Exploring Factors Affecting Citizens' Acceptance to Use E-Participation in Malaysian Local Governments Through an Extended UTAUT Model

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Abstract: Local governments in Malaysia are frequently confronted with several unexpected difficulties and limitations while striving to provide optimized public services, especially to individuals residing in specific regions. After thoroughly examining previous studies and analyzing current difficulties, the digital technologies of e-participation may play an important role in fostering successful collaboration between local communities and local government agencies. E-participation in local government is now recognized as a digitalization strategy for enriching the democratization culture in citizen-government relations, especially at the grassroots level. This article explores the current understanding of the relationship between Malaysian citizens' acceptance and use of e-participation provided by their respective local governments, which also will oversee the moderating effect analysis of demographics. This study framework integrates with slight extensions to the original Unified Theory of Acceptance and Use of Technology (UTAUT) model. This study uses a quantitative methodology involving a survey questionnaire with convenience sampling applied to respondents comprised of 484 local Malaysian citizens via offline and online methods. For data analysis, IBM SPSS Statistics Version 27 software was utilized for Pearson correlation analysis, while SmartPLS 3.0 software was used for moderating effect analysis via Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings show that all citizens' acceptance factors correlate with using e-participation. In the meantime, all 20 demographics' moderating effects were tested, but no significant relationship was found. This study is significant in that it revisits several relevant literature reviews to enrich the development of the research framework and provide a necessary foundation for understanding the use of e-participation within Malaysian local governments.

Keywords: Citizens' acceptance, Public participation, E-participation, Malaysian local governments, UTAUT

1. Introduction

A. Background of The Study

Since they are the prominent administrators of local and regional settings, local governments possess a long tradition of fostering economic, social, and living sustainably in their areas and neighboring communities [1] [2] [3] [4]. For instance, because of the relatively fundamental nature of local governmental interactions, local governments in the United States have always been at the forefront of e-government application execution in micro-level regions [5]. To provide high-quality local government services while reducing red tape agencies, local governments have benefited tremendously from increased participation from the public, comprehensive observation, and open acceptance of all ideas and perspectives via e-participation approaches [6]. The local government is uniquely positioned to use e-participation to determine and address the requirements of its constituents because of its proximity to those it serves [1] [3]. When considering implementing e-participation, local governments should consult the public for advice since, in today's digital environments, most local governments worldwide are pursuing digitalization and innovations [7].

Referring to goal 16th of the United Nations Sustainable Development Goals (SDGs), "peace, justice, and strong institutions," shows how digital government systems are directly relevant today. In the scope of digital governments, this may be accomplished by creating a government that is more accessible, user-friendly, and accountable to its constituents, as well as one that actively pursues transparency [4].Implementing extensive public participation, detailed monitoring, and universal acceptance of all stakeholders' opinions may make public sector agencies more efficient and better prepared to offer high-quality government ser-

vices [6]. This concept emphasizes the fundamental argument that citizens need to be allowed to access and use certain government-related information or publicly accessible resources to formulate policies and ensure government accountability and transparency. Nonetheless, this is only possible with adequate technological backing since this essentially allows for building record registries that can be accessed anywhere at any time [8].

In virtual participatory and consultative activities, "e-participation" concerns using contemporary digital technology to enhance individuals' participation in the government policymaking process [9] [10]. Citizens are encouraged to deliver various public services using e-participation tools actively, and governments can connect with their citizens more efficiently. People's interests will be considered when making policy decisions if the government is better prepared to ask, collect, and consider the opinions of its residents. E-participation also encompasses digital technology, which may inspire people to participate in online activities once they can [11] [12]. Online discussion groups, electronic voting, virtual communities and web forums, decision-making exercises, social networking, and tools for general recommendation are all examples of digital-enabled strategies for e-participation.

In 1996, the Malaysian government launched the Malaysian Electronic Government (EG) program via the Multimedia Super Corridor (MSC) as one of many MSC projects to propel Malaysia to the pioneering of the digital era and connect Malaysia with other "smart cities" around the world [13]. In the same year, the MSC unveiled seven flagship programs, one of which was Malaysia's extensive suite of online administrative functions. The primary goal is to make government agencies more effective in providing services via digital means [13]. Additionally, there was an expectation that individuals would have a more streamlined and efficient online experience when seeking information from relevant governmental entities. The Malaysian Administrative Modernisation and Management Planning Unit (MAMPU), an agency assigned to long-term policymaking, technological innovation, and public administrative tasks, was created to align its activities with Malaysia's e-government agenda [4].

The e-government implementation in Malaysia primarily depends on the technological advancement of public services offered to people and business organizations. Consequently, these developments in Malaysian e-government services will be vital for Malaysian local governments to create and introduce a comprehensive benefit for a long-term e-participation practice [14]. Moreover, the use of Movement Control Orders (MCO) following previous experiences of COVID-19 outbreaks in Malaysia aimed to restrict inter-regional, inter-state, and intra-district movement. Since then, the Malaysian government has created an extensive plan for speeding up the digitalization of its people, including measures to increase the acceptance of

government online services and e-commerce [15].

B. Structure, Research Objectives, and Contributions

Hence, to gain a greater understanding of the enduring issue of poor citizen acceptance of e-participation, despite the existence of e-participation in Malaysian local governments, it is significant to do a quantitative survey study to consolidate a considerable volume of public views. This study examines the perspectives and broad views of the public, aiming to uncover elements that influence people's acceptance of e-participation in Malaysian local governments. This study uses existing theoretical or research models to identify several factors influencing citizens' acceptance to adopt e-participation. Subsequently, a comprehensive research framework was developed to formulate research hypotheses. These hypotheses were thoroughly tested and verified, contributing to advancing knowledge in this field.

The following research objectives are then presented to aid the readers in assessing the importance of this empirical study. This study's first objective was to assess the relationship between the citizens' acceptance and use of e-participation in Malaysian local governments. Besides, this study's second research objective was to analyze the influence of demographic variables on the relationship between citizens' acceptance and use of e-participation in the field of Malaysian local governments.

This study presents a proposed framework that may be used to explore the factors that influence citizens' acceptance of e-participation in Malaysian local governments. This study's approach uses the UTAUT model theoretical framework, which several previous studies have validated. A few modifications and extensions to the constructs have been implemented to align with the specific setting of this study and assess the validity of the novel study model framework. The main contribution of this article is as follows:

- This study's intention is to develop and evaluate the validity of a novel research framework, which was based on the UTAUT model. This study seeks of closing the existing gaps in the literature via exploring the relationship between citizen acceptance and the use of e-participation within Malaysian local governments. The limited number of local researchers who have examined this topic demands a new research direction.

- This study examines the existing body of academic study on the acceptance of e-participation by citizens in the scope of local government, with a particular focus on international settings such as the Middle East and European countries. Nonetheless, the existing collection of literature concerning the problems of Malaysian local governments is insufficient.

- This study aims to include all local government regions in Malaysia, in contrast to previous studies

focusing on case studies within a limited number of Malaysian local government agencies.

- In the scope of public participation processes within Malaysian local governments, previous studies generally concentrate on assessing conventional public participation methods. These include participation by the public in local government programs, town-hall discussions, in-person consultation sessions, and direct discussions between citizens and officials from the local government. This study, in contrast, examines an extended study of the public participation process, with a specific emphasis on related to technology or virtual platforms.

- The recent rapid expansion of urbanization in Malaysia has led to a greater emphasis on the implementation of sustainable practices, particularly in establishing effective two-way communication channels between citizens and local government. Following the SDGs, e-participation is growing as a leading strategy for improving people's quality of life in the long term.

C. Problem Statements

E-participation is an instrument for boosting the quality of services provided by local governments, focusing on Malaysia. By empowering a 'bottom-up' approach, it enables the public community to actively contribute to their local government by providing valuable feedback and suggestions. This supplementing of input from citizens plays a pivotal role in fostering an environment conducive to improved governance. The persistent problems faced by local government agencies in Malaysia in their attempts to actively include citizens in providing feedback on service quality remain noticeable [16]. These challenges primarily originate from delays in service delivery, inefficiencies within local government systems, mediocre mentalities displayed by local government employees, and inadequate enforcement of local government regulations.

Furthermore, as shown by the report published by the [17], there has been a noticeable growing trend in using internet-based services and technology in Malaysia in recent years. Computer usage in Malaysia increased from 80.0 percent in 2020 to 83.5 percent in 2021. Similarly, internet usage has risen from 89.6 percent in 2020 to 96.8 percent in 2021. Notably, the use of smartphones has reached its all-time high, with a usage rate of 98.7 percent in 2021 compared to 98.2 percent in 2020 [17]. Malaysian local government agencies should take advantage of the increasing acceptance of digital use to create an all-encompassing e-participation to involve more people in policymaking.

Moreover, the present positive preference towards using digital devices still had minimal impact on the development of acceptable levels of e-participation usage, specifically in Malaysian local governments. The recent study by [18] found that citizens' use of e-participation in the scope of smart city programs in Petaling Jaya and Putrajaya remained

unsolved despite their advanced digital capabilities. In line with the studies by [18], [19], and [20], the findings of their respective examinations suggest that the public participation procedure at municipal levels in Malaysia mostly keeps to a top-down basis. The low participation of people in policymaking and decision-making processes may be linked to their restricted exposure to interactive digital platforms. This lack of exposure hinders their capacity to participate in such processes actively. Consequently, citizens generally agree to the decisions made by their local government without actively contributing to the policymaking process. The potential for inequalities in public policy may arise due to the exclusion of public perspectives in formulating local government policies in Malaysia. The above scenario highlights the need for more effectiveness in the public's participation in the local government process in Malaysia. This can primarily be attributed to the absence of a suitable and adaptable platform that facilitates enhancing public participation in establishing present local government policies [21].

In the scope of assessing the acceptance of e-participation among the citizens of Malaysia, it is essential to recognize the heterogeneous nature of people's demographic profiles, as well as their disparate degrees of proficiency and experience with government-sponsored e-participation initiatives. The potential for this occurrence is to jeopardize the successful participation of individuals in civic matters, particularly within the scope of local government [14] [15]. The participation of the public citizenry has considerable significance in the functional processes that govern local government in Malaysia, as shown by several academic studies. For example, a study by [19] examined the phenomenon of public participation within the parameters of the Kuala Langat District Council. Simultaneously, a study by [21] studied public participation practices in the Seremban Municipal Council. The studies demonstrate the importance of public participation within the scope of local administration in Malaysia. Based on their studies, [22] [23] argued that it is essential for local governments in Malaysia to monitor the current trends in e-participation use consistently. Ensuring the seamless advancement of planning and policy execution within their respective areas of responsibility is the highest priority.

Nonetheless, the use of e-participation from the scope of Malaysian local governments has not been well studied, especially using quantitative research methods. Previous studies have made several attempts to investigate e-participation in Malaysian local governments. Nonetheless, their studies are only limited to case studies in particular local government entities. For example, a study by [18] examined e-participation in local governments of smart cities, explicitly focusing on Petaling Jaya and Putrajaya cities. Another case study by [19] reviewed the level of public participation within the Kuala Langat District Council. The study undertaken by [21] aimed to analyze the extent of public participation in several activities established by the

Seremban local government agencies. Furthermore, a study was undertaken by [20] to assess the effectiveness of e-participation initiatives implemented by the Alor Setar City Council.

The study by [19] primarily examines citizens' awareness of e-participation programs at the Malaysian local government. Nonetheless, it is worth noting that [19] still does not extensively explore the many aspects contributing to citizens' acceptance of these programs. As per [20] a study on e-participation in local government primarily employs qualitative methods and centers on assessing the effectiveness of e-participation implementation as perceived by local government officials. Nonetheless, [20] and [21] analysis still does not comprehensively evaluate the numerous factors that influence the use of e-participation among the Malaysian citizens.

The study by [13] highlights the necessity for enhanced rigorousness, amounts, and continuity in contemporary studies on e-participation. This is crucial to ensure the continuous relevance of e-participation from the scope of Malaysian local government, encompassing its planning, execution, and utilization. The primary concentration in recent studies has been on the national or federal level of governance rather than the local level [13]. Hence, conducting regular and ongoing studies on e-participation in regional government settings is vital to guarantee that local government agencies remain adapted to the evolving patterns and preferences of e-participation users [14].

Hence, to gain a greater understanding of the enduring issue of poor citizen acceptance of e-participation, despite the existence of e-participation in Malaysian local governments, it is significant to do quantitative survey research to consolidate a considerable volume of public views. This study examines the perspectives and broad views of the public, aiming to uncover particular elements that influence people's acceptance of e-participation in Malaysian local governments. This study uses existing theoretical or research models to identify several factors influencing citizens' acceptance to adopt e-participation. Subsequently, a comprehensive research framework was developed to formulate research hypotheses. These hypotheses were thoroughly tested and verified, contributing to advancing knowledge in this field.

2. RELATED WORKS
A. Malaysian Local Government
In Malaysia's general terms, *Pihak Berkuasa Tempatan (PBT)* or *Kerajaan Tempatan (KT)* refers to the government administration authority that operates at the third tier of government, following the federal and state government levels [16] [23]. As per Malaysia's Federal Constitution since 1957, federal and state governments have power over local governments. The federal government can establish legislation to ensure all states adhere to the same policies and laws. Nonetheless, the Constitution's Clause 76 (4) clarifies that the states have exclusive authority over local government matters [24]. That is to say, except for the Federal Territory, whose concerns are handled by the minister responsible for the Ministry of Housing and Local Government of Malaysia, the federal and state governments must mandate that all local governments establish and carry out policies and objectives [23].

Figure 1 [23] depicts the power distribution between the federal government, the states, and local governments, offering a glimpse into the Malaysian Federal Constitution's 1975 framework for governing authority. This connection demonstrates the central government's jurisdiction over the councils' sub-national bodies. The federal government may provide recommendations, offer additional technical assistance, and maintain administrative changes. It is common for the federal government to collaborate with the states on policymaking for local government [23].

Currently, all local governments in Malaysia are subordinate to their one state government [25]. Department of Local Government or *Jabatan Kerajaan Tempatan (JKT)*, assists the Ministry of Housing and Local Government of Malaysia or *Kementerian Perumahan dan Kerajaan Tempatan Malaysia (KPKT)* in managing all of Malaysia's local governments by centralizing laws and policies, providing consulting services (including technical advice services), and distributing federal government funds. City Councils or City Halls, Municipal Councils, and District Councils make up the three local government categories in Malaysia, as specified by the [25]. As shown in Table I [25], there are a variety of local government categories in Malaysia.

B. Public Participation in Malaysian Local Governments
The term "public participation" describes the efforts made by Malaysian local governments to give more citizens the opportunity in policymaking by providing them with more open and accessible forums for doing so [25]. Subsections 9 (1) (2), 12A and 13, and 16B (3) of the Town and Country Planning Act of 1976 (Act 172), according to [26], all endorse the idea of public participation for local government. Regional local development plans (Structure Plan or *Rancangan Struktur - RS*, Local Plan or *Rancangan Tempatan - RT*, and Special Area Plan or *Rancangan Kawasan Khas - RKK)* were made with public input owing to Act 172 [26]. Likewise, Act 172 requires community feedback across the entire planning process for RS, RT, and RKK. This is necessary for the State Authority and the Local Authority to approve the plans [26].

