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ORIGINAL ARTICLE

DETERMINANTS OF SMART CITY TECHNOLOGY ACCEPTANCE: ROLE OF SMART GOVERNANCE AS MODERATOR

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ABSTRACT – Smart city technology is a city with information and communication technology that aims to solve problems and meet society's needs. Smart city technology's success depends on the acceptance of its citizens. The main purpose of this paper is to illustrate the determinants of smart city technology acceptance among working professionals and the moderating role of smart governance, supported by the unified theory of adoption and use of technology 2. The study uses a quantitative approach. Data is collected from working professionals using an online questionnaire. 103 responses were received and analysed using the IBM SPSS Statistics 26 and SmartPLS 3 software. The findings suggest that performance expectancy, social influence, facilitating condition, price value, habit, and trust significantly influenced the acceptance of smart city technology. In addition, smart governance moderated the relationship between performance expectancy, effort expectancy, social influence, price value, habit, trust, and smart city technology acceptance. The study contributes to the empirical gap by adding trust and smart governance's role as a moderator to address the limitations of the unified theory of adoption and use of technology 2 model. Practically, this study reveals insights useful to government agencies and corporations in crafting sustainable strategies that prioritise people's needs in smart city initiatives.

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INTRODUCTION

Complex systems integrating people, businesses, mobility, communication networks, utilities, and services make up a smart city (Komninos et al., 2019; Kumar et al., 2020). The smart city offers services that enhance residents' quality of life and guide their decision-making (Cook et al., 2018). While smart cities have been successfully introduced in developed countries, it is unknown whether or not people in emerging economies will welcome such a system. Societies in impacted countries have undergone new transformations due to the recent Coronavirus 2019 (COVID-19) pandemic.

According to the Malaysian smart city framework, a smart city employs information and communication technology (ICT) and technical advancement to address urban concerns, such as fostering economic development, enhancing the quality of life, fostering effective urban management, and creating a sustainable and secure environment (Ministry of Housing and Local Government, 2018). London is the top smart city, scoring 100 percent, followed by New York (94.63%) and Kuala Lumpur (52.8%), which is ranked 100th (Habibu, 2019). Moving toward smart living, the survey found that Malaysians fear robots because automation appears to be endangering their job positions, despite their conviction and idealistic views about the role of innovation in their profession, enabling and aiding people in completing intriguing tasks (Shahliza & Sarah, 2020; The Star, 2019). As the city moved closer to automation, people's acceptance of technology only got worse.

Many nations deployed smart city technologies as the coronavirus outbreak began at the end of 2019 to track down patients' close friends and family members and keep an eye on the rule of law and social distancing (Simon, 2020). Contact tracing tools like MySejahtera have greatly influenced the COVID-19 outbreak in Malaysia (Zainul, 2020). From a business standpoint, cashless payments became a vital component of the new way of life since it allows people to avoid using real cash and minimise human contact, helping the government flatten the pandemic curve while retailers and consumers embraced e-commerce (The Star, 2020; New Straits Times, 2020a). Malaysians now use virtual communications for jobs, education, and festival festivities (Goh, 2020; New Straits Times, 2020b; Chin, 2020). Therefore, citizens' exposure to the pandemic is anticipated to increase their adoption of smart city technologies.

The drawback is that Malaysia received a score of just 2.64 out of 5.00 for protecting the data of its citizens, placing it as the fifth-worst country out of 47 analysed. The evaluation was based on the following criteria: established security, legal assurance, protection requirement, information exchange, visual reconnaissance, identity cards, biometrics, and government access to information (Ashley, 2019). The Malaysian National Security Council did not support the introduction of the Gerak Malaysia application due to its ability to track location, which also raised many issues related

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to its data protection and privacy, especially after the application became mandatory to use to manage interstate travel among citizens to control movement during the pandemic (Haziqah, 2020). Additionally, there were ethical worries about the absolute adoption of technology and how it would benefit some groups while excluding others. For instance, Malaysia's massive push toward a cashless society would harm some societies, such as the underprivileged, undocumented, and exiled. In addition to moral concerns and doubts about the ability of smart city initiatives to address real urban problems, it should also be concerned about how technology will affect society in the long term (Badrul, 2019).

Although several technologies have made it possible for projects to ensure smart city living in the pandemic era, individuals still have concerns about the security, privacy, and integrity of their personal information when using those technologies (Simon, 2020; Zainul, 2020). Although widespread approval is required, user privacy must be protected, and data validity must be confirmed (Robin, 2020). In the context of smart cities, previous research has emphasised privacy and security as citizens' top concerns. According to the study, when given the guarantee that their privacy would be protected and that the services being provided would be of a high calibre, individuals would be open to utilising ICT-based smart city services (Yeh, 2017). People's approval of the service was positively influenced by their perceptions that urban services technology was secure and that privacy would be maintained (Sepasgozar et al., 2019). Based on the types of data collected, people's privacy concerns range from minimal for impersonal data and service objectives to profound for personal data and surveillance purposes (Van Zoonen, 2016).

Global urbanisation is accelerating, and smart city concepts are emerging to solve people's challenges (Ersoy, 2017). For a smart city to provide services that are focused on its citizens, smart living is essential (Petrolo et al., 2015). Smart living features provide individuals with various functionalities, including enhanced health outcomes, automation of products and equipment, and others (Chang et al., 2018). The quality of life for people is improved via ICT-based smart city services. However, research in industrialised nations revealed that various factors, including social groups, affected how well new technologies were received (Yeh, 2017). While Romão et al. (2018) found that smart living had a negative influence on young people's intention to live in a smart city, Pinochet et al. (2019) discovered that smart living had a favourable impact on that intention. Smart living and smart human capital are mutually dependent, according to Lombardi et al. (2012), who found that all aspects of smart living contribute to the association with lifelong learning.

