behaviour. Similarly, $Q^2 > 0$ indicated that GS could predict four UTAUT factors, the five factors could predict BI, and BI could predict the use of behaviour.

Table 5: r^2 and q^2.

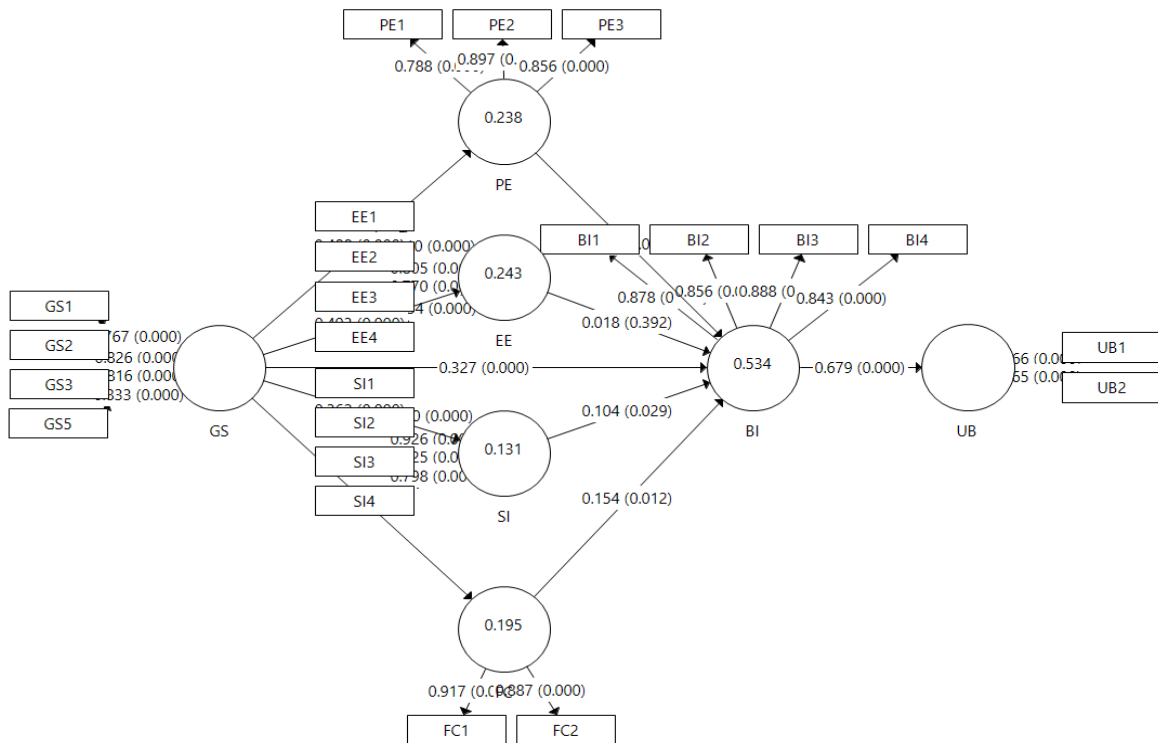| Factors	R^2	Q^2
UB	0.462	0.426
BI	0.534	0.389
EE	0.243	0.150
PE	0.238	0.166
SI	0.131	0.093
FC	0.195	0.153

Figure 2: Path-coefficient results.

4.4 Importance and performance map analysis

To better identify the areas for improvement in the research model, the IPMA was also carried out to investigate the factors' importance and performance levels regarding m-payment use BI. The findings of IPMA have a crucial implication for mobile platform operators, as they would know which factor to focus on for successful improvement of m-payment usage by concentrating on the critical but poorly performing factor. Table 6 and Figure 3 present the IPMA results, where GS denoted the greatest importance value (0.6136), followed by PE (0.3525), FC (0.1541), SI (0.1043), and EE (0.0184). FC reflected the highest performance value (86.7157), followed by EE (83.6168), GS (83.5665), PE (82.4488), and SI (61.2687). The result demonstrated that improvement efforts should emphasise PE and GS as the most critical factor, albeit with a slightly lower performance.

Table 6: IPMA.