According to [27], Act 172 requires the public presentation of papers and proposals for public discourse and evaluation. The National Physical Plan (NPP), State Structure Plan (SSP), and local district plans are all included throughout the feedback and criticisms. Since local plans typically include specific sections of public property, they may be the greatest venue for meaningful public input at the ground level. High frequency and usage are enforced within the local plan level, which differs from the federal and state levels, where vital policy actions are more likely
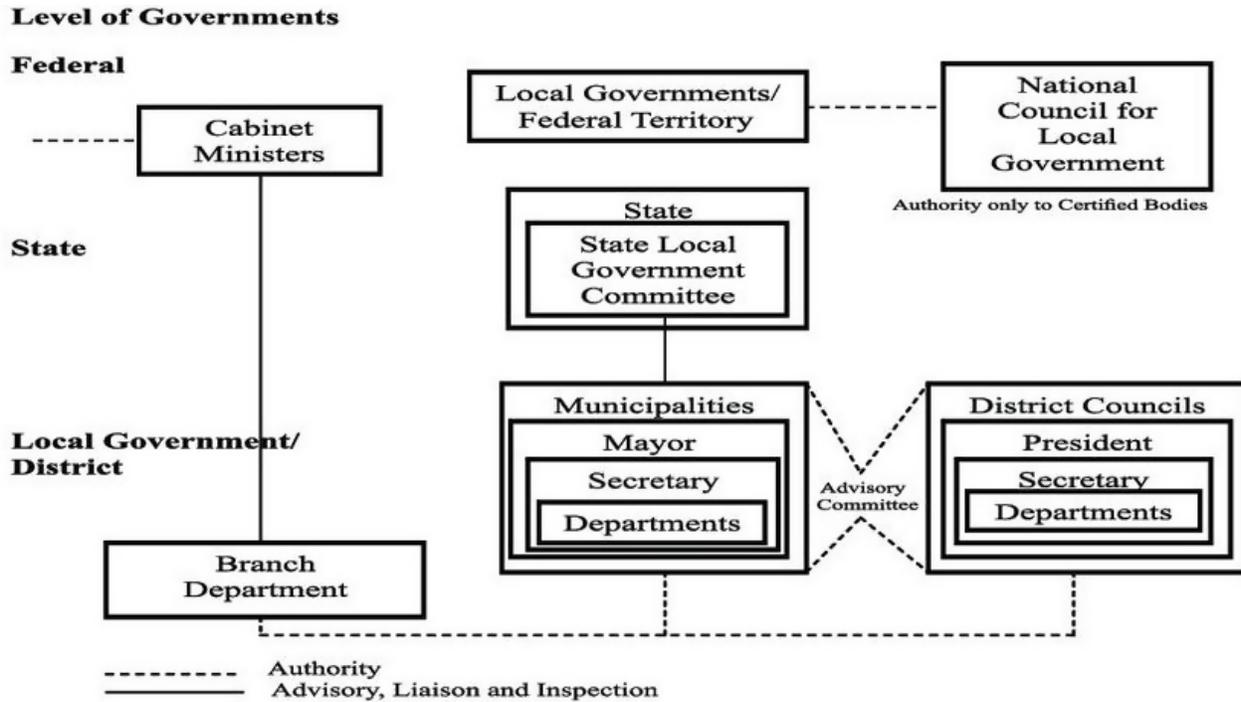
Figure 1. Level of governments in Malaysia

TABLE I. TYPES OF MALAYSIAN LOCAL GOVERNMENTS AND ITS CRITERIA

Types of Local Government	Criteria
City Council / City Hall	A City Council/City Hall is a local government that achieves city status upon fulfilling specific requirements, including a minimum population of 500,000 residents and a minimum annual income of RM100 million.
Municipal Council	Compared to the District Council, the Municipal Council is more concerned with urban regions, has a larger population, and generates more income. The eligibility requirements for the Municipal Council consist of a minimum population of 150,000 residents and a minimum annual income of RM20 million.
District Council	The District Council presents a greater emphasis on rural areas. Two specific criteria bind the District Council: firstly, the entire population it serves must not exceed 150,000 individuals; and secondly, its annual income must not exceed RM 20 million.

to be adopted.

Once again, city councils, municipal councils, and district councils are Malaysia's primary tiers of local government. As mentioned earlier, each local government level has created its strategy for future development based on the federal government's principles and procedures. As a component of the regional development plan in Malaysia, the Department of Town and Urban Planning or *Jabatan Perancangan Bandar dan Desa (JPBD)* set up a public participation mechanism called 'Publicity' *(SERANTA)*, which further entails a public exhibition method in which citizens get the opportunity to voice one's personal views to the local government officials [25].

Later, the *SERANTA* was transformed into digitalized access to simplify and increase public participation in local and regional plans in Malaysia. For instance, the *Seranta Awam Atas Talian* program is a Malaysian government's initiatives to provide space and encouragement to the public to express their views and feedback on all drafts of new proposals or amendments to laws (including by-laws, policies, regulations, and others), regardless of whether the new proposal or amendment needs to be presented in Parliament or not [28].

C. Definitions on E-Participation

Due to rapid innovation, today's public administration academics have actively discussed e-participation practices [29]. To begin, [30] saw e-participation for ICT technology used in data supply as "top-down engagement" and "bottom-up efforts" to encourage individuals, civic groups,

and possibly other politically established organizations to benefit from their elected leaders. Meanwhile, [31] states that e-participation uses digital means to improve citizen-government dialogue on particular policy issues. From the definition by [9], e-participation includes actively using digital technologies to address community issues or policy efforts. In addition, [32] described e-participation as one of the e-government programs that allow individuals to share their opinions on policy initiatives and develop inclusive online communities.

Moreover, [33] e-participation can be termed as a kind of participation that is facilitated by advanced technologies from society. E-participation needs connectivity to the internet and other online resources. This study describes e-participation as online venues where local communities can participate in government decision-making. While [34] expanded e-participation terms to digital participation, making them more widely used. [34] believes that digital participation is more interconnected. Digital participation systems may use several new technologies like private social networking to enable flexible and effective interactions between the government and the local community (for instance, Facebook, Twitter, YouTube, mobile apps, and others). Finally, as per United Nations' E-Government Survey 2020, e-participation can be related as "the process of involving individuals via ICT in policy, decision-making, and service design and delivery to make it participatory, inclusive, and deliberative" [35].

D. Types of E-Participation

The following Table II shows several examples of types of e-participation methods and its information that are often used by most agencies and certain organizations.

E. Previous Existing Literature Studies on E-Participation and Its Strengths and Weaknesses

The study conducted by [36] demonstrates its strength by introducing a conceptual model known as the 'Design-Reality Gap.' This conceptual model effectively identifies six significant factors contributing to the failure and success of e-government platform implementation in Malaysia. Despite the apparent simplicity of the conceptual model, it proved to be challenging to assign concerns to specific dimensions due to the potential for some issues to be classified into many categories. The inclusion of numerous challenges within one factor resulted in the generation of confusion throughout the assessment process. Additionally, using a non-numerical rating scale to assess the gap between design and reality in the model was somewhat subjective. Moreover, the study adopts a comparative approach, focusing only on implementing e-government at the national level. Specifically, the study only examined this growing trend in developing countries like Malaysia and developed countries like the Republic of Korea. In contrast to this study which uses a theoretical framework from UTAUT model which can divide the factors that influence the use of e-participation separately.

In another study by [37], digital technologies can facilitate novel forms of interaction, collaboration, and participation, as seen from many points of view, such as governmental and public participation and cultural and community participation. Nonetheless, the current understanding of e-government mainly concentrates on its technical aspects, neglecting the important role of grassroots participation in developing e-government programs. Consequently, the government's provision of services has not aligned with the community's needs. Therefore, in their study, [37] have adapted E-Gov 2.0, a conceptual framework that corresponds to the progress of e-government services by integrating interactive, collaborative, and participatory elements, which frequently use Web 2.0 technology and concepts.

The study assesses E-Gov 2.0 conceptual model readiness in Indonesia and Malaysia, specifically regarding e-government services and public participation. In their study, they found a problem in the willingness to use the e-participation platform in Malaysia in particular. For example, in Malaysia, they found the willingness to use e-participation is relatively still relatively low level (less than 40 percent), despite citizens' interest in e-participation seeming to be high (greater than 90 percent) as well as citizens' perception on the importance of e-participation being relatively very high (above 99 percent). The introduction of the E-Gov 2.0 conceptual model by [37] is significant in identifying the level of use of e-participation among users in Malaysia in particular.

Nonetheless, their study still does not focus on the scope of Malaysian local government and is done in a general way of the local citizens. Furthermore, their study was found to have not yet given a specific discussion in identifying the specific factors on the use of e-participation, as emphasized by themselves, where further study needs to be done to identify the factors that influence the use of e-participation among citizens in detail. Aware of the weaknesses in the study, this study has been made to improve in terms of the introduction of the study from the scope of Malaysian local government agencies. Furthermore, local government agencies are the closest to knowing the needs of local citizens. Therefore, this study can learn more about the weaknesses that need to be reformed through the local government's e-participation system, which can be used as the primary medium for identifying issues and problems in the community.

Another recent study [18] discovered that, despite their sophisticated digital capabilities, citizens' use of e-participation in the scope of smart city programs in Petaling Jaya and Putrajaya needed improvement. Their findings from this two-case study of Malaysia's smart cities of Putrajaya and Petaling Jaya found that both analyzed smart city examples needed to be improved in their supply of e-decision-making avenue. Integration of town plans into e-platforms was also sometimes inefficiently operated. The study concludes that there is much space for improvement in

TABLE II. TYPES OF E-PARTICIPATION

Online Surveys and Questionnaires	Governments can use online surveys and questionnaires to collect views and data relevant to specific topics or programs by implementing online surveys to evaluate the individual needs and interests of the target group, including citizens. For instance, the government can seek input from citizens on their fundamental preferences relevant to governmental services, urban planning, or government policies.
E-Petition Platforms	These online mediums promote the creation and acceptance of electronic petitions by individuals to voice support for causes or modifications to policies. Petitions frequently represent specific requests or concerns and gather signatures from the general citizenry.
Online Discussion Forums	A self-creation of online communities' platform that enables people to engage in discussion, exchange thoughts, and join forces with fellow citizens. Online discussion forums play a crucial role in e-participation by facilitating open discussions, cultivating an awareness of the community, and empowering individuals to engage in the decision-making process actively.
Virtual Town Hall Meetings	These virtual, interactive sessions facilitate citizen interaction with government officials, allowing for actual question-and-answer exchanges and feedback collection. To promote inclusivity and maximize participation, it is advisable to go for virtual meeting platforms that are both user-friendly and openly accessible. Various platforms such as Zoom, Google Meet, or specialized government web conferencing systems may be used.
Social Media	Government agencies frequently use various social media platforms, such as Twitter, Facebook, TikTok, WhatsApp, Telegram, YouTube, and Instagram, as channels for disseminating information, interacting with people, and requesting feedback and commentary. Similarly, citizen-led social media groups and forums may function as unofficial platforms for engaging in discussions concerning government-related concerns and promoting efforts toward reform.
Collaborative Document Editing	Specific e-participation approaches enable the process of collaborative document editing, allowing individuals to participate in policy ideas or governmental reports actively. Online collaborative document editing approaches, such as Google Docs, TeamViewer, Dropbox, or other specific government technologies, may facilitate synchronous collaboration among several users on a shared document.
Online Budgeting Tools	Certain government agencies provide interactive online platforms that enable individuals to take an active role in the budgetary process by assigning financial resources to certain priority areas.
Open Data Portals	Open data portals facilitate the provision of government data, whether publicly displayed or not, therefore allowing individuals to examine the latest information and establish strategies to address societal issues. Open data portals play a vital role in facilitating e-participation by allowing individuals, corporations, academics, and government officials to obtain, analyze, and use government data. Open data portals can enhance accountability, transparency, and public participation.

the e-participation of citizens, as shown by the e-platforms offered by the two primary smart cities in Malaysia, which have shown that people's capacity for influencing the top-down strategy needs to be stronger [18].

A significant feature of the study by [18] is its provision of a comprehensive analysis of smart cities in developing countries, specifically focusing on Malaysia. The study specifically examines the ongoing efforts in these countries to address participatory difficulties via the use of e-participation. In contrast, the study reveals that the Petaling Jaya City Council still needs to release a comprehensive smart city plan, unlike the city of Putrajaya. It also results in a limited significance of their case study on the general environment of e-participation services, particularly those provided by the Petaling Jaya City Council. Moreover, the researchers relied solely on the findings derived from their study, which primarily encompassed the examination of electronic platforms, including mobile applications

and websites. In contrast, this study employs various e-participation channels, such as official social media platforms, Internet-of-Things (IoT) platforms, and other digital platforms produced via Industrial Revolution 4.0 technology.

In another example study by [27], almost every Malaysia's local government has adopted public participation systems to gather community input on local plans and policies in the light of Act 172's mandate. Although public feedback has helped many Malaysian municipalities improve their Local Draft Plans, results have conflicted. A study by [27], who discovered that the public participation study for Kuala Lumpur's Draft City Plan 2020, which began in the year of 2008, reveals an optimistic level of local participation and that the length of collection of data was expanded in response to the people's optimism to participate. After three and a half years, the number of participants significantly exceeds the number of intended

responders. Nonetheless, [27] argued there had been some significant insufficient public participation within local government agencies in Malaysia because, based on their survey received just a few hundred replies, which was much lower than that of other local municipalities in Malaysia.

The most important feature of the study by [27] is its demonstration of extensive sample size, with a total of 62,224 opinions/objections collected during the data collection process conducted by the Kuala Lumpur City Council concerning the public hearing process. Nonetheless, the scope of the study only to examining the public objection or opinions process that occurs after the public release of the drafted plan. The analysis aims to identify every person and organization involved and the primary planning concerns that pertain to them. The analysis primarily adopts a qualitative and descriptive approach, relying on exclusive documents obtained from Kuala Lumpur City Hall. These documents relate to public participation, objections, and feedbacks regarding the plan, in contrast to the present study, which employs a quantitative study approach to collect data from a diverse range of respondents across different regions of Malaysia, encompassing an extensive range of sentiments, perspectives, and backgrounds. Moreover, the study still does not discuss specific factors that motivate the use of e-participation compared explicitly to this study, which identified some of these influencing factors.

This is consistent with the study by [19], who discovered that mostly just 1 percent of respondents followed the public participation process in completing the form complaints within their local government public participation campaign. This is supported by PLANMalaysia's (the Federal Department of Town and Country Planning) 2006 Annual Report, which reflects the claim made by [19]. Only 1-12 percent of the population in each district location visited the local government's displays of the proposal and local development plans process. In a related study; for instance, [19] found that the case of Kuala Langat District Council's local plan was implemented just using a top-down strategic plan alone, with input emanating only from the local government and the residents/community just having followed along.

While according to [19], they argue that the low participation proportion of Malaysian citizens in public participation activities is related to insufficient awareness of information about the process, current challenges, and legislation affecting the planning. Findings by [26] corroborate with [19] by adding that communities must know their rights to make the most of the local government's policy initiatives. As a rule, this happens when the public needs clarification about the intentions of the development project. Almost everyone knows they have the legal right to voice opposition to a construction project if it is planned for or located close to their home or another site of personal significance. The strength of this study by [19] is that they has used the Arnstein Theory in identifying the trend of

public participation among citizens in the Kuala Langat District Council. Nonetheless, their study only focused on a case study in one local government agency and no specific study was done to identify the factors of electronic use for public participation that is different from this study.

The next issue is a technique that may need more feedback from the public. Citizens need to get more chances to provide feedback to their administration. The number of people who attend public discussions and gatherings could be small if they are not well advertised. For instance, [21] studied public participation among Seremban Municipal Council citizens relating to the public participation. They discovered that most of those surveyed had an in-depth understanding of participating in Seremban Municipal Council-sponsored activities like the *"gotong-royong"* or collaborative work program. At the same time, a smaller subset had taken steps to seek out and participate in discussion and debate sessions with the council. It was discovered, nonetheless, that the Seremban Municipal Council needed help getting information out to the public about the public participation events it was planning. In certain instances, people need more awareness about a program because, in their view, the local government needs to do more to spread information about it. Nonetheless, the study by [21] still only focuses on the case study of public participation in one local government agency, namely Seremban Municipal Council, as suggested by the researcher of the study for further research that requires research at the research level that includes the entire local government area in Malaysia to learn more about the process of public participation in a more comprehensive manner. In addition, no specific study was made to identify the influence factors of electronic usage among local citizens for public participation, which differs from the aims of this study.

F. E-Participation Performance for Malaysia

This study revisited the current level of e-participation in Malaysia via referencing the United Nations' E-Participation Index reports published once every two years. The United Nations E-Participation Index is an established measure for assessing the success of government platforms in participating citizens in decision-making, monitoring, and sharing information and ideas via digital platforms [38]. The measure considers how well the public has access to information, how actively they are involved in shaping public policy, and how much impact they have on decision-making via digital [38].