De Guimaraes et al. (2020) discovered that smart governance has a crucial role in the framework of smart cities in achieving sustainable development goals. Due to the growing usage of ICT in smart city services, Razaghi and Finger (2018) emphasised the necessity for establishing better governance systems. Transparency, accountability, and credibility are all improved through smart governance, which also increases citizen involvement in decision-making (Gil et al., 2019). Thus, smart governance could lessen the public's worries about security and privacy in relation to smart city technologies, increasing the public's adoption of a smart city.

Despite the development of services and technology for smart cities that are intended to improve quality of life and smart living, the evidence before the pandemic has indicated that readiness is still lacking and that there are few empirical studies in developing nations like Malaysia (Salin & Abidin, 2011; Tahir & Malek, 2016; Leong et al., 2017; Ghazali et al., 2018; Yuan & Cheah, 2019; Ahmed et al., 2020). The increased usage of mobile applications, alteration in lifestyle, and quick adoption of technology during the COVID-19 pandemic made it necessary to study the acceptance of smart city technology among working professionals post-pandemic.

Most of the current work on smart cities focuses on technology, modelling, and urban planning issues and lacks quantitative research (Khatoun & Zeadally, 2016; Kummitha & Crutzen, 2019; Edge et al., 2020; Kumar et al., 2020; Lombardi et al., 2012; Petrolo et al., 2015). The findings of studies that examined citizens' perspectives (Pinochet et al., 2019; Romo et al., 2018; Yeh, 2017), which were based on a variety of theories and models, including the technology acceptance model, diffusion of innovation, UTAUT2, theory of planned behavior, social cognitive theory, and others, were inconclusive in determining whether citizens would accept smart city technology. This study develops an integrated model to identify the variables affecting working professionals' acceptance of smart city technologies post-COVID-19 pandemic, filling in the gaps in the existing literature. The primary objectives of this study are:

1. To identify the influence of UTAUT2 variables on smart city technology acceptance.
2. To identify if trust influences smart city technology acceptance.
3. To identify the moderating role of smart governance on relationships.

RELATED WORK

Underpinning Theory

This research integrates fundamental aspects from the unified theory of adoption and use of technology (UTAUT2) model as the major determinants towards the acceptance of smart cities (Venkatesh et al., 2012). The previous UTAUT model offered access to a person's intention to use a specific structure, considering the distinguishing evidence of the key effects on acceptance in any random setting. This model had performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC), as well as moderators like age, experience, and gender (Venkatesh et al., 2003). To address the UTAUT model's shortcomings, this model was developed into the UTAUT2 model, which is presented and used in the context of consumer technology. Hedonic motivation (HM), price value (PV), and habit (HB) were three additional factors included (Venkatesh et al., 2012). However, UTAUT2 might fall short in the more complicated and specific aspects of a smart city setting, such as connection, mobility, and smartness. To address the shortcomings of the UTAUT2 model, this study suggested the addition of trust and smart governance. As both models were strongly tied to the public's adoption of technology, trust is adapted from the information and communication technology-based smart city model (ICTSC) (Yeh, 2017) and smart governance from Pinochet's (2019) smart city model (SCM).

Literature Review and Hypothesis Development

Smart city acceptance indicates citizens' adoption of a smart city's complex systems that connect people, businesses, communication, mobility, utilities, and other services can be measured (Komninos et al., 2019; Kumar et al., 2020). Service quality, self-efficacy, perceived security, relative advantages, perceived ease of use, perceived usefulness, compatibility, reliability, work facilitation, cost reduction, and time-saving are all found to have a positive impact on urban service technology user's intention in the action plan of implementing citizen-oriented technology in developing smart cities (Sepasgozar et al., 2019). Apart from conducive conditions, all UTAUT2 predictors, according to Baudier et al. (2020), had a favourable influence on the intention to utilise smart home technology. Perceived compatibility, connectivity, control, system reliability, and satisfaction positively correlate with the user's intention in a comparable setting in South Korea. In contrast, there is a negative correlation between usage intention and perceived cost (Park et al., 2018). Other elements, such as innovative ideas, service quality, and trust, favourably affect the adoption and utilisation of ICT-based smart city services and city engagement (Yeh, 2017). The application's compatibility and utility are crucial factors in the acceptability and adoption of smart technology. The intention to use is also hindered by risk perception, with perceived utility serving as the mediator in this interaction (Hubert et al., 2019).

Performance expectancy is the idea that utilising a specific system or cutting-edge technology will allow users to improve their performance (Venkatesh et al., 2012). Performance expectancy increased consumers' behavioural intention to adopt mobile payment and m-commerce technology (Qasim & Abu-Shanab, 2016; Chhonker et al., 2018). This is consistent with a study on educated students, which found that performance expectations had a direct, favourable, and significant influence on whether or not they plan to live in a smart home (Baudier et al., 2020). The following hypothesis is proposed:

H1: Performance expectancy positively influences smart city technology acceptance among working professionals.