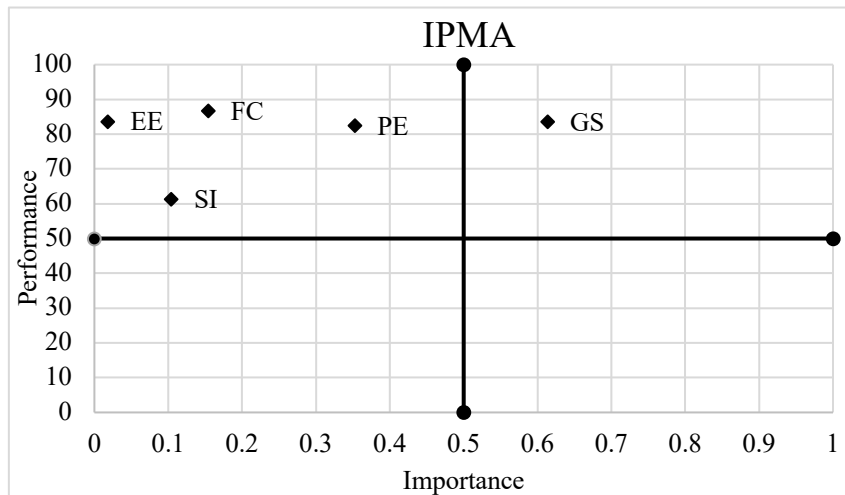| Factors	Importance Value	Performance value
EE	**0.0184**	83.6168
PE	0.3525	82.4488
SI	0.1043	**61.2687**
FC	0.1541	**86.7157**
GS	**0.6136**	83.5665

Figure 3: Importance-performance map analysis for BI.

5. DISCUSSION AND IMPLICATIONS

This study evaluated the m-payment determinants by considering the role of GS as supported by the TDT in the UTAUT model. The results demonstrated that nine out of ten hypotheses were confirmed, whereas EE (H_5) demonstrated an insignificant association with BI. This finding proved that GS has a significant relationship with the four UTAUT factors (EE, PE, SI, and FC). Besides that, the results supported the premise that TDT (societal influence, such as GS) determines technology adoption intention. The significant role of GS is relatively new, as limited evidence has explored the role of GS on the UTAUT factors. Therefore, this indicated that any GS or government agency supporting efforts or initiatives could stimulate the four UTAUT factors and ultimately affect users' m-payment adoption.

This study confirms the GS's important influence on users' mobile payment adoption, as previously found in research by Chen et al. (2020) and Kumar and Pasha (2017). Adequate GS, such as internet coverage, regulatory protection, and policy incentives, can promote the use of m-payment. However, the study found that EE did not significantly affect adoption, indicating that users perceive m-payment as challenging and requiring more effort, in line with previous studies by Madan and Yadav (2016) and Ojo et al. (2022). This insignificant finding could be because the study's respondents are highly educated and technology savvy. Besides, as the study is focused on the m-payment users, they have experience adopting m-payment in their daily lives. Therefore, the EE seems to have relatively less influence on their intention.

Nevertheless, based on the responses gathered, it was found that utilizing mobile payments can greatly enhance the ease and effectiveness of payment transactions. The decision of users to adopt mobile payment is heavily influenced by PE. Studies conducted by Al-Saedi et al. (2020), Gupta and Arora (2020), and Tang et al. (2021) consistently show that users are more likely to adopt mobile payments if the platform improves the payment process or provides additional benefits to users. Additionally, the findings reveal that BI is most impacted by PE. According to the findings of FC and SI, it was observed that users' intention to use mobile payments was in line with H3 and H4. Users were more likely to use mobile payments if they had access to a support team and assistance while using the platform, which was consistent with the views of Madan and Yadav (2016) and Patil et al. (2020). Additionally, personal surroundings had an impact on users' intention

to use mobile payments in accordance with SI. The result proved that the users tended to adopt m-payment if people surrounding them, such as friends and family members, also used the platform. Al-Saedi *et al.* (2020) reported that individuals use m-payment if someone in their social network influences their behaviour. Lastly, BI predicted user behaviour, which signified that if users intended to use m-payment, they would do so soon. In addition, PE exerted the greatest influence and effect on BI, followed by GS, FC, and SI.

The IPMA result showed that GS is positioned in the "Keep up the good work" quadrant, whereas it is the most important construct to determine the BI to use m-payment, and the current performance is relatively high. Therefore, the stakeholders, such as government agencies, should continue supporting efforts to encourage the usage of m-payment. Besides, BI's other four predicting constructs are located in the quadrant of "Possible over skill" as their performance is above average. Still, these constructs are least important as their importance value is below the average of 0.50. Among these, EE is the least important, but it performs satisfactorily compared to other more important constructs, such as PE and FC. With that, the IPMA result showed that the enhancement efforts should concentrate on PE and GS, as there is room for further improvement compared to the FC. At the same time, the efforts should not be focused on EE and SI, as both are the least important constructs, although the current performance of EE is relatively high.