The latest United Nations [4] report on the E-Participation Index for 2022 was analyzed for the study. Figure 2 [4] shows that despite Malaysia's rising position on the E-Participation Index between 2014 and 2020, there has yet to be a confirmation that the country's e-participation performance within e-government initiatives is adequate. After 2020, Malaysia's position and overall worth on the E-Participation Index began to decline. The value of Malaysia's E-Participation Index declined drastically, from
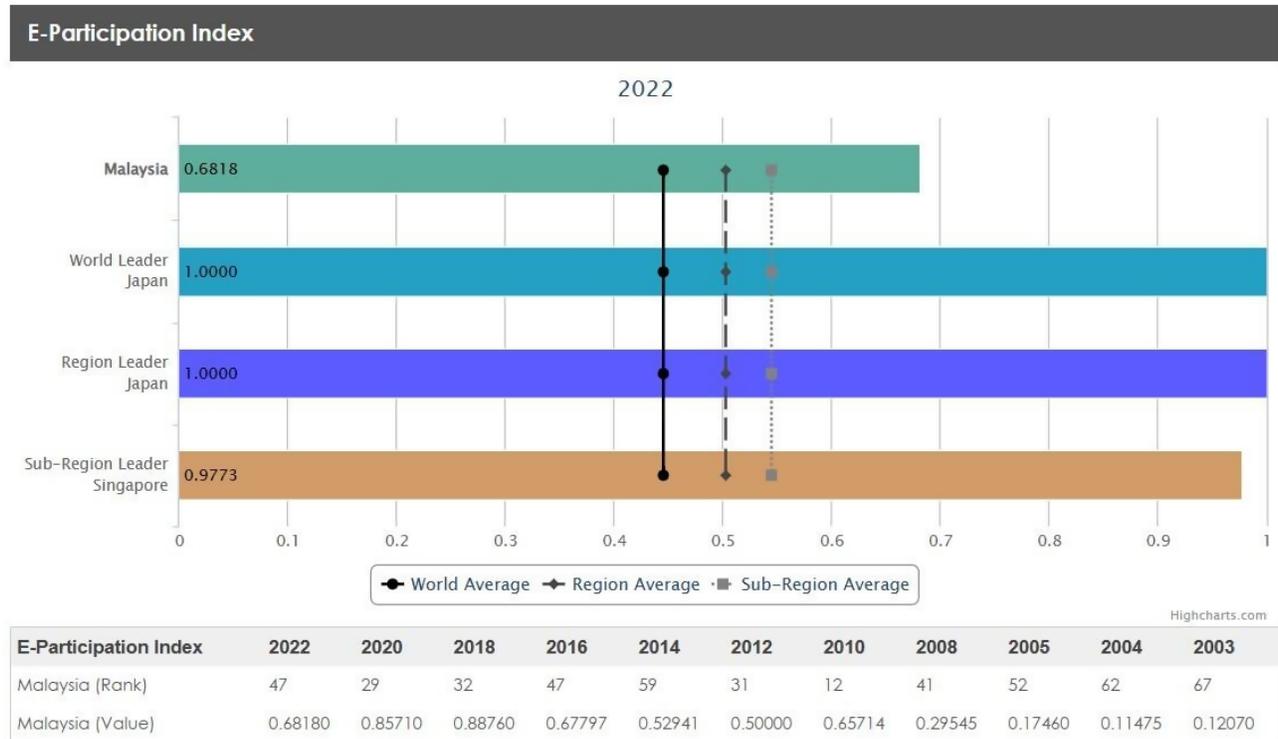
Figure 2. E-Participation Index for Malaysia

0.8571 in 2020 to 0.6818 in 2022, dropping the country from 29th in 2020 to 47th in 2022. This is a vast and severe decrease across the board, and further assessment needs to be undertaken to solve this severe decline trend.

The recent United Nations report on the E-Participation Index shows that the level of performance of the E-Participation Index in Malaysia still shows a less encouraging performance. This situation happened because before the outbreak of the COVID-19 disease that hit most countries, including Malaysia, at the beginning of 2020. Before the period of movement control in Malaysia that started in 2020 to 2021 due to the outbreak of the disease COVID-19, the empowerment of e-participation still needed to be given more attention by both parties, whether from government agencies or the public. This is because most channels for providing services and communicating with the general public still rely on physical interaction, particularly at the counter.

In addition, while movement control orders are in place due to COVID-19 in Malaysia, most of the significant digitalization empowerment programs in Malaysia have just initiated at the end of 2020 when the federal government launched the *Jalinan Digital Negara (JENDELA)* plan program which is part of the 12th Malaysia Plan (2021–2025). In addition to the JENDELA program, several other digitalization support programs, such as the National Fiberisation and Connectivity Plan (NFCP) 2019-2023 program, the 5G networks deployment program, as well as Public Sector Digitalisation Strategic Plan 2021-2025 (PSPSA) for Malaysian government sectors specifically and others are also being undergone in the same period. In other words, most Malaysian government sector digitalization empowerment programs started in early 2021 until now, where this scenario is one of the contributors to the decline in the E-Participation Index for Malaysia recorded in 2022.

Furthermore, another contributing factor to this index's decline is the lack of trust among the public toward the use of e-government platforms. This is evidenced by the study of [18], which discovered that individuals are still hesitant to use e-participation because of the safety factor in cyberspace, which is still a dilemma for people to use anything online. Local government agencies need to be aware of this scenario and be very proactive in providing an e-participation that is genuinely safe and suitable for use by the public. Therefore, local government agencies must collaborate with stakeholders such as the Ministry of Communications and Digital Malaysia, the Malaysian Communications and Multimedia Commission (SKMM), the Royal Malaysian Police, and specialist and certified organizations to handle digital media.

The implication of this decrease in the index has the potential to cause more Malaysians not to use the e-participation to deal with their respective local governments. This causes the digitalization process of the public sector in

Malaysia to be still unable to be expanded further, and the demand for physical operations in local government offices still receives the public's attention. In addition, other effects of this index drop caused more Malaysians to be reluctant to participate in discussions with their local governments. A lower e-participation index means citizens may have fewer opportunities to interact with their government through digital channels. This could contribute to declining participation in public policymaking processes and prevent the creation of inclusive public policymaking.

G. Unified Theory of Acceptance and Use of Technology (UTAUT) Model

Specific technologies can be successfully implemented with users' acceptance and support [39]. Users have claimed they accept new technologies when they use them without trouble [39]. Therefore, it is important to explore relevant theories or models to examine the progression of e-participation in study comprehensively. This will facilitate the establishment of a proposed research framework According to [39], they recommended that if numerous hypotheses or models are compatible with the study, scholars can determine which to implement.

This study employs a notable technological acceptance framework from [39], the UTAUT model. This study was used the theoretical foundation of the UTAUT model to identify the factors that significantly influence the adoption of e-participation among residents of Malaysian local governments. To synthesize and incorporate preexisting theory models, [39] created the UTAUT model (see Figure 3 [39] below). The UTAUT model includes extensive previous research and theory [39]. Performance expectancy, effort expectancy, and social influence are the three key components of the UTAUT that affect behavioral intention to use technology. The facilitating conditions and behavioral intentions, respectively, may influence usage behaviors. The model also considers the four moderating variables of gender, age, experience, and voluntariness of use.

Performance expectancy refers to the degree to which a person believes that using a specific technology can improve their capacity to complete tasks or fulfill professional obligations with increased effectiveness, efficiency, and productivity [39]. The user's level of expectancy for a specific software application designed for program management may be increased if they see it as a tool that may improve their ability to oversee specified tasks and deadlines, resulting in increased efficiency and achievement. Given this foundation, it is expected that users will have an enhanced level of optimism over the effectiveness of the technology, potentially resulting in increased utilization rates. Based on previous studies done by [39] [40], people exhibit an increased tendency to adopt and proficiently use emerging technology when they possess confidence that it will boost their daily work performance. Furthermore, this methodology may be used in both obligatory and discretionary situations. [40] state that it is the most effective

predictor variable for expecting future behavior.

According to [39], effort expectancy regards to the level of ease related to utilizing the specific system. The degree of effort shown by a user is indicative of their level of confidence in managing potential challenges when using the technology. Users may be more eager to continue embracing new technologies, provided they believe that adopting and using those technologies would be straightforward and will not burden their resources and time significantly. As per [41], there is a decline in the learning process associated with technology use over time, particularly when it is used regularly. Nonetheless, it is crucial for agencies integrating new technology to prioritize the development of user-friendly and basic systems. This occurrence can heighten their expectations about the effort necessary to use a particular technology efficiently, boosting their desire to participate actively. Furthermore, the provision of training and assistance to users may contribute to the elevation of their expectations about effort exertion. Consequently, this can enhance the acceptability and use of technology, as users are equipped with the necessary support to overcome any challenges they may encounter when using new technology.

Social influence corresponds to the extent to which a person perceives those influential individuals in their social circle, including leaders, peers, friends, and family, reckon that they should embrace a specific technology [39]. The level of support provided by an individual's social circle has a vital part to play in both the initial acceptance and long-term use of new technology [39] [40]. The concept of social influence in social psychology refers to how individuals' perspectives, attitudes, and actions are shaped by their interactions and connections with other people [39]. There are a variety of mechanisms via which individuals in society may be subject to influence from others, including deliberate persuasion, peer pressure, conformity, and social comparison. An individual's social network may have beneficial and detrimental effects on their overall well-being [40]. As per a study by [40], peer pressure has been seen to significantly impact an individual's determination, confidence, and connections with others. These factors are crucial in favourably shaping an individual's behaviour and general well-being. Nonetheless, social influence might lead to several unwanted outcomes, such as anxiety, stress, and the development of unfavorable attitudes or behaviors in some individuals [40].

The facilitating conditions refer to the degree to which a person perceives themselves as having adequate resources and support to use a specific technology effectively [39] [40]. For example, people may possess a more significant number of facilitating factors that contribute to their acceptance of new technologies. These prerequisites may include the possession of required technology and software, adequate training, and easily accessible technical assistance to facilitate their utilization [39] [42]. According to [39],

Figure 3. UTAUT model

the UTAUT model indicates a clear and direct impact of facilitating conditions on user behaviour. The relationship between age and experience serves as a moderating variable in evaluating the effectiveness of predictors in determining use behaviour [39]. This study emphasizes the need for local government agencies to prioritize providing training and support to their employees and citizens to adapt and use new technology effectively. This may include the allocation of suitable hardware and software resources to users, along with the provision of enough training opportunities. Furthermore, enhancing facilitating conditions for users may be achieved by cultivating an organizational culture that promotes the use and adoption of technology, hence enhancing citizens' preparedness and acceptance.

The moderating effects of age, gender, experience, and voluntariness of use determine the intensity of predictors on behavioural intention. Age has a significant effect on the impact of all four variables. Gender impacts the relationships between performance expectancy, effort expectancy, and social influence. The effect of experience on the relationship between effort expectancy, social influence, and facilitating conditions depends upon the individual's experience level. The extent to which the voluntariness of use moderates the relationship between social influence and behavioural intention is restricted.

The UTAUT model is often used as a framework of theory for the analysis of technology acceptance and usage [40]. In examining e-participation within Malaysian local governments, the UTAUT model might provide significant contributions by facilitating an understanding of the many

factors that impact technology adoption among people and government employees. The UTAUT model encompasses many aspects that impact technology adoption, including performance expectancy, effort expectancy, social influence, and facilitating conditions. By conducting an analysis of these factors, researchers can get insight into the primary drivers and barriers to e-participation within local government administrations.

Furthermore, the UTAUT model incorporates the impact of cultural factors and demographic characteristics on adopting technology since it was derived through a comprehensive meta-analysis of several theories and models about technology acceptance. By examining e-participation in Malaysia, this country can be characterized by cultural and demographic diversity. This, the UTAUT model's cultural relevance might facilitate the identification of characteristics that may possess uniqueness within the specific local context. Moreover, gaining a comprehensive knowledge of the many elements that impact the acceptability of technology among citizens and local government employees has substantial policy implications, particularly within the realm of local planning policymaking. Policymakers within the local governments of Malaysia can use insights derived from the UTAUT model to develop focused interventions and strategies to foster e-participation and enhance governance outcomes via technology adoption.

The UTAUT model's standardized framework enables comparison study across various areas, cities, or local governments within Malaysia. This could give a greater understanding of regional disparities in technology accept-

ability and adoption, hence aiding in identifying optimal strategies for fostering e-participation in diverse settings. Furthermore, utilizing the UTAUT model in examining e-participation within local governments in Malaysia may provide a comprehensive theoretical framework and a systematic approach for discovering the complex relationships that influence technology acceptability among individuals and government employees. This understanding, in return, may provide valuable perspectives on the advancement and implementation of successful e-participation strategies, leading to increased public participation and greater efficiency and responsiveness within local government.

3. METHODS

A. Research Framework

The proposed research framework is stimulated by the UTAUT, which served as a base for creating citizens' acceptance variables. Nonetheless, a slight modification was made to the original UTAUT to ensure its suitability for this specific type of study. The UTAUT is the convergence of several preceding technology acceptance theories and models, including those created by [39]. Although UTAUT is mostly verified and well-adapted, a few issues have been discovered via previous study, as stated by [42]. This suggests it may be possible to undertake comprehensive relationship analyses, particularly in e-participation, by matching the relations from UTAUT using extra or external factors. It is also suggested that to increase the specific study's practical application, the original moderating variable in UTAUT, consisting of gender, age, experience, and voluntariness of use, may be added, or replaced with a different moderating variable depending on some circumstances [40].

For instance, [42] and [43] used the same four moderator variables as the original UTAUT but replaced them with new ones. Previous studies missed moderators because the moderator is sometimes comparable across acceptance and use conditions [42]. For instance, an organization may have demanded that all employees use a specific suite of digital tools [42]. Thus, gender, age, experience, and voluntariness as a moderator may be irrelevant in some study inquiries [42]. Nonetheless, the original voluntariness of use is deleted and replaced with one new demographics moderator variable, such as education level, to optimize the holistic demographics perspective in this study. Figure 4 shows the proposed research framework used for this study.

1) Citizens' Acceptance (Independent Variable)

This study provides an extensive review of the general level of interest among users engaging in e-participation, aiming to discover the level to which they are likely to participate. There is a growing concern regarding the likelihood of Malaysian citizens believing that a certain number of known factors can significantly impact e-participation usage. The model's variables, as well as the researcher-created variable awareness of the system, performance expectancy, effort expectancy, social influence, and facilitating conditions.

a) Awareness of the System:

The likelihood of someone adopting new technologies depends on the importance they place on beliefs and principles. Knowing about e-participation methods can help people form personal opinions about using them. For a broader and more varied group of participants and organizations across all sectors to participate in the digital system, it is common practice, to begin with digital tools intended to discuss the initiative and gather contributions [44]. Nonetheless, in the early stages of e-participation adoption, personal interaction is less successful than mass media sources in creating system knowledge [45]. The issue with e-participation is that numerous individuals still have to learn about the public participation process and the various forms of participation they can participate in [46].

As per [2] study, indicates that most contemporary Malaysians still need to gain adequate awareness of the function of their local government. How best to disseminate awareness concerning this e-participation for public feedback is an important issue in Malaysia, where many residents still have questions about the function of their local government. Getting information about a single online platform for local government relations with its citizens is vital. The digital gap, insufficient access to suitable technology, and a failure to use government-provided e-participation services are just a few reasons why [21] and [47] discovered that the digital empowerment of Malaysian people remains required to be enhanced. In addition, Malaysians must thoroughly understand the particulars of their rights and benefits concerning the policy initiatives made by local government agencies [26]. According to [48] study is one example of an attempt to combine the different awareness of the system alongside the original UTAUT to examine the amount of user awareness and understanding concerning the scope of using a digital platform.

b) Performance Expectancy:

Based on UTAUT, an individual's perception of technology is highly affected by their expectation of how effectively it will perform [49] [50]. This factor is related to the extent to which a user anticipates that adopting new technology could help fulfill their objectives and enhance their working performance [39]. Since officials in municipalities expect greater efficiency due to citizens' more active participation, they prioritize concrete results [50]. E-participation can inspire individuals to significantly increase their achievement and commitment to society [50].

c) Effort Expectancy:

These features are often used to indicate ease engagement with digital media. People of all ages and backgrounds can and should take advantage of the opportunities the online world presents when the digital platform is easy to use. Given the optional nature of online participation, it is crucial to recognize that users may emphasize the community more than themselves. Nonetheless, at the level of society, the apparent effort needed to deal with e-participation may impact individuals' willingness to participate. One notable impediment to the successful implementation of

e-participation initiatives, particularly within the domain of local government, consisted of individuals' insufficient digital proficiency [50] [51]. Many people have a sense that e-participation tools are complicated to learn how to use. This implies that if individuals have problems with e-participation, they are less predicted to use it.

d) Social Influence:

Previous research has emphasized the influence of cultural norms and values in shaping individuals' views toward e-participation services [49]. When individuals express their social influence, they often refer to their ability to have a substantial effect on the decision-making processes of others in their immediate social circles [39] [40]. Other individuals that are politically active and possess significant online influence have the potential to influence others' experiences inside the digital realm [52]. The likelihood of e-participation adoption by friends and family increases when early adopters see the technology as useful.

e) Facilitating Conditions:

The study by [50] found that local government agencies are the leading suppliers and advocates of e-participation. Those with more convenient access to media technologies like laptops and cell phones are likelier to be involved in online groups through message forums and social media. It is possible that people's opportunities for e-participation would appear to be quite varied in a world where access to technology differs significantly, and digital disparities remain [53] [47] [40]. It takes more work on their part to participate in an online community, make a recommendation, or pitch a project proposal online.

There must be a more significant correlation between technological advances and adopting digital resources for cooperation and other reasons, even though more effort is being made towards digitalizing communities [50]. For example, in the case of Ghana's local government's policymaking process, which currently is evidence that user acceptance and the use of digital tools have a significant impact on e-participation, even though a relatively small usage due to technological issues, most notably technical limits [51]. These findings are consistent with those of [54], who conducted a literature survey on the study of e-participation and found that citizens must make full use of the software tools made available to them by their governments. People in remote areas of Malaysia are less equipped than those in metropolitan areas due to a lack of access to and a disparity in the quality of digital tools [47].