The perceived ease of use and effort expectancy are directly related to how complex the technologies are (Venkatesh et al., 2012). The intention to live in a smart home is directly, favourably, and significantly impacted by effort expectancy, according to Baudier et al. (2020). Although Chhonker et al. (2018) reiterated that effort expectancy is one of the key variables in determining m-commerce technology, Qasim and Abu-Shanab (2016) found that customers' behavioural desire to utilise mobile payment was unaffected by effort expectancy. The following hypothesis is made:

H2: Effort expectancy positively influences smart city technology acceptance among working professionals.

Social influence is the degree to which those around a person persuade them to adopt a technology or system. This persuasion may be based on various social variables and arbitrary rules (Venkatesh et al., 2003). Social pressure favoured people's decision to use a smart city system (Fitriani et al., 2016). This is consistent with the findings of Faqih (2020), who discovered that social influence positively influences learners' behavioural intention to adopt an e-learning system. Tan et al. (2014) discovered a significant association between social influence and the use of mobile credit cards. It also fits with research on educated students, where social influence is found to have a direct, favourable, and significant impact on the intention to live in a smart house and is found to affect customers' behaviour intending to use mobile payment (Baudier et al., 2020; Qasim & Abu-Shanab, 2016). However, societal influence did not support the desire to adopt the internet of things (Leong et al., 2017). Consequently, the following hypothesis is put out:

H3: Social influence positively influences smart city technology acceptance among working professionals.

As the level of a user's competencies is highly correlated with their acceptance of novel technologies, the term "facilitating condition" refers to the degree of assistance provided by an organisation or technological assistance given to assist the individual in using the technology. This assistance may include personal resources or knowledge (Venkatesh et al., 2012). According to Chhonker et al. (2018), the facilitating condition is found to be a crucial factor in the prediction of the m-commerce technology, but it did not significantly affect the behaviour of those who intended to use the internet of things in smart cities (Leong et al., 2017). Facilitating condition greatly impacts how easily older persons perceive using smartphones (Ma et al., 2016). The results were closely related to the research on people's desire to live in smart homes (Baudier et al., 2020). Consequently, the following hypothesis is put out:

H4: Facilitating conditions positively influences smart city technology acceptance among working professionals.

Hedonic motivation is deliberated as a basic factor for the acceptance and usage of technologies (Venkatesh et al., 2012). Hedonic motivation positively influences behavioural intention to adopt the internet of things in a smart city (Leong et al., 2017). It was similarly found to have a direct, positive, and significant impact on the intention to live in a smart home (Baudier et al., 2020). The hedonic motivation is found to significantly influence students' acceptance and usage of ReWIND, a lecture capture system that allows lectures to be recorded automatically and made available to students digitally (Nair et al., 2015). Furthermore, hedonic motivation is found to significantly influence the behavioural intention of consumer adoption in internet banking (Alalwan et al., 2015). The following hypothesis is proposed:

H5: Hedonic motivation positively influences smart city technology acceptance among working professionals.

The price value is the degree of cost perception, which considerably impacts how customers embrace and use new technologies (Venkatesh et al., 2012). The smart city's behavioural intention to adopt the Internet of Things was positively influenced by price value (Leong et al., 2017). This is consistent with research showing that the intention of educated students to live in a smart house was directly, favourably, and significantly influenced by price and value (Baudier et al., 2020). ReWIND's price value, which enables lectures to be recorded so that students can view them digitally, was also discovered to have a major impact on students' adoption and use of the programme (Nair et al., 2015). As a result, the following hypothesis is put forth:

H6: Price value positively influences smart city technology acceptance among working professionals.

Habit evaluates people carrying out automatic activities as they use new technologies or repeat past experiences (Venkatesh et al., 2012). Habit substantially affects students' adoption and use of ReWIND and has a favourable, direct, and significant impact on educated students' intention to live in a smart house (Baudier et al., 2020; Nair et al., 2015). It is determined that the habit substantially impacted customer adoption of internet banking activity (Alalwan et al., 2015). As a result, the following hypothesis is put forth:

H7: Habit positively influences smart city technology acceptance among working professionals.

One party's propensity to rely on another's actions, especially when the latter is exposed, is described as trust (Yeh, 2017). The likelihood that citizens would invest their time, money, and knowledge in ICT-based engagement associations increased with trust (Royo et al., 2014). Citizens' trust favourably influences the adoption and use of ICT-based smart city services (Yeh, 2017). This result is comparable to Leong et al.'s (2017) research, which found that smart cities' perceived trust had a beneficial impact on citizens' behavioural intentions to use the internet of things. Behavioral intention is favourably impacted by trust in smartphone credit card acceptance (Ooi & Tan, 2016). Trust affected customer adoption of internet banking (Alalwan et al., 2020) and was connected with the behavioural intention to embrace smart city services (Habib et al., 2020). Trust affected customer adoption of internet banking and was connected with the behavioural intention to use smart city services (Habib et al., 2020; Alalwan et al., 2015). Consumers' intent to use mobile payments is influenced by trust (Qasim & Abu-Shanab, 2016). These puzzling findings demonstrate that technology-enabled citizen collaboration can be activated in organisational strategy structures through trust or uncertainty. However, maintaining citizen commitment necessitates faith in the government's procedural fairness (Sørensen & Torfing, 2018).

Furthermore, opinions of a smart metre as being more beneficial, less expensive, and posing a lower privacy risk strongly correlate with higher trust in energy companies. Additionally, through perceived privacy and utility, trust is found to have a considerable impact on the intention to utilise smart metres (Chen et al., 2017). In light of this, the following hypothesis is proposed:

H8: Trust positively influences smart city technology acceptance among working professionals.