Practically, this finding was crucial for platform providers to understand the determinants that can foster users' m-payment use intention. This study determined that the government should offer more protection to users through legislation and regulations and invest in internet coverage facilities and infrastructure. As proven, GS could further improve the FC and ultimately cultivate the users' m-payment adoption intention. Besides, the government can encourage m-payment among citizens through policies, such as an RM 30 incentive for eligible mobile users and special discounts to attract more m-payment users. With the usefulness provided, these government initiatives and incentives could further user performance expectancy. When users expect a lot of benefits from the m-payment adoption, they tend to have a high likelihood of using it. In addition, as one of the societal influences, the government could further impact the users' adoption decision on m-payment. Therefore, the encouragement from the government and the implementation of the policies have to be clear to give a clear signal to the users as these signals would affect their adoption intention. Furthermore, the support from the government also directly impacts the users' intention to adopt m-payment. Any supporting efforts or initiatives are necessary to encourage the m-payment users to use it.

Moreover, platform providers should simplify the m-payment processes. M-payment methods should also be multilingual for users' convenience, as not all users are proficient in English, the dominant language on m-payment platforms. Users would expend less effort or time learning how to use an m-payment platform if it is less complicated. Therefore, the m-payment platform's simplification could attract more users and improve platform usage. Platform operators should also focus on platform advantages or benefits, such as loyalty rewards, incentives, or discounts, and increase the transaction speed, as it could encourage users' intention to adopt the platform. Furthermore, platform operators should also convince users that technical support and resources are available to assist them if they encounter platform issues. Users use an m-payment platform if they are more confident in the operator's supportive services. Moreover, operators should encourage

users to share positive experiences with people around them, such as family members, friends or colleagues, as it would motivate more people to use the platform.

Theoretically, this study significantly contributed to the literature as the study proved the integration model of the UTAUT and TDT to examine the role of the GS on m-payment adoption. The significant influence of the GS on consumer behaviour has been widely proven in different areas but relatively limited in mobile technology adoption. As proven in this study, the proposed novel framework has superior explainability, as it better captures the features of the societal influence, especially the government support on the user technology acceptance of mobile applications. Specifically, the study revealed that GS significantly affected all four UTAUT factors (EE, PE, SI and FC), and this finding offered new insight into this area. In contrast, the effect of GS on these UTAUT factors is scarce in the literature. The postulation of the impact of GS on the four UTAUT factors is proven in this study, and future studies in this area can reference it. In addition, compared to the four UTAUT factors, the IPMA's results showed that GS is the most crucial variable in determining the user's BI to use m-payment. This study verified that GS was essential in shaping m-payment use intention. Thus, future studies should not overlook societal influence, like the GS efforts and initiatives, as they could significantly cultivate m-payment usage.

6. CONCLUSIONS

It is unclear how much of an impact GS has on encouraging the use of m-payment, as research on this topic is limited. In order to shed light on this issue, an empirical study was conducted that integrated the TDT (especially on the GS) into the UTAUT model. The results showed that GS plays an important role in promoting the use of m-payment and has a significant effect on the four UTAUT factors. The study also found that, along with PE, SI, and FC, GS has a significant impact on users' intentions to use m-payment. However, EE was not found to have a significant effect on users' intentions to use m-payment. Moreover, the result of IPMA revealed that the improvement efforts should be focused on PE and GS to enhance the user's m-payment adoption further. Overall, the study found that users are more likely to use m-payment if they intend to do so, and operators should focus on improving platform usefulness to encourage greater uptake.

The study limitations include limited generalisability, as the responses were collected from a small geographical scope compared to other studies. Furthermore, the sample size was small, as only 215 users participated in the study. Hence, expanding the geographical area to the Malaysian context to increase the sample size and outcome generalisability could be a suggestion for future studies. Besides, future studies could consider inter-respondent differences, as the study respondents were assumed to be homogenous. For example, future studies could examine the differences between younger versus older users, male versus female users, and high-income versus low-income users. Furthermore, exploring the indirect relationship of the predicting constructs on the outcome construct could be interesting as it added more rigour to the findings in the literature than the direct relationship between the constructs in the study. In addition, including some constructs like trust and convenience to investigate their mediating and/or moderation effect on the subject matter could enrich the evidence of the study as the user's behaviour tends to be complicated. Considering all of these suggestions it could further add more comprehensive and robust evidence in the literature of m-payment adoption.

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