2) Use of E-Participation (Dependent Variable)

This study uses the "use behavior" construct from the UTAUT as the dependent variable to assess the utilization of e-participation. The findings underscore significant factors that impact the use of e-participation; nonetheless, it is likely that the study did not specifically address the users' desired outcomes. The study by [55] assessed public agencies' use of social media platforms to enhance service provision and promote citizen engagement. The study revealed that incorporating environmental, technical,

and creative factors significantly contributes to the success of public agencies. A positive correlation exists between the utilization of social media and favorable results, for example, increased public satisfaction and enhanced trust in government engagement via electronic [56]. Simultaneously, it was shown by [57] that the likelihood of e-participation decreases in the presence of reduced levels of trust.

3) Demographics (Moderating Variable)

This study makes use of quantitative methods. This survey-based quantitative analysis also considers demographic factors, including participants' gender, age, educational backgrounds, and technology experience when utilizing e-participation.

a) Gender:

The possible moderating influence of gender in this situation implies that gender may have an impact on how people participate in e-participation programs. Many possible factors might explain the gender disparities in e-participation. One relevant factor is a perception of digital distinction, which refers to unequal access to digital technology. Throughout history, women have encountered obstacles in acquiring and using technology, often experiencing more significant challenges in some geographic regions or demographic groups. Moreover, women may exhibit greater reluctance to engage in e-participation activities due to concerns over online harassment or safety, given that some online venues are vulnerable to toxic behaviors. Moreover, the impact of social norms and beliefs about gender roles could change the level of participation by people of different genders in public discourse, whether in virtual or real environments. Disparities can impact differences in women's preference to participate in e-participation activities, specifically concerning their perceived efficacy and confidence in using digital technology. Furthermore, individuals of various genders may exhibit varying orientations and predilections regarding the subjects and concerns they actively participate in on the internet.

b) Age:

Moderating effect of age on the use of e-participation refers to how age can influence individuals' engagement with digital technologies and online platforms for participating in public decision-making processes. Like gender, age is a socio-demographic variable that might influence individuals' views and actions toward the adoption of technology and engagement in e-participation. There are many potential paths via which aging may have a moderating influence on using e-participation. Older adults' digital literacy and technological familiarity may exhibit various degrees of proficiency compared to younger generations. The variation in digital competencies might impact individuals' level of comfort and self-assurance while using e-participation. Furthermore, there might be variations in attitudes and receptiveness towards adopting new technology across different age cohorts. The younger demographic, raised in a digital-native background, may exhibit more openness towards e-participation activities. At the same time, older folks
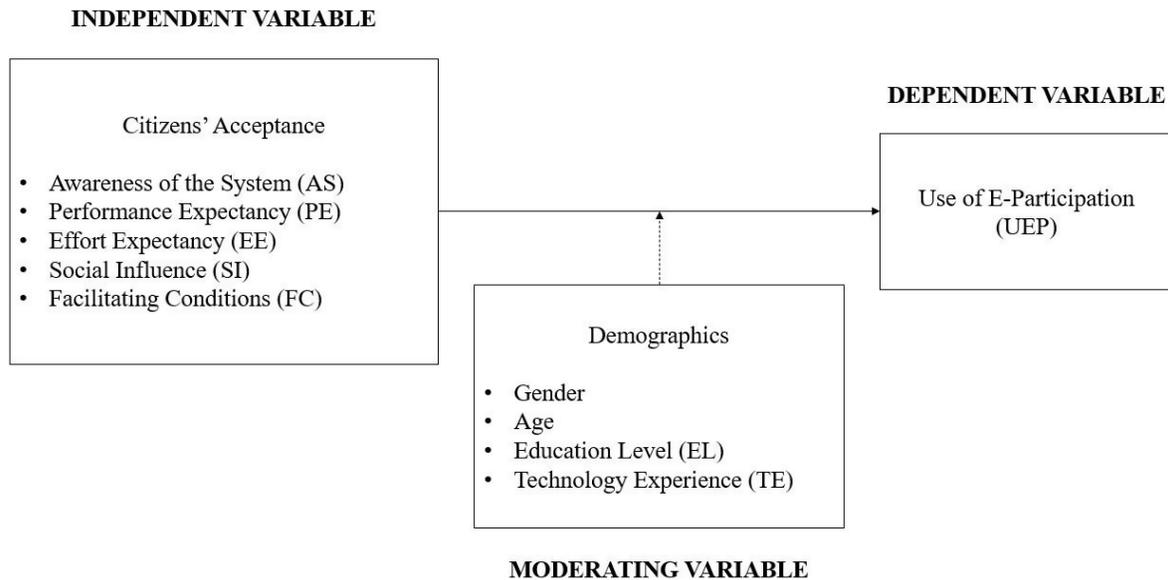
INDEPENDENT VARIABLE

Citizens' Acceptance

- Awareness of the System (AS)
- Performance Expectancy (PE)
- Effort Expectancy (EE)
- Social Influence (SI)
- Facilitating Conditions (FC)

DEPENDENT VARIABLE

Use of E-Participation
(UEP)

Demographics

- Gender
- Age
- Education Level (EL)
- Technology Experience (TE)

MODERATING VARIABLE

Figure 4. Research framework of this study

may have doubts or hesitations. The perceived significance of e-participation programs may differ depending on age-related interests and concerns. Younger people may exhibit a stronger preference towards matters that pertain to their age cohort. In contrast, elderly persons may accord precedence to distinct subject matters. Furthermore, it is worth noting that elderly adults who have been used to traditional modes of engagement, such as face-to-face gatherings or community assemblies, could exhibit a reduced willingness to adapt to digital platforms.

c) Education Level:

The moderating variable of education level has been used as a replacement for the moderating variable of voluntariness of use from the UTAUT model. The level of education that a person has played a crucial role in shaping their attitudes, talents, and actions regarding the acceptance of technology and engagement in online activities. A person's educational background may influence e-participation usage in several ways. Initially, it has been observed that individuals who have attained higher levels of education exhibit enhanced digital literacy abilities. Consequently, they have greater ease and self-assurance while engaging with e-participation and online tools. Furthermore, the learning of technical competencies in higher education institutions often equips students with the requisite knowledge and proficiencies to effectively go through detailed digital landscapes, hence facilitating their active involvement in e-participation activities. Furthermore, understanding extensive matters, such as e-participation, often requires discussing sophisticated local subject matters. Individuals with greater levels of education may have more self-assurance

and competence in making significant contributions to such discussions.

d) Technology Experience:

This study has included the moderating variable 'experience' from the original UTAUT model. Nonetheless, minor changes have been made to create a new 'technology experience' moderating variable in this study. The change of technology moderating effect on e-participation relates to the impact of people's previous technological experience on their involvement with digital platforms for engaging in policymaking activities. The domain of technology expertise spans a range of areas, including not just a familiarity with digital tools but also a history of using online platforms and a level of comfort in navigating digital surroundings. Individuals with substantial past expertise in technology use may have acquired the requisite technical abilities to engage proficiently with e-participation. These skills include publishing comments, actively engaging in online conversations, and finding relevant data.

B. Study's Method, Population, Sampling, and Data Collection

This study utilizes a statistical method that explores respondents' perceptions on various perspectives on the acceptance of e-participation in Malaysian local governments. The study is based on real-life situations and input from citizens. This study's factors were validated using an extended version of the UTAUT model, as shown in Figure 4 of the proposed research frameworks discussed previously.

The survey's study group was comprised of Malaysian citizens, with data collected from a sample chosen to be

representative of a wide variety of demographic and social factors. Because of the larger total population of Malaysian citizens (over 30.2 million people), this study minimized the total population studied to local citizen adults in Malaysia who had reached the age of at least 18 when the study was performed. Thus, by the end of 2022, it is projected that the final sample group used in this study will number anywhere in the surrounding area of 21,170,614 people, representing the total number of local Malaysian citizens aged 18 and over who were registered to vote for the 15th Malaysian General Election (PRU-15) in 19th November 2022.

This is because, by the moment they reach adulthood, members of this age group are more likely to have worked for and interacted with local government agencies, especially concerning submitting complaints making certain payments, and giving opinions on decision-making processes [18] [58]. In addition, people aged 18 or older were found to have the highest probability of using e-participation channels in Malaysian public services that are online to communicate with government agencies, probably because of the necessity of doing so in their present occupation [59]. Several literature studies on sample size determination guidelines were reviewed to acquire a sample representative of the Malaysian community. These included the formula provided by [60] and [61].

It has been determined that a sample size of 400 is sufficient using the calculation method developed by [60]. In addition, a sample size of at least 384 Malaysian citizens is required to accurately reflect a community of 100,000 or more, as determined by the [61] sample size determination (approximately 21,170,614 people). There is a difference of 16 responses between the sample size suggestions made by [60] and those made by [61].

The recommended minimum number of samples for a quantitative study is 300, with 500 being adequate and 1000 being excellent [62]. To apply the findings of a quantitative study to the whole country, a sample size of at least 300 people is required [63] [64]. In the scope of quantitative study, it is preferable to slightly increase the sample size from 300 to enhance the study outcomes' reliability [63] [64]. Taking into account Slovin's and Krejcie, and Morgan's number of samples formulas as well as numerous studies of the literature on sample size determination, this study will aim for 500-1000 samples due to the study's limitations, which include the expenses related to collecting data, the constrained timeframe for the comprehensive gathering of data, the difficulty for researchers collecting additional information throughout an extensive geographical area, and the massive sample size of Malaysian citizens, which approximately around 21,170,614 peoples.

Considering the high population density and geographically dispersed in Malaysia have resulted in requirements of extensive time and resources to gather a large group of samples that could represent the community. As [49]

and [65] suggested, the convenience sampling technique is suitable when time and resources are limited to conduct a study on a very high population. Hence, the researchers used a convenience sample approach for selecting participants for this study, considering their accessibility, commitment, and willingness to get involved in the studies.

Respondents respond by selecting their own corresponding choices when filling out this self-administered survey. Because questionnaires can be administered either offline or online, the study can reach a broader range of people and places at a lower expense and with less administrative complexity [49]. Then the data variables were examined and arranged for statistical analysis from this self-administered survey. This is useful when the sample group is large and challenging to reach; approaching them poses some difficulties for a researcher [49] [65] [66].

C. Instruments and Measurement

This study will examine instruments using [49], [50], and researcher self-modification. The instruments created by [49], which offer a comparative evaluation of user adoption of government-supplied digital technology, can be helpful when conducting this study. While in the e-participation, research carried out by [50] will also be used in this study. [49] and [50] employ the same UTAUT model in their studies. Consequently, the UTAUT model and its instruments have been used to form one of the fundamental frameworks for analysis in this study.

All the question items were assessed via the Likert scale: strongly disagree; disagree; neutral; agree; and strongly agree, which was created via the Likert scale. The use of the Likert scale for this study is justified by its user-friendly nature and efficient administration, as well as its ability to assess individuals' perspectives on the relevant variables quantitatively [67]. This section of the questionnaire will include five independent variables: awareness of the system (consisting of three items), performance expectancy (consisting of five items), effort expectancy (consisting of five items), social influence (consisting of four items), facilitating conditions (consisting of eight items), and the dependent variable of 'use of e-participation' (consisting of seven items).

For moderating effect variable instrument, the 'gender' and 'age' instruments still maintain the same variables from the UTAUT model. While for the education level instrument has been applied in this study which has been changed from the original instrument 'voluntariness of use' to give suitability of this study. The following moderating variable from the original UTAUT instrument, 'experience,' still maintains the same function but has been slightly changed to the 'technology experience' instrument, which aims to assess the respondents' frequency of experience using their digital telecommunications equipment in a certain period. The following Table III provides a listing of survey constructs and items.

TABLE III. Survey's Constructs and Items

Constructs	Items	Source
Awareness of the System	1) I am aware the existence of e-participation in local government. 2) I believe the importance of e-participation in local government. 3) I am ready to use e-participation in local government.	[49]; Researchers.
Performance Expectancy	1) E-participation can save my time. 2) E-participation encourages my participation in every local government program. 3) E-participation allows me to provide relevant feedback to local government. 4) E-participation help speed up the working process in local government. 5) E-participation ensuring a more transparent decision-making process in local government.	[50]; [40]; Researchers.
Effort Expectancy	1) E-participation in local government is easily accessible (e.g., server loading). 2) E-participation in local government has clear usage instructions. 3) E-participation in local government has a simple and easy participation process. 4) E-participation in local government is easy to be uploaded with any relevant information or document. 5) Feedback through e-participation in local government is fast.	[50]; [40]; Researchers.
Social Influence	1) Family members can influence me in using e-participation. 2) Neighborhood can influence me in using e-participation. 3) My colleague can influence me in using e-participation. 4) People around me who use e-participation enjoy various advantages when dealing with local government.	[50]; [40]; Researchers.
Facilitating Conditions	1) Local government need to provide official apps for e-participation. 2) Local government need to provide social media platforms for e-participation. 3) Local government need to provide special menu for e-participation on their official website. 4) E-participation system is compatible with technologies I use. 5) I have necessary knowledge to use e-participation. 6) I have necessary skills to use e-participation. 7) A campaign by the local government helped me use e-participation. 8) Incentives by the local government encouraged me to use e-participation.	[50]; [40]; Researchers.
Use of E-Participation	1) I use e-participation to make complaints. 2) I use e-participation to make recommendations. 3) I use e-participation to make a payment. 4) I use e-participation to get information. 5) I use e-participation to get other relevant services. 6) I would continue to use e-participation in the future. 7) I would recommend to others to use the e-participation.	[50]; Researchers.

D. Research Hypotheses

1) H1:There is a significant relationship between the awareness of the system and use of e-participation.

    a) H1a:

Gender moderates the relationship between the awareness of the system and use of e-participation.

    b) H1b:

Age moderates the relationship between the awareness of the system and use of e-participation.

    c) H1c:

Education level moderates the relationship between the awareness of the system and use of e-participation.

    d) H1d:

Technology experience moderates the relationship between the awareness of the system and use of e-participation.

2) H2:There is a significant relationship between the performance expectancy and use of e-participation.

    a) H2a:

Gender moderates the relationship between the performance expectancy and use of e-participation.

    b) H2b:

Age moderates the relationship between the performance expectancy and use of e-participation.

    c) H2c:

Education level moderates the relationship between the performance expectancy and use of e-participation.

    d) H2d:

Technology experience moderates the relationship between the performance expectancy and use of e-participation.

3) H3:There is a significant relationship between the effort expectancy and use of e-participation.

    a) H3a:

Gender moderates the relationship between the effort expectancy and use of e-participation.

    b) H3b:

Age moderates the relationship between the effort expectancy and use of e-participation.

    c) H3c:

Education level moderates the relationship between the effort expectancy and use of e-participation.

    d) H3d:

Technology experience moderates the relationship between the effort expectancy and use of e-participation.

4) H4:There is a significant relationship between the social influence and use of e-participation.

    a) H4a:

Gender moderates the relationship between the social influence and use of e-participation.

    b) H4b:

Age moderates the relationship between the social influence and use of e-participation.

    c) H4c:

Education level moderates the relationship between the social influence and use of e-participation.

    d) H4d:

Technology experience moderates the relationship between the social influence and use of e-participation.

5) H5:There is a significant relationship between the facilitating conditions and use of e-participation.

    a) H5a:

Gender moderates the relationship between the facilitating conditions and use of e-participation.

    b) H5b:

Age moderates the relationship between the facilitating conditions and use of e-participation.

    c) H5c:

Education level moderates the relationship between the facilitating conditions and use of e-participation.

    d) H5d:

Technology experience moderates the relationship between the facilitating conditions and use of e-participation.

E. Data Analysis Technique

The first objective of this study is to use correlation analysis to explore the relationship between awareness of the system, performance expectancy, effort expectancy, social influence, facilitating conditions and the dependent variable of the 'use of e-participation.' Analysis of linear relationships between variables is a typical application of correlation. This includes determining the direction, strength, and degree of relationship between the concerned variables [68] [69]. This study used Pearson's correlation (r) to analyze the ordinal data derived from Likert scale data collection following recommendations by [69]. As per [70], a value of r between 0.1 and 0.29 signs a weak relationship, while values between 0.30 and 0.49 signs a moderate relationship and values between 0.50 and 1.0 signs a strong relationship. The letters p and r typically represent coefficients. This analysis will also serve the purpose of examining the data to evaluate the primary hypotheses provided.

Nonetheless, it is necessary to understand that the correlation analysis approach has several limitations when used for data analysis. It is significant to acknowledge that a significant relationship does not always imply causation but rather implies an interrelated link among a sequence of occurrences [71] [72] [73]. When the two variables are influenced by a single underlying cause, which results in a correlation between them, this is an example of a significant correlation situation. In addition, it is important to use cautiousness when using the correlation coefficient to forecast results [71]. The difficulty in accurately forecasting outcomes comes from insufficient theoretical or practical clarification that guides the selection of variables to be related [71]. Therefore, this study uses the existing framework applied in previous studies to examine the relationship between variables influencing citizens' acceptance and their use of e-participation. This has been achieved by incorporating the UTAUT model.