Smart governance encompasses characteristics of political participation, citizen services, and administrative duties in a system of urban cities (Giffinger et al., 2007). The willingness of the young populace to live in a smart city is affected by smart governance (Pinochet et al., 2019). Another study finding is that the five components of smart governance, transparency, cooperation, participation and partnership, communication, and accountability, directly and indirectly impact people's quality of life (De Guimaraes et al., 2020). According to earlier research, such as that by Bstieler et al. (2015), the effective governance of university-industry partners increases the influence of trust on the study. According to the results, the quality of e-government services and trust in government increased due to smart governance practises that emphasise openness, sharing, communication, and collaboration (Myeong et al., 2014). Privacy and security are crucial for protecting people's privacy in these advancements and action plans and were critical components to increasing user trust in e-government systems (Yang et al., 2019). Smart governance can increase the trust effect and increase user acceptability. In light of this, the following hypothesis is proposed:

H9a: Smart governance enhances the influence of performance expectancy on smart city technology acceptance among working professionals.

H9b: Smart governance enhances the influence of effort expectancy on smart city technology acceptance among working professionals.

H9c: Smart governance enhances the influence of social influence on smart city technology acceptance among working professionals.

H9d: Smart governance enhances the influence of facilitating conditions on smart city technology acceptance among working professionals.

H9e: Smart governance enhances the influence of hedonic motivation on smart city technology acceptance among working professionals.

H9f: Smart governance enhances the influence of price value on smart city technology acceptance among working professionals.

H9g: Smart governance enhances the influence of habit on smart city technology acceptance among working professionals.

H9h: Smart governance enhances the influence of trust on smart city technology acceptance among working professionals.

This paper constructed a conceptual model that detailed the determinants of working professionals' acceptance of smart city technology post-COVID-19 pandemic by integrating the UTAUT2 (Venkatesh et al., 2012), ICTSC (Yeh, 2017) and SCM (Pinochet, 2019). Additionally, the moderating function of smart governance has been integrated. The research model can be seen in Figure 1.

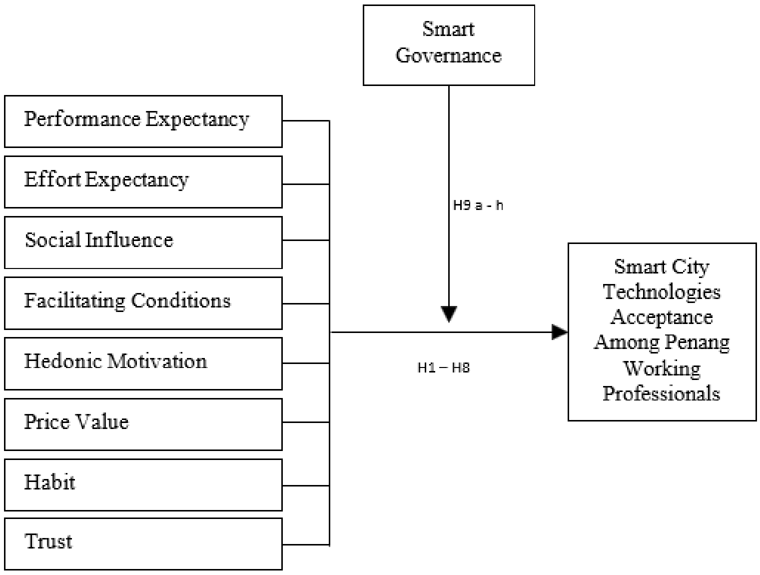

Figure 1: Research Framework

METHODOLOGY

The research uses a quantitative study approach to determine the factors influencing working professionals' acceptance of smart city technology after the COVID-19 pandemic. As long as they met all three of the following requirements being a Malaysian citizen, being a working professional, and having used one of Malaysia's smart city technologies, the targeted demographic comprises Malaysian working professionals. Working professionals who are the target audience were given access to an online survey. The study uses a non-probability convenient sampling strategy since it was effective, time-saving, and quicker to carry out (Jager et al., 2017) during the pandemic. It also allows the researcher to select respondents based on proximity. Respondents are emailed the online survey through Google Forms and asked for feedback. The UTAUT2, ICTSC, and SCM measurement sources are modified for this investigation. Data analysis is done using SmartPLS 3 and IBM SPSS Statistics 26. 103 people responded to the survey, and only 77 usable ones were examined.

Descriptive Characteristics of Respondents

The respondents were 54.4 percent male and 45.6 percent female. The largest age group participating in this study is under 20 to 25 years old (50.5%). The least number came from the group of those aged 31 to 35 years old (9.7%). This research also looked at how long the respondents have working experience. About 44.7 percent of respondents have 1 to 5 years of working experience. Only 5 percent of the respondent had experience working less than a year, and 5 percent were ten years and above. 57.3 percent have a bachelor's degree as their educational background, and 17.5 percent have a postgraduate qualification. The remaining respondents have a professional qualification (4.9%) and a diploma (20.4%). The smartphone operating systems were also questioned, and it was found that 68.9 percent of the respondents used Android, 29.1 percent used IOS, and the remaining 1.9 percent used Windows Phone. The summary of the demographic profile is shown in Table 1.