The second objective of this study is to use SmartPLS 3.0 software to answer the second set of research questions by determining the impact of demographic variables such as gender, age, education level, and technology experience on the relationship between citizen acceptance and use of e-participation in the Malaysian local governments. This strategy was used to examine the data to evaluate the sub-hypotheses provided.

F. Flowchart Diagram of The Study

The Figure 5 shows the flowchart diagram for this study. This flowchart was created to show the process of this study from the initial stage of the study to the end of the study in a simple way.

4. Results

A. Response Rate and Distribution of Sample

Several selected Malaysian citizens were requested to complete the survey. This study initially intended to collect data from between 500 and 1000 samples but could only obtain 484 samples. This is caused by the numerous limitations researchers encounter, which have been discussed before. According to the findings, the total response rate was 48.4 percent from the maximum of 1000 samples intended. For surveys, a 30 percent answer rate can be considered adequate, while a response rate of 50 percent or higher is excellent [74].

Findings from the online data collection approach via Google Forms survey reveal that this study only received responses from 303 participants out of 484 overall. Because Google Forms only enables respondents to send off their responses once all the provided questions have been answered, all 303 questionnaires received are entirely useable. For the offline approach, 198 finished questionnaire papers were received. Nonetheless, only 181 appeared to be useable. Table IV and Table V detail the respondent's demographic details.

B. The Relationship of Citizens' Acceptance and Use of E-Participation Correlation Data Analysis and Main Hypotheses Testing Results

This sub-section examines the potential relationship between citizens' acceptance and the use of e-participation. Inferential statistics using the Pearson Correlation analysis was used to assess the relationship between citizens' acceptance and the use of e-participation to fulfill the first research's objective. Table VI displays the results of the correlation analysis conducted to examine the relationship between the primary variables and the related constructs. The findings of the respective five main hypotheses testing consisting of H1, H2, H3, H4, and H5 are shown in Table VI.

- H1: There is a significant relationship between the awareness of the system and use of e-participation. Pearson correlation analysis of awareness of the system and use of e-participation was revealed to be

moderately positive and significant (r=.663, p≤.001). Hence, the hypothesis of H1 was supported.

- H2: There is a significant relationship between the performance expectancy and use of e-participation. Pearson correlation analysis of performance expectancy and use of e-participation was revealed to be highly positive and significant (r=.831, p≤.001). Hence, the hypothesis of H2 was supported.

- H3: There is a significant relationship between the effort expectancy and use of e-participation. Pearson correlation analysis of effort expectancy and use of e-participation was revealed to be moderately positive and significant (r=.697, p≤.001). Hence, the hypothesis of H3 was supported.

- H4: There is a significant relationship between the social influence and use of e-participation. Pearson correlation analysis of the social influence and use of e-participation was revealed to be moderately positive and significant (r=.610, p≤.001). Hence, the hypothesis of H4 was supported

- H5: There is a significant relationship between the facilitating conditions and use of e-participation. Pearson correlation analysis of facilitating conditions and use of e-participation was revealed to be highly positive and significant (r=.728, p≤.001). Hence, the hypothesis of H5 was supported.

C. The Demographics Moderating Effect Data Analysis and Sub-Hypotheses Testing Results

The subsequent aim of this study is to examine the demographic variables that might impact the relationship between citizens' acceptance and use of e-participation within Malaysian local governments. The demographic variables of this study were assessed utilizing the Partial Least Squares - Structural Equation Modeling (PLS-SEM) technique, with the assistance of the SmartPLS 3.0 software. PLS is a variance-based approach used for predictive analysis to evaluate hypotheses based on theoretical relationships [75]. To accomplish this objective, 20 sub-hypotheses were created and evaluated.

1) Measurement Model

This study's measurement model included a reflective construct. Both the internal consistency and convergent validity of reflective constructs were assessed. Internal consistency is measured utilizing Cronbach's Alpha and Composite Reliability. The values greater than 0.7 for overall variables are shown in Table VII, indicating that internal consistency was established for both [75]. While Average Variance Extracted (AVE) and loadings also measure the convergent validity. Table VII indicates that all constructs have good convergent validity, with AVE values exceeding 0.5. Table VIII shows all loading values exceeding 0.7, except for FC8, which showed 0.692. Several pieces of study disputed the convergent validity value. [76] and [77]
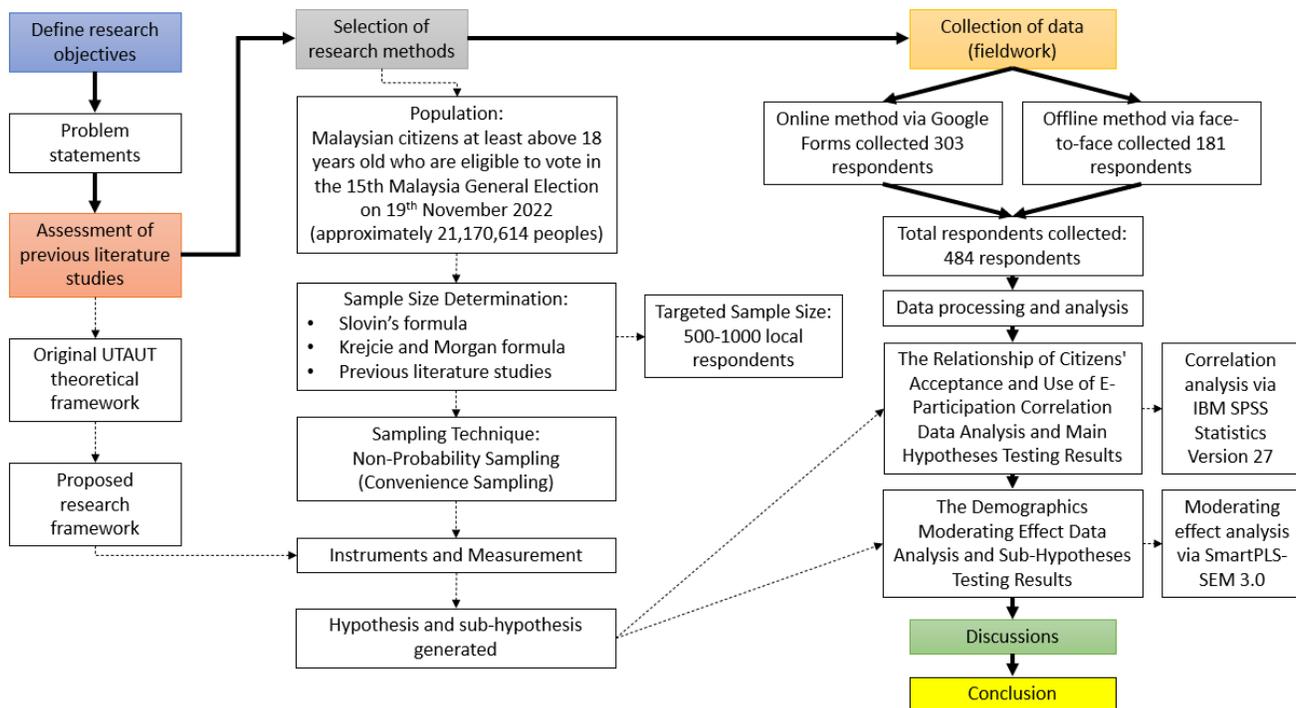
Figure 5. Flowchart process of the study

TABLE IV. DISTRIBUTION OF SAMPLE ACCORDING TO THE STATES OF MALAYSIA

States	Final Samples Received
Johor	9
Kedah	85
Kelantan	3
Melaka	2
Negeri Sembilan	8
Pahang	2
Pulau Pinang	16
Perak	66
Perlis	58
Selangor	9
Terengganu	16
Sabah	73
Sarawak	10
Wilayah Persekutuan	127
Total	484

TABLE V. DISTRIBUTION OF RESEARCH SAMPLE ACCORDING TO DEMOGRAPHIC BACKGROUNDS

Demographics	N=484	Percentage
GENDER		
Male	194	40.1
Female	290	59.1
AGE		
20-29	111	22.9
30-39	186	38.4
40-49	121	25.0
50-59	41	8.5
60-69	22	4.6
70-79	3	0.6
DISTRICT OF RESIDENCE		
Alor Gajah	2	0.4
Bandar Baharu	1	0.2
Barat Daya	5	1.0
Besut	2	0.4
Dungun	1	0.2
Gombak	5	1.0
Gua Musang	1	0.2
Hulu Langat	14	2.9
Johor Bahru	3	0.6
Kampar	1	0.2
Kemaman	1	0.2
Kinta	6	1.2
Klang	13	2.7
Kota Bharu	1	0.2
Kota Kinabalu	3	0.6
Kota Setar	14	2.9
Kota Tinggi	2	0.4
Kuala Kangsar	1	0.2
Kuala Langat	5	1.0
Kuala Lumpur	22	4.5
Kuala Muda	14	2.9
Kuala Nerus	2	0.4
Kuala Selangor	1	0.2
Kuala Terengganu	4	0.8
Kuantan	1	0.2
Kubang Pasu	14	2.9
Kuching	3	0.6
Kulim	10	2.1
Langkawi	27	5.6
Larut, Matang dan Selama	6	1.2
Manjung	2	0.4
Mersing	1	0.2
Miri	10	2.1
Muar	1	0.2
Padang Terap	1	0.2
Pasir Puteh	1	0.2
Pendang	2	0.4
Perlis	66	13.6
Petaling	22	4.5
Pontian	1	0.2
Putatan	2	0.4
Putrajaya	105	21.7
Rembau	1	0.2

Demographics (Continuation of Table V)	N=484	Percentage
Sandakan	1	0.2
Seberang Perai Selatan	7	1.4
Seberang Perai Tengah	37	7.6
Seberang Perai Utara	8	1.7
Segamat	1	0.2
Semporna	1	0.2
Sepang	13	2.7
Seremban	6	1.2
Sibu	3	0.6
Tampin	1	0.2
Tawau	1	0.2
Temerloh	1	0.2
Timur Laut	1	0.2
Tuaran	1	0.2
Yan	2	0.4
EDUCATION LEVEL		
SPM (Malaysian Certificate of Education)	85	17.6
Certificate/Diploma or Equivalent	139	28.7
Bachelor's degree	182	37.6
Master's Degree	67	13.8
Ph.D	11	2.3
FREQUENCY OF USING TELECOMMUNICATIONS EQUIPMENT		
More than 10 times a day	425	87.8
More than 10 times a week	50	10.3
More than 10 times a month	3	0.6
More than 10 times in six months	0	0
More than 10 times a year	6	1.2
Never use	0	0
OCCUPATION		
Government	340	70.2
Private	62	12.8
Self-employed	53	11.0
Un-employed	29	6.0
OCCUPATION POSITION		
Top management group	47	9.7
Management and professional group	157	32.4
Implementation/support group	237	49.0
Others group	43	8.9

recommended removing variables with a loading value below 0.5. At the same time, [78] advocated reviewing variables with loading values between 0.4 and 0.7 before removing them, whereas [79] recommended 0.4. If removing these indicators increase the composite reliability, discard, or otherwise maintain the factors. Hence, the present study opted to retain this factor by considering the proximity of the outer loading value of 0.692, as observed in item FC8, to the threshold of 0.7. Additionally, this study considered the opinions conveyed by [76], [77] and [78], together with the deciding factors of the composite reliability value and valid AVE value.

2) Structural Model

For determining the structural model, the method used here is similar to that used by [75]. It consists of coefficient of determination (R^2), f^2 effect size, predictive relevance (Q^2), and structural model path coefficients. At the same time, each of those main hypotheses was followed by the results of the demographics moderating effect sub-hypotheses of H1a, H1b, H1c, H1d, H2a, H2b, H2c, H2d, H3a, H3b, H3c, H3d, H4a, H4b, H4c, H4d, H5a, H5b, H5c, and H5d as shown in Table X.

The predictive performance of the model is quantified by its R^2 value. [80] provide a general guideline for explaining R^2 values. See Table VIII [80] below. From the results of coefficient of determination R^2 testing, UEP recorded a R^2 value of 0.780 and obtained strong effect correlation size.

The f^2 effect size can be categorized as an effect size of ($f^2 \leq 0.020$ is small; $f^2 \leq 0.150$ is medium; $f^2 \leq 0.350$ is

TABLE VI. CORRELATION TEST OF INDEPENDENT VARIABLE AND DEPENDENT VARIABLE

		AS	PE	EE	SI	FC	UEP	Hypothesis Supported/ Rejected
Awareness of the System (AS)	Pearson Correlation Sig. (2-tailed) N	1 - 484	.639* ≤.001 484	.626* ≤.001 484	.448* ≤.001 484	.765* ≤.001 484	.663* ≤.001 484	Supported
Performance Expectancy (PE)	Pearson Correlation Sig. (2-tailed) N	.639* ≤.001 484	1 - 484	.735* ≤.001 484	.625* ≤.001 484	.719* ≤.001 484	.831* ≤.001 484	Supported
Effort Expectancy (EE)	Pearson Correlation Sig. (2-tailed) N	.626* ≤.001 484	.735* ≤.001 484	1 - 484	.454* ≤.001 484	.702* ≤.001 484	.697* ≤.001 484	Supported
Social Influence (SI)	Pearson Correlation Sig. (2-tailed) N	.448* ≤.001 484	.625* ≤.001 484	.454* ≤.001 484	1 - 484	.574* ≤.001 484	.610* ≤.001 484	Supported
Facilitating Conditions (FC)	Pearson Correlation Sig. (2-tailed) N	.765* ≤.001 484	.719* ≤.001 484	.702* ≤.001 484	.574* ≤.001 484	1 - 484	.728* ≤.001 484	Supported
Use of E-Participation (UEP)	Pearson Correlation Sig. (2-tailed) N	.663* ≤.001 484	.831* ≤.001 484	.697* ≤.001 484	.610* ≤.001 484	.728* ≤.001 484	1 - 484	Supported

Note: [*] Correlation is significant at the 0.01 level (2-tailed)

large) [70]. Most f^2 values provide minor impacts from the significantly different constructs. Only 4 exceptions; that is, AS (0.037) recorded medium effect, EE (0.024) recorded medium effect, SI (0.035) recorded medium effect, and PE (0.325) recorded large effect.

Q^2 value was computed using the blindfold approach, with an omission distance of 7. UEP's endogenous latent variables have measured values of Q^2 greater than zero (Q^2 = 0.598). This suggests that the endogenous structure of the model is fully predictable by its exogenous inputs [77].

Path coefficient significance was examined using bootstrapping with 5,000 iterations to see if the offered sub-hypotheses were supported. Research data supports sub-hypotheses with p-values less than 0.05. As demonstrated in Table IX, all moderating effects (Gender, Age, EL, and ET) had p-values of more than 0.05 on the relationship between citizens' acceptance (AS, PE, EE, SI, and FC) and the use of e-participation (UEP). The moderating effect variable does not significantly affect all the citizens' acceptance dimensions and use of e-participation. Thus, all examined sub-hypotheses (H1a, H1b, H1c, H1d, H2a, H2b, H2c, H2d, H3a, H3b, H3c, H3d, H4a, H4b, H4c, H4d, H5a, H5b, H5c, and H5d) were rejected. The following Figure 6 exhibits the demographics moderating effect results.

5. Discussion

A. Study's Discussions

This study uses an expanded UTAUT model to develop and evaluate a new research framework. The newly-created research framework aims to analyzing the aspects related to citizens' acceptance and use of e-participation components within local governments in Malaysia.

1) Awareness of the System

The findings from this study indicate a significant relationship between the awareness of the system and the use of e-participation. Individuals already aware of the positive aspects of e-participation tend to exhibit a higher motivation to use these systems for engaging in political and governmental matters. The findings of this study align with the findings reported by [81] in their literature analysis on e-government use, explicitly concerning the awareness of the system and the utilization of e-participation. Before utilizing e-participation, the community must be well-informed about those systems in the first place before they can start to use them [19] [44] [81]. While according to the study by [82] found similar findings in the study of Jordan country. E-participation services awareness of the system is significant among Jordanian citizens. In addition, [83] conducted a study to examine the influence of journalistic community relationships on the use of digital platforms in governmental agencies in Kazakhstan. The study demonstrates a significant relationship between users' awareness of e-government platforms and their following use of those platforms within a particular setting of Kazakhstan. The findings of this study in line with [84], who examined the relationship between user awareness and the duration of using e-participation services in several cases, including local governments and cities within the Czech Republic. The study revealed a significant relationship between users' awareness of local government e-participation services and a rise in the usage of these platforms at the national level. In Malaysia, a sig-

TABLE VII. Cronbach's Alpha, Composite Reliability, and AVE Values

Constructs	Cronbach's Alpha	Composite Reliability	AVE
AS	0.844	0.905	0.761
Age	1	1	1
Age*AS	1	1	1
Age*EE	1	1	1
Age*FC	1	1	1
Age*PE	1	1	1
Age*SI	1	1	1
EE	0.953	0.964	0.841
EL	1	1	1
EL*AS	1	1	1
EL*EE	1	1	1
EL*FC	1	1	1
EL*PE	1	1	1
EL*SI	1	1	1
TE	1	1	1
TE*AS	1	1	1
TE*EE	1	1	1
TE*FC	1	1	1
TE*PE	1	1	1
TE*SI	1	1	1
FC	0.903	0.922	0.596
Gender	1	1	1
Gender*AS	1	1	1
Gender*EE	1	1	1
Gender*FC	1	1	1
Gender*PE	1	1	1
Gender*SI	1	1	1
PE	0.952	0.963	0.840
SI	0.935	0.954	0.838
UEP	0.955	0.963	0.789

nificant digital knowledge gap may explain this, particularly between urban and rural regions [47]. The public may learn about e-participation via various channels, such as news, individual conversations, or formalized education and promotion initiatives led by government and non-governmental organizations (NGOs). Greater awareness often results in more significant participation initiation. Citizens' awareness of the presence and objectives of e-participation systems is correlated positively with their attraction to actively pursue and use these platforms to participate in social activities. Indirectly, awareness among the public in using this e-participation platform can help to be the eyes and ears of local government agencies to solve an issue in the local community.