Table 1: Demographic Profile of Respondents

Demographic Variables	Description	Frequency	Percentage
Age	Below 20 - 25 years old	52	50.5
	26 - 30 years old	20	19.4
	31 - 35 years old	10	9.7
	36 - Above 40 years old	21	20.4
Gender	Male	56	54.4
	Female	47	45.6
Total working experience	Less than a year	5	4.9
	1 to 5 years	46	44.7
	6 to 10 years	8	7.8
	10 years and above	44	42.7

Demographic Variables	Description	Frequency	Percentage
Education Level	Professional Qualification	5	4.9
	Diploma	21	20.4
	Bachelor's Degree	59	57.3
	Master's Degree	13	12.6
	PHD	5	4.9
Smartphone Operating System Being Used	Android - ASUS, Blackberry, HTC, Honor, Huawei, Lenovo, LG, Motorola, Nexus, Nokia, OnePlus, Oppo, Pixel, Realme, Redmi, Samsung, Sony, Vivo, Xiaomi, ZTE	71	68.9
	iOS - iPhone	30	29.1
	Windows Phone - Microsoft Lumia	2	1.9

Confirmatory Factor Analysis

The confirmatory factor analysis checks the model's composite reliability and validity (Hair et al., 2019). The insights of this study explained that all construct items' outer loading was greater than 0.708, the Cronbach's Alpha and composite reliability values are greater than 0.7, and the AVE value is greater than 0.50, as per the recommendation of Hair et al. (2021).

Table 2: Confirmatory Factor Analysis

Variables	Items	Loading	Cronbach's Alpha	CR	AVE
Smart City Technologies Acceptance	AC1	0.934	0.950	0.964	0.869
	AC2	0.936			
	AC3	0.934			
	AC4	0.923			
Effort Expectancy	EE1	0.936	0.929	0.949	0.822
	EE2	0.898			
	EE3	0.887			
	EE4	0.905			
Facilitating Condition	FC1	0.923	0.943	0.958	0.851
	FC2	0.927			
	FC3	0.940			
	FC4	0.899			
Habit	HB1	0.908	0.942	0.957	0.847
	HB2	0.918			
	HB3	0.925			
	HB4	0.932			
Hedonic Motivation	HM1	0.950	0.929	0.955	0.876
	HM2	0.932			
	HM3	0.924			
Performance Expectancy	PE1	0.900	0.919	0.942	0.803
	PE2	0.884			
	PE3	0.889			
	PE4	0.910			
Price Value	PV1	0.961	0.953	0.970	0.915
	PV2	0.956			
	PV3	0.952			
Smart Governance	SG1	0.896	0.963	0.968	0.789

Variables	Items	Loading	Cronbach's Alpha	CR	AVE
	SG2	0.867			
	SG3	0.914			
	SG4	0.875			
	SG5	0.900			
	SG6	0.855			
	SG7	0.909			
	SG8	0.888			
Social Influence	SI1	0.928	0.911	0.943	0.846
	SI2	0.890			
	SI3	0.941			
Trust	TR1	0.937	0.957	0.967	0.880
	TR2	0.953			
	TR3	0.917			
	TR4	0.947			

Discriminant Validity

Based on Heterotrait-Monotrait (HTMT) results, Table 3 indicates no discriminant validity problem according to the $HTMT_{0.85}$ criteria (Henseler et al., 2015). This implies that the HTMT criterion did not detect the collinearity problem among the constructs, indicating the item of the constructs were not measuring the same thing; in other words, does not contain overlapping items.

Table 3: Results of Discriminant Validity

	AC	EE	FC	HB	HM	PE	PV	SG	SI	TR
AC										
EE	0.271									
FC	0.213	0.545								
HB	0.108	0.083	0.073							
HM	0.158	0.050	0.174	0.181						
PE	0.503	0.531	0.303	0.095	0.217					
PV	0.304	0.155	0.288	0.242	0.109	0.088				
SG	0.167	0.158	0.165	0.183	0.193	0.239	0.103			
SI	0.287	0.375	0.453	0.145	0.214	0.356	0.387	0.170		
TR	0.109	0.122	0.131	0.285	0.227	0.124	0.225	0.406	0.180	

Additionally, Figure 2 explains the structure of each main construct item outer loading and the relationship between each variable. It also shows the R^2 value of smart city technology acceptance due to the exogenous variables. 0.304 gain of the R square value means that the eight independent variables explain 30.4 percent of the dependent variable (smart city technology acceptance).