Specifically, for the demographic moderating analysis in this study, firstly, gender does not moderate the relationship between awareness of the system and the use of e-participation in Malaysian local governments. This may be due to the increase in e-participation awareness due to local government digitalization initiatives currently giving wider usage among Malaysian citizens. For instance, most Malaysian local governments nowadays strive to shift towards digitalized services instead of providing them from the counter office [13]. In addition, following the previous COVID-19 outbreak, the Malaysian local governments started to implement digital services via e-participation, including digital parking, payments, licensing, and virtual public discussion. This study's findings align with the findings of a previous study conducted by [85], which revealed that gender does not significantly impact the relationship between awareness of the system and the use of e-participation. The presence of gender does not serve as a moderating factor in the scope of awareness. This implies that there do not exist noticeable challenges or barriers connected with gender that prevent individuals from developing awareness about e-participation opportunities. Efforts by local government agencies in Malaysia have focused on raising awareness and have shown success in promoting equal levels of awareness among individuals of all genders, particularly men and women, about the presence and objectives of e-participation platforms.

TABLE VIII. Loadings Value

Constructs and Items	Loadings
AS*Age	0.942
AS*EL	0.964
AS*TE	1.623
AS*Gender	1.015
AS1	0.800
AS2	0.919
AS3	0.894
Age	1
EE*Age	0.883
EE*EL	1.049
EE*TE	1.519
EE*Gender	1.015
EE1	0.905
EE2	0.925
EE3	0.937
EE4	0.912
EE5	0.905
EL	1
TE	1
FC*Age	0.840
FC*EL	1.024
FC*TE	1.774
FC*Gender	0.992
FC1	0.727
FC2	0.821
FC3	0.809
FC4	0.744
FC5	0.815
FC6	0.811
FC7	0.748
FC8	0.692
Gender	1
PE*Age	0.878
PE*EL	0.981
PE*TE	1.543
PE*Gender	1.007
PE1	0.889
PE2	0.927
PE3	0.939
PE4	0.924
PE5	0.902
SI*Age	0.900
SI*EL	1.023
SI*TE	1.405
SI*Gender	0.991
SI1	0.856
SI2	0.928
SI3	0.932
SI4	0.943
UEP1	0.898
UEP2	0.889
UEP3	0.909

Constructs and Items (Continuation of Table VIII)	Loadings
UEP4	0.934
UEP5	0.922
UEP6	0.831
UEP7	0.826

TABLE IX. Coefficient of Determination (R^2) and Effect Size

R^2 Value	Effect Size
$R^2 \leq 0.3$	None or very weak effect size
$0.3 \leq R^2 \leq 0.5$	Weak or low effect size
$0.5 \leq R^2 \leq 0.7$	Moderate effect size
$0.7 \leq R^2$	Strong effect size

TABLE X. Moderating Effect and Sub-Hypotheses Testing Results

Sub-Hypothesis	Moderating Effect Relationship	Original Sample	Sample Mean	Standard Deviation	t-Values	p-Values	Sub-Hypothesis Supported/ Rejected
H1a	Gender*AS - UEP	-0.002	-0.003	0.039	0.056	0.956	Rejected
H1b	Age*AS - UEP	0.090	0.088	0.053	1.683	0.093	Rejected
H1c	EL*AS - UEP	-0.010	-0.010	0.050	0.197	0.844	Rejected
H1d	TE*AS - UEP	-0.014	-0.014	0.043	0.320	0.749	Rejected
H2a	Gender*PE - UEP	-0.013	-0.016	0.047	0.282	0.778	Rejected
H2b	Age*PE - UEP	0.084	0.088	0.052	1.614	.107	Rejected
H2c	EL*PE - UEP	0.001	0.001	0.057	0.023	0.981	Rejected
H2d	TE*PE - UEP	0.002	0.004	0.071	0.032	0.975	Rejected
H3a	Gender*EE - UEP	-0.038	-0.036	0.050	0.756	0.450	Rejected
H3b	Age*EE - UEP	0.022	0.022	0.057	0.383	0.702	Rejected
H3c	EL*EE - UEP	-0.015	-0.018	0.042	0.354	0.723	Rejected
H3d	TE*EE - UEP	-0.022	0.017	0.072	0.028	0.978	Rejected
H4a	Gender*SI - UEP	0.062	0.066	0.036	1.711	0.088	Rejected
H4b	Age*SI - UEP	-0.027	-0.033	0.036	0.759	0.448	Rejected
H4c	EL*SI - UEP	-0.076	-0.072	0.042	1.829	0.068	Rejected
H4d	TE*SI - UEP	0.012	0.018	0.042	0.271	0.786	Rejected
H5a	Gender*FC - UEP	0.009	0.005	0.050	0.185	0.853	Rejected
H5b	Age*FC - UEP	-0.083	-0.078	0.054	1.524	0.128	Rejected
H5c	EL*FC - UEP	0.077	0.080	0.057	1.345	0.179	Rejected
H5d	TE*FC - UEP	-0.003	-0.033	0.078	0.033	0.974	Rejected

Note: Moderating effect is significant at the p-value ≤ 0.05

For moderating effect of age, age does not influence the relationship between awareness of the system and the use of e-participation. This may be due to the intensive digitalization of Malaysian local government services, which left older people with limited options when utilizing local government services online. Nonetheless, findings discovered by [86] in Portugal contradict this study's findings. As per [86] findings, Portuguese local government agencies' system awareness and e-participation are significantly influenced by age moderation. [86] discovered that younger individuals are more inclined than older individuals to use e-participation for political goals. This is because of disparities in the ease with technology, expertise with online communication and social media, and a desire for more simple and readily available political activity within the use of e-participation in Portuguese local governments [86]. While [87] argues that the government has devised and implemented a program to enhance digital literacy among older people to address current problems. If the local population were less elderly and more tech aware, they could help older people with the e-participation.

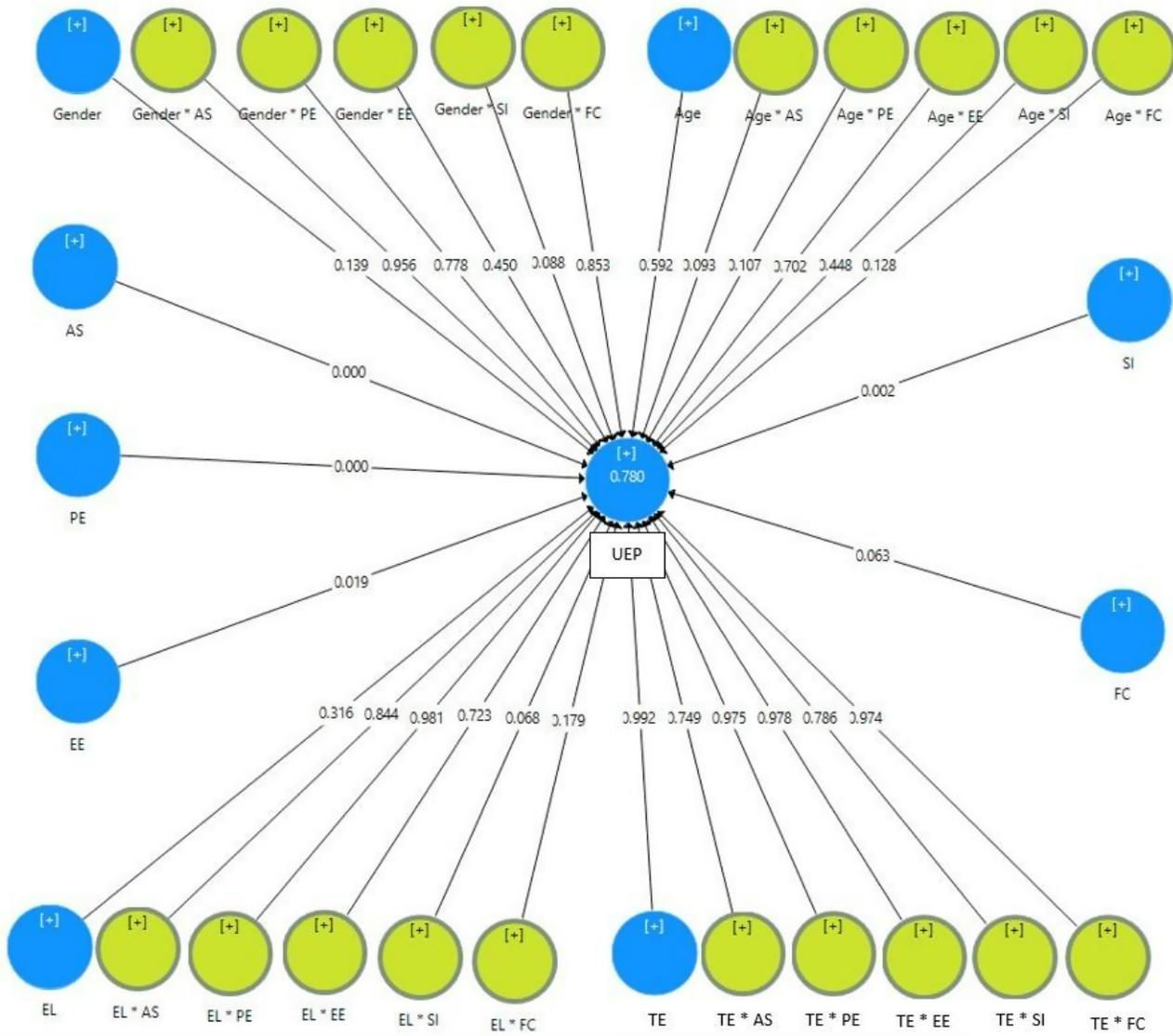The education level moderating effect also does not affect the relationship between awareness of the system

Figure 6. Result of bootstrapping for demographics moderating effect analysis.

and the use of e-participation. In most cases, an individual with greater education will likely use e-participation. E-participation can be more accessible to those with more education, partly because those with higher education tend to have better computer literacy awareness. Furthermore, those with more educational backgrounds are also more likely to find employment in fields that require a certain level of technological competence, which may explain why they are more comfortable using various online resources. Nonetheless, this study's findings contradict the study by [88] in the case study e-participation study in the United Arab Emirates (UAE). [88] revealed that higher-education respondents are better aware of e-participation and believe government websites provide enough material and assistance for users. In addition, in the case study of local

governments in Zambia and Zimbabwe, [89] discovered that education level could significantly impact system awareness in numerous local governments. Nonetheless, most of this study's respondents are those not in the elderly age category. In addition, the elderly respondents in this study are among those with a good background in mastery of digital equipment. Therefore, it is likely that the results of this study cannot be generalized to all age groups. This may be because the elderly may still rely more on traditional forms of communication, and their awareness of e-participation might be influenced by how information is disseminated through non-digital channels.

In this study, the relationship between awareness of the system and the use of e-participation is not moderated by

technological experience. This non-significant moderating impact implies that local Malaysians have started embracing the local government service for e-participation technology. Those who have used computers and other technological equipment for extended periods are more likely to be aware, understand, and be at ease with e-participation systems. People with an adequate technology foundation may be more open to trying out innovative digital tools, such as e-participation. They could also be more prepared to manage technical problems using these technologies. Nonetheless, as referenced by [90] and [91], technology experience can significantly impact awareness of an e-participation and its application. Experienced technology users with more expertise can use the e-participation by recognizing numerous cutting-edge technology systems. In their findings, people with less experience with technology may feel intimidated or overwhelmed by e-participation [90] [91].

2) Performance expectancy

This study's findings found a strong and highly positive relationship between performance expectancy and the use of e-participation in Malaysia's local government. Performance expectancy is the perception people have about the potential improvement in their work performance via the use of a specific technology [39], particularly when engaging in e-participation such as online discussions and virtual political activities. In e-participation, performance expectancy defines the level to which someone expects that using e-participation could help them participate effectively in government and political processes and achieve their civic objectives. Performance expectancy's high correlation reflects studies by [92] and [50]. Performance expectancy can significantly affect Qatari citizens' e-participation use, according to [92]. Furthermore, this study's findings follow the study by [50], who conducted a similar analysis of e-participation in Portuguese local governments. They found a strong positive correlation between performance expectancy and the use of e-participation. The local community believes e-participation may improve community productivity and local government council task execution.

Specifically, this study's demographics moderating effect findings indicate no gender effect on performance expectancy and use of e-participation in Malaysian local governments. These studies suggest that individual differences in personality, attitudes, and previous experience with technology may be more important in shaping these beliefs and behaviors than gender. Nonetheless, [86] studies have revealed different findings. Their case study of the Lisbon Local Government Council study explored how gender affects high-performance expectations and e-participation [86]. Males used e-participation more because they believed it would speed up local government council policymaking. Males were more competent in improving city council community outreach production; therefore, they were assured of participating online. This might be explained by cultural and demographic variables influencing how males and females view their strengths and competence in using technology.

Contradicted with the findings of this study, the female gender group is considered more confident in adopting e-participation because they feel it will enhance their performance in the community and the local government's work activities [86].

In this study, there were no significant differences in the relationship between performance expectancy and the use of e-participation when considering age moderation. Older and younger people surveyed indicated that older people in Malaysia have similar expectations regarding technology use for e-participation in local government. Further, although younger individuals may be more inclined to participate in e-participation activities, older people might be just as interested, particularly regarding problems that directly impact their age group. E-participation may strengthen job performance and the local community, making local governments' workflow more efficient and smoother based on all age groups examined. Similarly, [93] observed that Kuwaiti participants' performance expectancy was unaffected by age when using e-participation. This is because e-participation is easy to learn for all ages since most of the all-age respondents agreed that e-participation usage would promote their work performance. Nonetheless, factors including lack of access, unfamiliarity, and physical constraints may prevent older individuals from entirely using e-participation opportunities and limiting their performance expectancy.

The education level variable does not affect the relationship between performance expectancy and the use of e-participation. This study discovered that nowadays user with a lower education level also used technology and participated in e-participation activities at significant rates. This finding parallels the findings of [93] in the case study of Kuwait country, where education does not modify performance expectancy for Kuwaitis using e-participation. In another study, as per [94] e-participation performance expectancy improved with education. [94] emphasized that educated families' recommendations may improve community or government performance. Literacy increases local citizen e-participation in development, he discovered. This study's findings are in line with the study by [95] in the case study of Senegal country, who found that higher-educated individuals might pose a barrier to public participation because professionals in these circles seldom have the time to become concerned about issues and welfare at the neighborhood level. This is attributed to the demands of having several professional commitments. Nonetheless, [96] study on various municipalities in the Netherlands country suggests differently. A positive correlation exists between higher education levels and increased interest in engaging in e-participation activities. The finding implies that a person's education level is relevant to the relationship between performance expectancy and using e-participation [96]. The citizen's level of education also has a role in how they interact with the platform. Previous study has shown that high school students with a more advanced education level

have a greater propensity to engage in community service projects than their peers with lesser academic achievement [96]. This suggests that those with more formal education have an advantage in digital literacy, affecting their self-assurance and participation opportunities in society. An individual's acceptance to participate in political and civic life is correlated with their level of education, which in turn might affect their usage of e-participation tools.

Within this study, the performance expectancy and the use of e-participation are not significantly moderated by technology experience. This shows that the respondents in this study believe that experience in using technology is not a problem for them in using the e-participation to improve performance in the community and help the local government's work operations. Similar findings by [93] when they discovered that the participants' technological knowledge and experience level did not influence Kuwait's e-participation acceptance and usage. While in the other study of community readiness in using e-participation services in Qatar [92] revealed that technology experience, such as internet use, did not significantly impact the relationship between performance expectancy and the intention to use e-participation. The findings of this study indicate that individuals participating in the study, regardless of their various degrees of technological expertise, exhibit identical expectations on the advantages and effectiveness of e-participation platforms. Consequently, this similarity in expectations contributes to the consistent trends seen in the widespread use of such platforms.