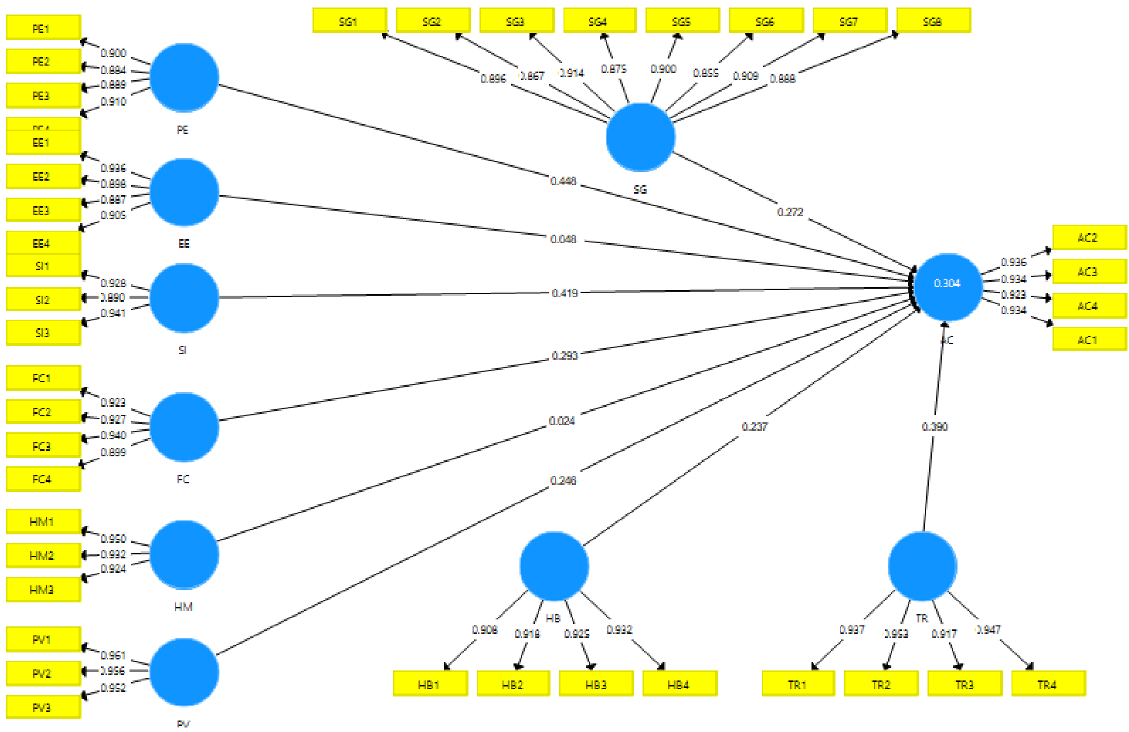

Figure 2: Measurement Model

Structured Equation Model

The structured model analysed the proposed direct and moderating hypotheses. Table 4 summarises the direct hypotheses proposed. The model shows that six variables have a significant positive relationship with the dependent variable, the smart city technology acceptance. Among the variables that have a significant positive relationship are performance expectancy (β = 0.448, p < 0.05); social influence (β = 0.419, p < 0.05); facilitating conditions (β = 0.293, p < 0.05); price value (β = 0.246, p < 0.05); habit (β = 0.237, p < 0.00); and trust (β = 0.390, p < 0.05). Effort expectancy (β = 0.048, p > 0.05) and hedonic motivation (β = 0.024, p > 0.05) show an insignificant impact on smart city technology acceptance.

Table 4: Direct Hypotheses Results

H	Hypothesis	β	STD EV	T Stat	P Value	Remark
H1	Performance Expectancy -> Acceptance	0.448	0.127	3.542	0.000	Yes
H2	Effort Expectancy -> Acceptance	0.048	0.129	0.373	0.709	No
H3	Social Influence -> Acceptance	0.419	0.145	2.897	0.004	Yes
H4	Facilitating Conditions -> Acceptance	0.293	0.144	2.040	0.042	Yes
H5	Hedonic Motivation -> Acceptance	0.024	0.113	0.211	0.833	No
H6	Price Value -> Acceptance	0.246	0.120	2.045	0.041	Yes
H7	Habit -> Acceptance	0.237	0.106	2.226	0.026	Yes
H8	Trust -> Acceptance	0.390	0.118	3.295	0.001	Yes

Moderating Effect of Smart Governance

Smart governance has a strong contribution to the proposed framework as it strengthens six direct relationships, performance expectancy (β = 0.265, p < 0.05); social influence (β = 0.419, p < 0.05); price value (β = 0.340, p < 0.05); habit (β = 0.371, p < 0.00); and trust (β = 0.237, p < 0.05). Smart governance strengthened the relationship between effort expectancy and smart city technology acceptance (β = 0.249, p < 0.05), which was previously not supported by the moderator's absence. However, smart governance did not significantly strengthen the relationship between facilitating conditions (β = 0.139, $p > 0.05$) and hedonic motivation (β = 0.127, $p > 0.05$).

Table 4: Moderation Effect of Smart Governance

H	Hypothesis	β	STDEV	T Stat	P Value	Remark
H9a	Performance Expectancy *Smart Governance -> AC	0.265	0.026	10.226	0.000	Yes
H9b	Effort Expectancy * Smart Governance -> AC	0.249	0.028	8.855	0.000	Yes
H9c	Social influence * Smart Governance -> AC	0.419	0.143	2.928	0.002	Yes
H9d	Facilitating Conditions * Smart Governance -> AC	0.139	0.290	0.479	0.632	No
H9e	Hedonic Motivation * Smart Governance -> AC	0.127	0.141	0.901	0.184	No
H9f	Price Value * Smart Governance -> AC	0.340	0.097	3.495	0.000	Yes
H9g	Habit * Smart Governance -> AC	0.371	0.104	3.557	0.000	Yes
H9h	Trust * Smart Governance -> AC	0.237	0.113	2.087	0.019	Yes