3) Effort expectancy

The effort expectancy and use of e-participation were significantly and moderately correlated based on this study. An individual's expectations for effort when use e-participation is the point at which they predict having a little difficulty utilizing e-participation tools to engage in political and civic activities. In this study, e-participation in local government in Malaysia correlated positively with effort expectancy. In other words, Malaysian citizens who believe that using technology for participating in government and civic affairs will be simple and need minimal effort have a greater probability of doing so. This seems to reason since ease and convenience significantly determine whether individuals would participate in an activity. Several variables might affect an individual's effort expectancy, including the technology's design and usability, the ability to obtain of assistance and resources, and the individual's previous encounter with similar technology. For instance, [92] found that e-participation usage substantially correlates with participation effort in Qatar. Promoting e-participation requires considering people's effort expectancy and removing obstacles to using technology for civic and political activities. For this reason, it may be necessary to make technological platforms more user-friendly and accessible, provide detailed instructions and advice on using them, and provide training and assistance to those unfamiliar with them.

Specifically, for demographics moderating effect findings, gender did not affect the relationship between effort expectancy and the use of e-participation for this study. This study's findings highlights that, regardless of gender, people in Malaysia are just as likely to use e-participation for political and civic activities provided they believe it would be effortless of their time. This study's findings aligned with the findings by [86], who concluded that there was no difference in the level of e-participation with effort expectancy made by both genders in local governments. Citizens of both genders may have achieved the skill of e-participation significantly. Furthermore, they must be more selective in supplying e-participation services like Chat Box and Online Bots, a new software application that serves as a virtual assistance agent for internet users and is easy to use and support. In addition, in line with this study, [93] also found no gender-moderating impact on Kuwaiti e-participation use with effort expectancy. Because of this, initiatives to encourage e-participation must refrain from assuming that males or females are more or less inclined to use technology for this reason and instead seek to be accessible to both genders.

At the same time, age did not affect the relationship between effort expectancy and the use of e-participation in this study. This indicates that Malaysian citizens of all ages are equally likely to use e-participation for political and civic activities if they perceive that doing so will be easy and require little effort. This might be because several Malaysian municipalities prioritized convenience for the citizens they serve while developing and publicizing their latest digital tools for providing vital municipal services. This is critical for ensuring that technologies are accessible and user-friendly for individuals of all ages and for motivating older individuals to overcome any difficulties they may have in using these technologies. [86] findings match this study's findings. They found no significant positive impacts of age on effort expectancy and e-participation use. This study shows that initiatives to increase e-participation cannot assume that people of different ages are either more or less likely to use technology for this reason but rather should be suited to be accessible to everyone. Nonetheless, more extensive studies are needed to confirm that different age groups in each community have different rates of using e-participation within the local government. E-participation is currently accessible to all ages owing to rigorous local government digitalization initiatives. E-participation must be straightforward, secure, and convenient for all ages.

For this study, the education level moderating effect variable does not moderate the relationship between effort expectancy and the use of e-participation. This finding suggests that respondents, regardless of their education level, are similarly motivated to engage in e-participation for political and social purposes when they believe the process to be straightforward and effortless. This study's findings are identical to those of [93], who found that Kuwaiti citizens' effort expectancy and e-participation use was unaffected

by education level. They used the e-participation tools effortlessly. Thus, e-participation can be used by individuals of different education levels. In this study, the respondents have shown that individuals with different levels of education are likely to demonstrate almost identical adoption patterns, as determined by their perceived ease of use. This suggests that the level of ease or complexity that comes from using e-participation platforms has a constant impact on use patterns, regardless of individuals' varying educational backgrounds.

At the same time, in this study, the technology experience also does not moderate the relationship between effort expectancy and the use of e-participation. E-participation was less affected by effort expectancy for inexperienced internet users. [92] also found that technological experience, such as internet use, did not affect the correlation between effort expectancy and intention to use e-government services. [93] found that Kuwaitis prefer to use the Internet to access e-government online services, including the government's continuing e-participation initiative. Because government agencies desire user-friendly e-participation services, people with little skills can now access e-government services. Thus, non-technical users, particularly in local government agencies, will find e-participation easier to use.

4) Social influence

This study discovered a positive and moderate positive relationship between social influence and Malaysia's local government's use of e-participation. Communicating with others, experiencing others, and being exposed to the social media are all methods of influencing one's social circle. According to the findings of this study, an individual's acceptance to engage in e-participation may be affected by their social environment, including the views and actions of others surrounding them. Social influence can manifest in various forms. In the initial stages, it may help establish generally accepted practices for e-participation. A certain amount of study suggests that when individuals see their friends participating in something online, they are more inclined to join. Second, there is the potential for peer pressure to increase interest in joining in. An individual's sense of obligation to participate in an activity might increase if they believe their friends and acquaintances are counting on them to do so. For instance, an individual's opinion regarding technology may shift for the better if it is recommended by someone they like and respect. This study's findings reflect [97] study on e-participation usage among Saudi Arabian citizens. They analyzed the relationship between social influence (subjective norms) and the utilization of e-participation in Saudi Arabia. They discovered that family, friends, and the media in the Kingdom of Saudi Arabia significantly impact social influence to use e-participation. [97] also observed that social influence is vital and can significantly promotes e-participation usage. In another study by [93], the Kuwaiti's citizens' acceptance of the e-participation utilization also matches similar findings when concerning social influence. Since citizens of Kuwaiti

culture prioritizes social influence, friends and trusted top management influence many participants' views of a new system.

Specifically, for demographics moderating effect findings, the relationship between social influence and the use of e-participation is not significant and negatively impacted by gender. This study's findings correspond with one example case study conducted by [98] that investigated 2,175 Electronic Document Management Systems (EDMS) users for e-participation in Portuguese local governments. They discovered no differences in the correlation between social influence and e-participation activities based on gender. Based on this study's findings, males and females have sufficient expertise in using e-participation to be less or less impacted by the community around them. The online voting mechanism is easy enough to use that members of either gender may manage it independently.

The relationship between social influence and the use of e-participation in Malaysian local governments in this study is also not significantly influenced by age moderating effect. The findings of this study are consistent with the study conducted by [92]. Specifically, while examining the correlation between social influence and the use of e-participation in Qatar, it was determined that age negatively plays a moderation influence [92]. No outside influence prevents Qataris of all ages from accessing the e-participation [92]. They have chosen to use e-participation independently. The lack of age moderation suggests that community and inter-generational connections within an individual social circle can positively influence the adoption of e-participation. This may indicate that information about e-participation is shared and valued across age-diverse networks. Regardless of age, most respondents in this study are equally likely to be influenced by recommendations and endorsements from their peers, friends, family members, or colleagues when it comes to using e-participation platforms. In this matter, the elderly generation among the respondents of this study is seen to be less influenced by non-elderly citizens in determining their actions in using the local government's e-participation platform. This may be due to the majority of discussions, complaints, and payments now increasingly shifting to digital platforms, which causes the elderly to become better at handling local government e-participation in Malaysia.

From this study's findings, there is no moderation effect of educational level on the relationship between social influence and the use of e-participation in Malaysian local governments. The findings of the previous study by [49] indicate that the impact of social influence on the use of e-participation for e-government initiatives in Saudi Arabia was not found to be influenced by individuals' level of education. The effectiveness of social influence becomes more effective when it is in line with the common values and interests that exist within social networks. It is sometimes possible to build strategies that capitalize on

public participation and social influence to be universally successful without the need for customizing depending on the education level of the targeted demographic.

When examining the technological aspect of the present study, it is seen that it has a negative moderating effect on the relationship between social influence and the use of e-participation. Aligns with findings by [49], technological experience negatively impacted social influence to use the Saudi Arabian e-government program. In the same time, the study by [92] examined the level of preparation within the Qatari society and its impact on the desire to use e-participation services. The findings indicated that technological experience, specifically with the Internet, did not substantially change the relationship between social influence and the intention to engage with e-participation services. E-participation choices are growing in local governments nowadays. Simple instructions were made before a user could use the system without difficulties.

5) *Facilitating conditions*

This study indicates a positive relationship between the use of e-participation by respondents surveyed and the presence of facilitating conditions. The use of e-participation may be influenced by many supporting factors, including but not limited to access to technology, the availability of information and resources, and the provision of technical assistance. E-participation initiatives may exhibit limited accessibility for those facing specific limitations to participation, such as insufficient access to internet connectivity or inadequate technological infrastructure. Individuals may need guidance in exploring e-participation or utilizing the essential tools; therefore, access to technical assistance is another key helping factor. The design and functioning of e-participation may influence their adoption in addition to these facilitating conditions. Nonetheless, if the government promotes e-participation, user perceptions of using e-participation may significantly change. Some case studies, such as from [90], found similar findings when they surveyed 370 local citizens using e-participation in several European local governments. They discovered that e-participation acceptance and usage by the local citizens depend much on facilitating condition factors. While a study by [99] examined the correlation between facilitating conditions and e-participation in the UAE. In the [99] study, they also found that good facilitating conditions have a positive relationship with using e-participation in the UAE government agencies.

The present study did not find a positive moderating impact of gender on the relationship between facilitating conditions and the use of e-participation among the respondents studied. This is due to the empowerment of digitization among the Malaysian population is now equal in terms of use by gender, regardless of male or female. Both genders demonstrate shared characteristics in their ability to access and effectively use digital equipment, particularly in using e-participation. Male and female respondents who

were studied also think that technical support and virtual assistance are also provided by most local government councils in Malaysia when accessing their e-participation. Nonetheless, in this study's findings, the gender demographic variable is contradicted by the study [86], as they discovered that gender could significantly affect the Portuguese citizens' use of e-participation, as shown by their study. Their study found that females prefer to use e-participation in their local government. This is because local government technical support is always available for users using their e-participation services.

Like the influence of gender, the present study discovered that age, as a moderating factor, did not substantially affect the relationship between facilitating conditions and the use of e-participation among the participants under study. Most of the various age levels of the respondents that were studied, whether young or elderly, can each use e-participation well. This is because, especially for the elderly, they are confident that their local government agencies have provided the necessary help and support to use the e-participation, and they also have good equipment and skills in handling technology such as computers and mobile phones. The use of e-participation among most respondents regardless of the background of ages studied is well received to use the e-participation. Nonetheless, a subset of senior individuals has been concerned in this study, it has been seen that they continue to have challenges in recognizing the operation of the e-participation because of the absence of external assistance, specifically in terms of technical proficiency, appropriate digital resources, and a shortage of confidence in using such an e-participation. Therefore, appropriate assistance should be given by the local government in Malaysia involved to continue helping this age group to use their digital services, especially this e-participation. In another study by [86] also discovered similar with this study's findings. E-participation usage trends among Portugal's elderly are higher when encouraged and supported with a good facilitating condition. E-participation might be difficult for older individuals because of insufficient technological knowledge and the willingness to learn new skills based on their studies promptly. They found that elderly individuals, who are used to visiting the local city council for local concerns, were less inclined to use e-participation than younger ones if no good facilitating supports was given to assist them using it.

The findings presented in this study indicate that the influence of education level as a moderating factor did not have much effect on the relationship between facilitating conditions and the use of e-participation among the participants studied. Most of the various educational background levels of the respondents who were studied, whether they completed their studies at a higher or lower level, were each able to use e-participation well. This may be because most services have switched to a digital medium that allows respondents to use e-participation. In addition, most teaching modules at the school level in Malaysia are

now increasingly emphasizing the use of digital mediums and online learning, which has helped the respondents to use e-participation well. Technical skills are currently taught at multiple educational levels. This is because current digital literacy is growing significantly in Malaysia. Nonetheless, another study by [84] disagreed because education level can significantly moderate the relationship between local government e-participation technology acceptability and facilitating conditions in their case study of Czechia country. According to [84], without A-levels requirements, secondary education performed poorly when using digital technology. The findings presented in this study indicate that the influence of education level as a moderating factor did not have much effect on the relationship between facilitating conditions and the use of e-participation among the participants studied.

The findings from this study reveal that the influence of technology experience as a moderating factor did not have any substantial effect on the relationship between facilitating conditions and the use of e-participation among the participants studied. Most of the various levels of experience of the surveyed respondents have good experience in operating technology equipment. Indirectly, this experience facilitates the respondents to use the e-participation well without needing specific technical assistance to use the platform. Another study by [100] revealed identical results in the scope of e-participation study conducted in Jordan. The survey conducted by [100] did not find any evidence of a moderating influence of technological expertise on the relationship between community-facilitating conditions and the use of e-participation in Jordan. Similarly, an equivalent finding was made by [101] during their analysis of data collected from 200 e-participants in Portugal. The influence of facilitating conditions on e-participation was not shown to be considerably influenced by individuals' level of technology expertise.

B. Theoretical Implications

In the field of Malaysian local government studies, based on the previous literature reviews that have mainly concentrated on evaluating the level of general awareness related to e-participation and neglecting to explore other acceptance variables. This study is founded on a conceptual framework that draws on a comprehensive theoretical foundation while including additional variables that potentially impact people's acceptability of e-participation. The proposed research model is derived from the UTAUT model and incorporates supplementary components grounded in previous scholarly works. As a result, this study has provided a fresh viewpoint to the study on e-participation in Malaysia, specifically within the domain of local government. The achievement has been made by using the research framework of the original UTAUT model, which has been modified by introducing an additional variable specifically referred to as "awareness of the system." This additional variable has been previously examined and validated by earlier studies, supporting a deeper understanding of the

issues being studied and reducing any pitfalls of the existing UTAUT model. Lack of awareness among users often leads to information gaps. Many potential users may not know about the features, functionalities, or opportunities offered by e-participation platforms. This study has included this new component as a step in identifying the awareness of local citizens in Malaysia regarding the existence of an e-participation platform in their local government. When individuals know how these platforms contribute to civic processes, decision-making, and community engagement, they are likelier to see the value in public participation. Local government agencies in Malaysia should emphasize the importance of awareness campaigns to reach diverse audiences, promoting inclusivity. Ensuring that individuals from different demographic groups know and feel welcome to use e-participation platforms contributes to a more inclusive and representative civic engagement.

This study conducted an evaluation that specifically targeted the primary users of the e-participation, comprises of the Malaysian local citizens who serve as the main clientele to this local agency. This study uses methodology that differs from previous study that mainly concentrated on assessing the e-participation effectiveness from the standpoint of local government agencies rather than the upper government level, as described in the problem statement. Due to the lack of e-participation in the scope of studies on local government, there is a need for more data and analysis into the particular dynamics, possibilities, and challenges. Therefore, this study has been conducted to gain an understanding of the many acceptance factors that are significant to developing successful ways to strengthen two-way communication between the citizens and officials of the local government. In addition, this study employs a methodological approach to examine the diverse community of individuals with varying perspectives and backgrounds concerning their use of the e-participation under study. The findings of this study disclose that a wide variety of demographic backgrounds were obtained, indicating that the selection of participants was fair and minimize the bias influence.

The findings of this study indicate that citizen acceptance variables significantly influence respondents' motivation to engage in e-participation. As discussed in the discussion sub-topic, the relationship study has validated the previous findings regarding using e-participation in local government in some selected studies. At the same time, for the moderating effect analysis of this study, all the moderating effects of demographic respondents did not influence the relationship between citizens' acceptance and the use of e-participation in Malaysian local governments. While some other selected previous literature studies also found similar findings as this study. Although this study's findings and other selected previous studies have proven that demographic moderating effects do not necessarily affect citizen acceptance to use e-participations, this technology acceptance study may differ in terms of context and

methodology approach from other studies that may show a significant moderation effect.

Numerous academic studies have been conducted on the public's acceptance to engage in e-participation within the scope of local government on an international level, for instance, in the Middle East and European countries, as discussed before in the early stage of this study. Nonetheless, minimal previous studies have been undertaken within the scope of Malaysian local governments. Besides, based on many literature studies that have been revisited, e-participation studies in Malaysia are mostly done at the higher level of government, which is different from the scope of the local government level [13]. Hence, this study has the potential to contribute to developing a novel study field, providing support to other researchers conducting similar studies. Specifically, it can offer perspectives on how to take advantage of electronic tools for e-participation assessment, as well as other studies concerning the planning and implementation of e-government initiatives within the scope of local governments in Malaysia. In addition, researchers from several countries have extensively used the UTAUT model to examine the acceptance of e-participation among local citizens at the local government level. Given the limited number of local researchers in Malaysia who have examined the relationship between citizen acceptance and the use of e-participation within the scope of Malaysian local governments, this study can potentially bridge this research gap by adding a novel study direction.