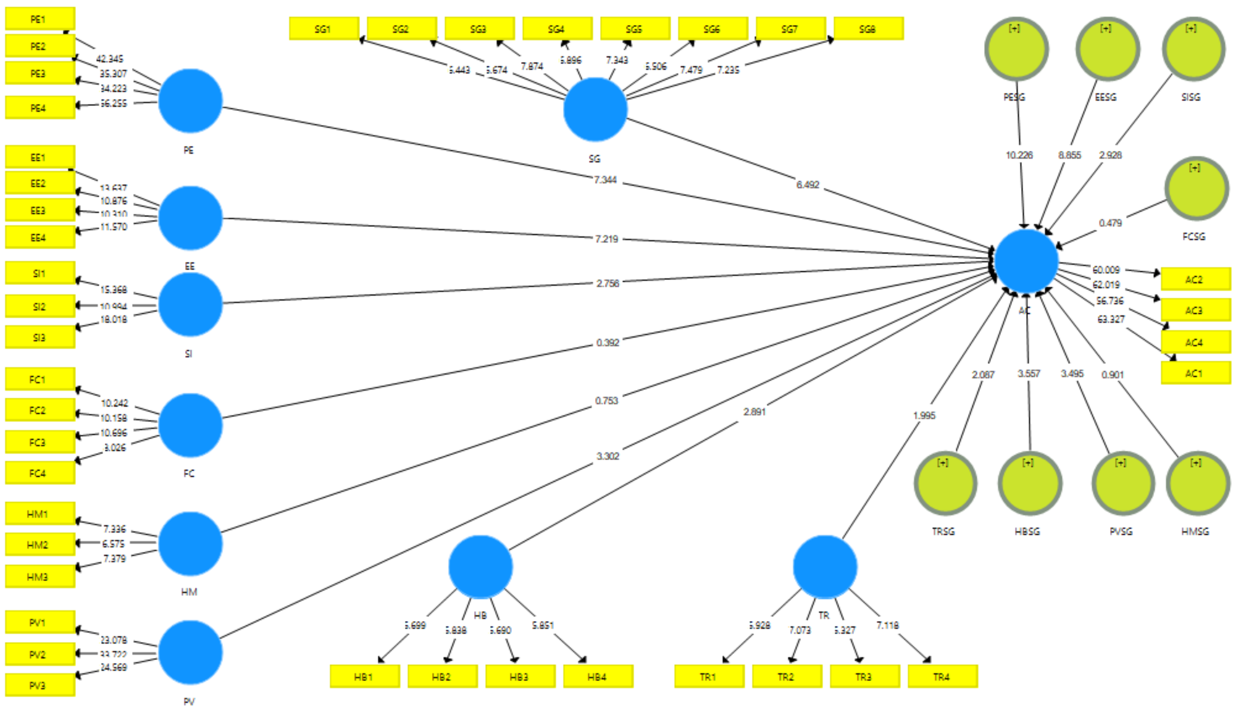

Figure 2: Measurement Model with Moderator

RESULTS AND DISCUSSION

This study is done to identify the determinants of smart city technology acceptance among working professionals post-COVID-19 pandemic.

Hypothesis 1 proposed that performance expectancy positively influences smart city technology acceptance among working professionals. This study showed that performance expectancy has positively influenced smart city technology acceptance with a t-value of 3.542 and a beta value of 0.448; thus, HI is supported. The result of this study coincides with the previous work of Qasim and Abu-Shanab (2016), Chhonker et al. (2018), and Baudier et al. (2020), where performance expectancy is extensively found to have a direct, positive, and significant impact on technology acceptance. The working professionals in this study perceive smart city technologies to enhance their performance. Hypothesis 2 proposed that effort expectancy positively influences smart city technology acceptance among working professionals. The outcome of this study shows that effort expectancy did not significantly influence smart city technology acceptance, with a t-value of 0.373 and a beta value of 0.048. Hence H2 is not supported. The result is in line with Qasim and Abu-Shanab's (2016) study, where effort expectancy is also found not to influence mobile payment use. The result indicates that using smart city technology was not easy for working professionals, and it takes certain skills and abilities to accept these smart city technologies.

Hypothesis 3 proposed that social influence positively influences smart city technology acceptance among working professionals. This study has proved that social influence does influence an individual's decision to accept smart city technology with a t-value of 2.897 and a beta value of 0.419; hence H3 is supported. The result of this study is similar to the outcomes of the study by Fitriani (2016), Fafiq (2020), and Tan et al. (2014). The working professionals' circle of important people can convince them to accept smart city technology. Hypothesis 4 proposed that facilitating conditions positively influences smart city technology acceptance among working professionals. The result of the study indicates facilitating conditions significantly influence the acceptance of smart city technology with a t-value of 2.040 and a beta value of 0.293; thus, H4 is accepted. The result of this study is in accordance with the results obtained from previous studies by Chhhonker et al. (2018) and Ma et al. (2016).

Hypothesis 5 proposed that hedonic motivation positively influences smart city technology acceptance among working professionals. However, this study found that hedonic motivation did not influence the acceptance of smart city technology, with a t-value of 0.211 and a beta value of 0.024. Hence, H5 is rejected. The result is opposite from the previous studies by Leong et al. (2017), Baudier et al. (2020), and Nair et al. (2015). As smart city technology is still new and needs time for adaption and acceptance, respondents do not find these technologies fun, enjoyable and entertaining. Hypothesis 6 proposed that price value positively influences smart city technology acceptance among working professionals. The result of this study stipulated that price value significantly influences smart city technology acceptance with a t-value of 2.045 and a beta value of 0.246; hence, H6 is accepted. The result is identical to the previous studies by Leong et al. (2016), Baudier et al. (2020), and Nair et al. (2015). The price of smart city technologies does influence acceptance depending on whether the working professionals can afford or not get them.

Hypothesis 7 proposed that habit positively influences technology acceptance among working professionals. The result acquired from this study showed that habit positively influences smart city technology acceptance with a t-value of 2.226 and a beta value of 0.237. Hence H7 is accepted. The result is paired with the previous studies' outcomes by Baudier et al. (2020), Nair et al. (2015), and Alalwan et al. (2015). The constant act of the working professionals eventually convinces them to accept. Hypothesis 8 proposed that trust positively influences technology acceptance among working professionals. This study found that trust positively impacted smart city technology acceptance with a t-value of 3.295 and a beta value of 0.390; hence, H8 is accepted. This is in line with the past research results among Yeh (2017), Ooi and Tan (2016), and Habib et al. (2020). Trust plays an important role in most technology studies, and it is again shown in this study's results as well.

Hypothesis 9a proposed that smart governance enhances the influence of performance expectancy on smart city tech technology acceptance among working professionals. The result of this study shows that smart governance moderates the relationship between performance expectancy and acceptance with a t-value of 10.226 and a beta value of 0.265; H9a is supported. The result deduces that the more transparent and cooperative the data and information are, the more likely people accept smart city technology. The result of this study is in accordance with Pinochet et al. (2019) and De Guimaraes et al. (2020). Hypothesis 9b proposed that smart governance enhances the influence of effort expectancy on smart city technology acceptance among working professionals. The study revealed that smart governance enhanced the influence of effort expectancy on acceptance with a t-value of 8.855 and a beta value of 0.249; H9b is supported. Effort expectancy did not directly influence smart city technology acceptance. Still, the moderating effect of smart governance enhanced the relationship, deducing respondents found it easier to use smart city technology with good data and information transparency.

Hypothesis 9c proposed that smart governance enhances the influence of social influence on smart city technology acceptance among working professionals. The study resulted in smart governance enhancing the influence of social influence and acceptance with a t-value of 2.928 and a beta value of 0.419; hence H9c is accepted. The result of this study is in line with Pinochet et al. (2019) and De Guimaraes et al. (2020). Hypothesis 9d proposed that smart governance enhances the influence of facilitating conditions on smart city technology acceptance among working professionals. The study derived that smart governance did not enhance the relationship between facilitating conditions and acceptance with a t-value of 0.479 and a beta value of 0.139; H9d is rejected. As individuals can get resources and support around them, and have compatible devices to use smart city technology, smart governance in terms of data transparency and confidence does not seem to be a problem for respondents.

Hypothesis 9e proposed that smart governance enhances the influence of hedonic motivation on smart city technology acceptance among working professionals. The study showed that smart governance did not enhance the relationship between hedonic motivation and acceptance with a t-value of 0.901 and a beta value of 0.127; H9e is rejected. Even with smart governance as moderating effect, it does not strengthen the relationship between hedonic motivation and smart city technology acceptance as these technologies are intended to be used for vital issues, and the element of fun and enjoyment does seem to interest respondents, even with data transparency. Hypothesis 9f proposed that smart governance enhances the influence of price value on smart city technology acceptance among working professionals. The study showed that smart governance influenced the relationship between price value and acceptance with a t-value of 3.495 and a beta value of 0.340; H9f is supported. The more governed these technologies are, the more likely they will not be overpriced.

Hypothesis 9g proposed that smart governance enhances the influence of habit on smart city technology acceptance among working professionals. The study revealed that smart governance enhanced the relationship between habit and acceptance with a t-value of 3.557 and a beta value of 0.371; H9g is accepted. Smart governance encourages individuals to make it a habit to accept these technologies. Hypothesis 9h proposed that smart governance enhances the influence of trust on smart city technology acceptance among working professionals. The result derived that smart governance strengthens the relationship between trust and acceptance with a t-value of 2.087 and a beta value of 0.237. Hence H9h is supported. The result of this study is in line with Myeong et al. (2014), Bstieler et al. (2015), and Yang et al. (2019).

CONCLUSION

This paper explores the factors that influence working professionals' adoption of smart city technologies in the wake of the COVID-19 outbreak. This article addressed current knowledge gaps regarding smart city technology from a theoretical standpoint. The model offers a comprehensive look at the key elements influencing working professionals' acceptance of smart city technology, emphasising the moderating impact of smart governance that may change how privacy concerns affect acceptance in the post-COVID-19 pandemic environment. This study found key factors that affect how working professionals view smart city technologies in the post-pandemic era. These findings are important for regulators, government organisations, businesses, and associated practitioners. Under the seven smart city components stated in the Malaysia smart city framework, the Ministry of Housing and Local Government may be able to handle better the populace's concerns in addressing important urban difficulties. This is important because smart city projects in Malaysia will succeed more if working professionals adopt smart city technologies after the COVID-19 pandemic.

Understanding the factors that motivate citizens to adopt and accept smart city technologies would benefit both public and private organisations, increasing the likelihood that people will participate in existing smart city initiatives. This study's main limitation is that most of the data were gathered from younger generations, likely because older generations found Google Forms challenging or lacked the necessary experience. Future research should concentrate on a more approachable approach to get a response from the older generation's perspective on acceptance of smart city technology as it is crucial, given that Malaysia is among the countries with the fastest ageing populations, with a projected increase in the ageing population of 20 percent. This research provided a comprehensive model that forecasts smart governance's moderating effects and smart city technologies' acceptance among working professionals in the post-COVID-19 pandemic period.

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CONFLICT OF INTEREST

The author(s), as noted, certify that they have NO affiliations with or involvement in any organisation or agency with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, jobs, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, expertise or beliefs) in the subject matter or materials addressed in this manuscript.

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