In addition, another implication that can be established through this study is made to cover the scope of all local government areas in Malaysia, unlike some past studies that are based on case studies in a few selected Malaysian local government agencies only, for instance in the study by [18] [20] [21] and [27]. By using a quantitative method approach, this study has focused on as many respondents of local citizens as possible throughout Malaysia. Nonetheless, due to some constraints, as discussed earlier, this study was only able to collect 484 respondents even though many efforts and promotions were made to attract more individuals to engage in this study. Since the sampling methodology of this study uses a convenience sampling technique, generalizations cannot be made to represent the entire study population. Therefore, this study only narrows the study's findings for the studied respondents. Nonetheless, this study can provide a new resource in the study of e-participation at the level of local government agencies in Malaysia, considering that the study of the acceptance of e-participation in Malaysia needs to be revised and requires further related studies.

There is no denying that based on previous existing literature studies, there are indeed several studies of public participation at the Malaysian local governments. Nonetheless, the study of public participation using digital technology, such as e-participation, still needs more attention from the scope of the Malaysian local government. The study of

public participation at the Malaysian local governments still focuses on the physical process of public participation, such as community participation in local government programs, town-hall sessions, physical consultation sessions, communication sessions, and face-to-face two-way discussions between citizens and local government. In contrast, this study discusses maintaining the study of the public participation process in Malaysia but focuses on technological or digital medium methods. This study is very significant considering that based on the findings of the official data report from [17], the trend of using the internet and digital equipment such as smartphones in Malaysia is increasing every year. In addition, the emergence of several issues in the performance of Malaysian local government agencies whose efficiency is often doubted among local citizens, as highlighted in studies [2] and [16], and the lack of empowerment of local citizens in the policy-making process at the local level such as in some previous case studies. Hence, it is essential to further enhance the implementation and promotion of e-participation studies in the scope of local government in Malaysia, aligning it with the actual demands of citizens.

C. Practical Implications

The findings of this study may serve as a valuable resource for policymakers in formulating and modifying policies aimed at enhancing the adoption of e-participation in Malaysia, particularly within local government agencies. This study findings also shows that citizens' acceptance proposed research frameworks can help to increase the quality of local government by encouraging the use of e-participation in local governments. This is because based on the findings of this study which found that the five factors of citizens' acceptance of the use of local government e-participation were found to have a significant relationship. In addition, since e-participation is open to individuals from various living, it is vital to consider how different demographics could be affected. So, each member of this online community contributes something unique.

Local development planning based on sustainable urban development such as the SDGs remains to get the utmost consideration from all Malaysian government agencies to transform cities into better places to live. For instance, the fundamental emphasis of Local Agenda 21 (LA21) since its creation at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992 on promoting a sustainable development within the scope of neighborhood communities. The LA21 declaration acknowledges the significant contribution of local communities towards achieving the goals of more extensive global sustainability aspirations. Nonetheless, the success of LA21 is dependent upon the implementation of rigorous collaborative effort and the development of strategic partnerships. The significant participation of local governments and other stakeholders, such as NGOs, business organizations, and citizens, promotes developing relationships to pursue sustainability goals collectively. In the scope of Malaysia, the LA21 was formally adopted by the Malaysian

government in 1999 [102]. In order to foster credibility and establish a common understanding among community members about the LA21 strategy, it is deemed crucial for local governments in Malaysia to implement measures that enable and promote communication among the local citizens [102].

From the perspective of Malaysian urbanization process, there has been a dramatic growth within the percentage of the Malaysian population that lives in urban areas, from 70.9 percent (19.5 million) in 2010 to 75.1 percent (24.4 million) in 2020, while it is projected that 85 percent of the country's population would achieve this until in 2040 [103]. With the creation of the Second National Urban Policy (DPN2) and the adoption of the Fourth National Physical Plan (RFN4) in 2021, every level of the Malaysian government has made the necessary efforts to provide a framework for sustainable urban development. Since urban populations are projected to keep growing until at least the year 2040, Malaysia is striving to enhance comprehensive participation in its many local government activities. As a result, the Twelfth Malaysia Plan (RMK-12) prioritizes the creation of green cities, which further strengthen the well-being of citizens, and it introduces several New Urban Agenda (NUA) 4 approaches which concentrate on effective urban management as well as promoting sustainable urban communities via e-participation strategies within the local government.

In addition, the rapid population growth and urbanization in many cities throughout Malaysia have generated a need for novel and inclusive approaches to good governance at the local level. E-participation has the potential to provide significant data on the preferences, interests, and concerns of citizens. The use of this data by urban planners employed by local government agencies may serve as a valuable tool in informing their decision-making processes, optimizing the provision of resources, and facilitating the designing of urban plans that are both more efficient and sustainable. E-participation plays a crucial role in the successful implementation of smart city aspirations in Malaysia, as it takes advantage of modern technology to promote public participation and increase the quality of urban life. This technology facilitates the combination of advanced digital technologies, sensors, and data analytics to develop urban environments that are more intelligent and dynamic. For example, using smart sensors in urban design may increase efficiency in traffic control management, smart parking solutions, reduce hazardous gas emissions, and improve public safety and security.

From the findings of the relationship studies, which shows that all five citizens' acceptance factors have a positive relationship on the use of e-participation, hence, these factors should be given attention by the Malaysian local government. Local government agencies in Malaysia can promote and guide the local public community to be exposed to the utilization of the e-participation. Consid-

ering that, in practice, most local government agencies in Malaysia are now increasingly shifting to the trend of providing services digitally, nonetheless, it is worth noting that not all local communities have exposure and good skills in using certain technologies. Therefore, early exposure, promotion, and continuous guidance to the local public community about using this e-participation must be given attention by local government agencies in Malaysia before fully transitioning service provision to the digital medium. In the meantime, the local government's e-participation infrastructure also needs to be consistently improved and suitable for use by all levels of society.

Another practical impact is the requirement for Malaysian local governments to expand efforts to develop skills like digital consulting and training courses with digital professionals to improve competencies and minimize failed attempts to implement an efficient e-participation. There is an immediate requirement for comprehensive digital technical training to proficiently develop, execute, and sustain digital tools for e-participation. This training is of the utmost importance and may be delivered by digital professionals to both current and newcomer employees of the Malaysian local government workforce. The significance of this training lies in its capacity to cultivate proficient managers who possess the necessary skills to effectively use digital technologies to address the requirements of both agencies and contemporary citizens. The significance and use of this specific aspect of this study are the highest priority when looking at the perspectives of local government managers in Malaysia. Presently, there is an apparent development through which local government duties are undergoing a transformation, characterized by increased dynamism and a shift towards both formal and informal practices. This evolution has profoundly affected the overall performance of local governments.

To further increase the Malaysian local government's performance in empowering this e-participation, KPKT is also tasked with planning improvement programs, particularly in training and workshops related to the citizens' acceptance variables of awareness of the system, performance expectancy, effort expectancy, social influence, and facilitating conditions, since overall of the five respective citizens' acceptance variables provide a significant finding on the relationship with the utilization of e-participation. Besides, the local government council may monitor how the training is being implemented and provides any relevant data that might help the community's e-participation efforts advance in a predictable, steady manner.

D. Limitations of The Study

Like previous study attempts, this study also comes with a few limitations. One primary limitation of this study is its sole dependence upon quantitative surveys, which only involve a sample population of Malaysian citizens residing within the local region. This study only uses quantitative data collecting methods, without including any qualitative

data, such as interviews or discussions with key stakeholders, to supplement the data analysis. Quantitative surveys are often considered an effective method for examining e-participation; nonetheless, researchers must acknowledge their fundamental limitations. The survey questions used in this study's close-ended may limit respondents' ability to provide comprehensive and detailed expressions of their opinions. Furthermore, it is important to remember that the survey questions used in this study are relatively limited, including only 32 question items. Thus, respondents may have a sense of restriction due to the preset response options, limiting an in-depth analysis of a wide range of viewpoints. Survey replies may be influenced by many biases, such as social acceptability bias, where respondents prefer to provide answers that they see as appropriate in society, and accepting bias, which refers to the desire to agree with an argument. The possible implications of the issue on the reliability and precision of the survey data should be considered.

Another limitation of this study is the imbalance proposition of demographic representatives of the sample. For instance, a respondent below the age of 60 comprises of 94.8 percent of the overall participants. In Malaysia, the age of the elderly is calculated at the age of 60 years and above. Nonetheless, the respondents obtained from among the elderly were very low, where they only covered 5.2 percent of the total number of respondents received. Furthermore, the sample respondents in this study primarily consisted of well-educated and proficient individuals using the digital tools. This was done intentionally to deal with the difficulties caused by the extensive geographical coverage of Malaysia and the population differentiation across urban and rural areas. In addition, despite of using a face-to-face offline survey collection, this study also uses an online survey collection and convenience sampling method that resulted in a unintentional of collecting a data from an individuals who are already good in using the digital platforms such as e-participation. This selection strategy raises the possibility of biases due to characteristics that may vary for non-digital platform users. Besides, some Malaysian local citizens were not included in the survey due to their inability to cover the expenses related to possession of digital tools, along with their residence in remote areas without a proper digital communications infrastructure and Internet connectivity. The findings showed that the sample group showed a high proportion of individuals who were young, well-educated backgrounds, good handling in using digital technologies, residing in urban areas, and financially stable.

The next limitation of this study involves the utilization of a cross-sectional survey methodology to explore the factors that may impact citizens' acceptance to engage in e-participation. This approach allows for a comprehensive examination of a specific event in a relatively short timeframe. Nonetheless, this may be considered a disadvantage since longitudinal studies appear to be prefer-

able for analyzing and detecting a change in the current evolving environments, and researchers would have a more significant influence over examining the factors for upcoming studies. This limitation affects the capacity to evaluate changes or patterns over a period and could prevent an in-depth understanding of the changing features of e-participation. Moreover, due to the cross-sectional nature of the data collection, the conclusions drawn from this study depend on the individual viewpoints of Malaysian citizens, as expressed via the responses they provided to the questionnaires given during the specific time under study.

Furthermore, this study used a research framework mostly based on the UTAUT model, with some modifications to certain constructs. Despite the widespread utilization of the UTAUT model in previous research as a framework or measurement for examining the adoption of e-participation tools, it is important to point out that this model sometimes overgeneralizes multiple decision-making processes by reducing it to a limited number of constructs. Consequently, it may only comprehensively encompass some of the factors that influence technology adoption. A greater level of complexity and sophistication frequently defines the implementation of e-participation in real-world contexts. Furthermore, understanding the nature of the relationships between the variables is not always present, particularly when the framework is used in diverse settings. This study observed that the moderating factors, including gender, age, education level, and technology experience, were not shown to have any statistically significant relationship with the independent variable of citizens' acceptance. One limitation of UTAUT is the potential insufficient consistency in the dynamics of relationships when in a different context [104]. Moreover, the UTAUT demonstrates weak consistency due to complex relationships between its constructs, as shown by the presence of diverse effects and moderations [105].

In addition, despite several attempts to recruit additional participants via various channels and promotions, the study could only collect data from 484 people, even though the study included all local governments in Malaysia. This study's survey data was gathered using two methods. Firstly, via approaching directly in-person using physical paper-based survey questionnaire form and secondly, via digital methods, for example e-mail, social media, and other digital-related platforms using Google Forms platform for data collection. The data sharing and re-collection procedure have taken almost four months. In addition, this study uses a non-probability convenience sampling technique when considering limited time and resource allocation. As a result, the findings of this study only apply to the sample of respondents and unable to be generalize to all Malaysian citizens.

E. Recommendations for Future Research

To comprehensively examine the scope of direct and significant public participation in the decision-making process

of Malaysian local governments, it is required to perform more extensive and detailed case studies. By narrowing the scope of analysis to a specific set of concerns, it becomes possible to draw comparisons and get a deeper understanding of the underlying e-participation processes. The assessment of the case study should be conducted based on the assessment of the five citizens' acceptance constructs that have been explored in this study. One example is involving the local citizens in the school curriculum, specifically focusing on cultivating e-participation competencies within the framework of efforts aimed at enhancing digital literacies. It is essential to broaden the scope of the educational and awareness undertaking to accommodate individuals from various demographic backgrounds. In addition, it is essential to enhance proficiency in using digital tools and the internet to reduce the digital divide among the local population in Malaysia.

The use of contemporary interactive digital communication tools, such as social media platforms, enables the dissemination of information to citizens on upcoming events, opportunities for participation, and significant improvements. The proactive use of social media platforms can enhance community participation, facilitate the distribution of accurate data, and promote online discussion and participation. Local government agencies in Malaysia may effectively leverage social media platforms to efficiently and immediately distribute information relating to policies, projects, events, and updates. This enables them to enhance their outreach efforts to a broader, more diversified community. In addition, the use of visual aids, such as infographics and animations, by local government agencies can effectively enhance the availability and interaction of information across a more significant number of citizens.

The present study employed a statistical quantitative approach to examine the factors influencing the acceptance and utilization of e-participation. This methodology aimed at strengthening and understanding the opinions of Malaysian citizens as the primary users based on specific factors. Nonetheless, future study activities might further develop an awareness by employing a qualitative approach. Qualitative study is characterized by its ability to examine and offer comprehensive understanding through real-life issues, making it a valuable method for investigating the acceptance of e-participation [106]. This is because qualitative study can gather deeper participants' experiences, perceptions, and behavior. A phenomenon, including observations, beliefs, and actions, represent problems in their accurate and quantitative capture. Since qualitative studies are more open-ended, researchers can identify the acceptance factors of e-participation more widely or other critical issues that are difficult to identify through quantitative methods. Respondents are more open to providing any research data input that is more in-depth, realistic, and not limited to a purely theoretical basis.

Moreover, it is recommended that a new study be

conducted to assess the effectiveness and adaptability of the indicators of e-participation in local government agencies. These indicators enable local governments in Malaysia to measure and determine the extent to which a program implemented within the local government can achieve its intended objectives or outcomes. For example, a study centered on sophisticated such as Artificial Intelligence (AI) systems that possess the capacity to support the delivery of public services. These systems aim to do this by developing more effective policies, facilitating improved decision-making processes, enhancing interaction and participation with citizens, and ultimately enhancing the efficiency and effectiveness of public service delivery. The automation of services via the use of AI presents the prospect of transforming human resources, which may, after that, be directed towards sophisticated decision-making procedures. The use of AI in the scope of e-participation comprises the proactive recommendations of expected service provision to specifically targeted citizens facilitated by an intelligent algorithm. Predictive analytics is another possible beneficial use. The AI has the capability to analyze historical data in the public sector to predict patterns and monitor the development of citizens' complaints. This ability facilitates proactive decision-making in several domains such as public safety, infrastructure maintenance, and urban planning.

The proposed research framework used in this study has the potential to be applied in future research attempts encompassing a more extensive sample size throughout Malaysia, including those residing in rural regions as well as those who do not use the Internet. By emphasizing this aspect, future research attempts can explore additional influential factors that may contradict the findings of this study. It is worth noting that the moderating effect of demographic characteristics on the relationship between citizens' acceptance and use of e-participation in Malaysian local governments was found to be not statistically significant in this study. This is because most respondents possessed proficient digital literacy and internet usage skills, which helped facilitate how they interacted with the local government's e-participation platform.

Potential future research may include examining various factors that impact business users' preference towards accepting e-participation in the government-to-business (G2B) context. Such investigations would provide valuable comparative insights compared to the present study, which primarily concentrates on citizens' acceptance of government-to-citizen (G2C) e-participation. This is because, apart from individuals in the community, business organizations also often deal with local government agencies such as business license permit applications, tenders, tax assessments, payment of related bills, giving any opinion, and so on. As the use of digital mediums is gaining ground in most business organizations, they can use e-participation as one of the ways they communicate directly with their local government to resolve matters.

Besides that, future studies might benefit from using a longitudinal study design to examine the acceptance of e-participation, as this would enhance the strength and comprehensiveness of the study findings. This is particularly important given the somewhat changing nature of these characteristics. Furthermore, it is recommended that future research explore other aspects that influence the adoption of e-participation by people. Such investigations would provide further relevance to the present study. The study literature review indicates that longitudinal studies are more effective in identifying the current requirements and forecasting the future needs of e-participation utilization among Malaysian citizens. This recommendation proposes that the local government should engage in early and systematic planning of e-participation to guarantee the ongoing relevance of this platform for Malaysian citizens.

6. Conclusion

Using an extended UTAUT model, this study sheds light on how citizens' acceptance standpoints might affect the use of e-participation in Malaysian local councils. Evaluations were made using information gathered from 484 different Malaysian communities. The effects of e-participation were significantly impacted by all citizens' acceptance dimensions, including awareness of the system, performance expectancy, effort expectancy, social influence, and facilitating conditions. A positive relationship exists between a sense of acceptance among citizens and the use of e-participation. Nonetheless, the impact of moderating variables on this relationship is not shown to be statistically significant. These studies can facilitate the public sector, particularly KPKT and all every local government agency in Malaysia, in developing strategies for promoting and dispersing e-participation among the local communities for long-term use; for instance, sustaining and strengthening residents' motivation in those who were initially hesitant to use e-participation and those who continued to use them. The model provides a framework for academics to probe further into what drives local communities to accept e-participation.

7. Acknowledgements

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