SMART GOVERNMENT: ROLE OF E-GOVERNMENT IN LOCAL GOVERNMENT

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Abstract
The concept of a smart city has become a popular topic among researchers over the last decades. The concept of e-government and smart city are interconnected with each other. E-government focuses on using information and communication technology (ICT) to provide better services. Similarly, a smart city also focuses on utilizing the data on a larger scale to foster innovation. This paper provides an overview and initial understanding of e-government roles in the local authority in Malaysia. Local authority plays a prominent role in providing government services to the people in the cities and in realizing the smart city concept. This paper contributes to the existing literature on smart city and e-government by providing insight into the roles of e-government as a part of smart city projects.

1 Introduction

The increase in the population residing in urban areas [1] and global climate change issues create challenges and urgency for the government to pay attention to the environment, infrastructure, and delivery of better services to citizens in urban areas [2]. Thus, as a growing global phenomenon in the 21st century, smart cities are seen as a solution to the current challenges of urbanization [3]. The central concept of smart cities is to integrate the city's services systems, such as health, energy, education, transportation, and public services, by making them available to citizens everywhere [4]. The rapid development of ICT has turned this concept into reality. Smart city emphasize six main characteristics: the smartness of economy, people, governance, mobility, environment, and living [5].

Smart governance is one of the main concepts under the smart city umbrella. Smart government focuses on transforming local government into a transparent, efficient, and open administration through ICT for its citizen [6]. As the most prominent public service renderers, local governments were in the hotspot in managing the challenges in urban areas. Therefore, local governments viewed smart city initiatives as current strategies to provide better services, increase citizen participation in cities' decision-making processes, and improve managerial effectiveness [7]. Local governments have initiated using ICT electronic municipalities to reduce big cities' problematic issues such as traffic, environmental pollution, and other issues [8]. The usage of e-government was in line with the objectives of smart city to increase public participation and enhances services through the digitally enabled solution. E-government has been implemented by governments worldwide in the past decades and is seen as a form of government in the future [9].

The popularity of the smart city concept has caught the attention of 135 cities worldwide [10], including Malaysia. In 2019, the Malaysian Federal Government launched the Malaysian Smart City Framework (MSCF). This framework involved seven key dimensions: smart economy, living, environment, people, government, mobility, and digital infrastructure [11]. The year 2021 is supposed to be the kick-off year for smart city implementation nationwide, but the direction of local

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implementation remains unclear [10]. The smart city blueprints are not initiated and prepared comprehensively nationwide, implemented by only several city councils (Putrajaya, Kuala Lumpur, and Ipoh), state level (Selangor and Penang), and regional level (Iskandar Malaysia and MySmart Wilayah 2030) [10]. Although the concept of the smart city is important, arguably, the concept of a smart city will follow the footsteps of sustainability discourses and become the significant ubiquitous leitmotif on urban development [12]. Thus, it is crucial to understand the local application of 'smartness' for urban development and management [12]. Several challenges, such as acceptance, usability, availability, and practical usefulness of new technology in highly complex application domains exist that hinder goals from being accomplished, should be emphasized [13].

Therefore, these articles aim to understand the roles of e-government applications in local authorities to deliver and enhance service to its citizens. The following chapter will highlight the definition of a smart city, smart government, and the roles of e-government applications in local authority settings in Malaysia. This paper will present several online applications available in the Malaysian local government to further elaborate on how e-government works in local government settings in Malaysia. This paper tries to elaborate upon the ways in which all of these elements are interconnected to one another and, in the end, yield a better effort for smart city initiatives.

2 Smart City - A definition

Governments worldwide increasingly view the smart city as a way to improve the lives of their citizens and increase efficiency and sustainability [4]. However, a smart city is a fuzzy concept without a single clear and well-defined meaning. Smart cities often represent holistic and sustainable development ideas that focus on technology, human resources, and collaborative government or all three combined [14]. Broadly, a smart city can be defined as the use of information and communication technology (ICT) and the Internet of Things (IoT) in urban areas to improve operational efficiency, quality of government service, quality of life, and reduced cost [15]. Although, technology is undoubtedly the main driver of smart city development [16]. Yang et al. [17] argue that smart cities are more than just the use of technology; they also include other determinants of sustainability and urban growth, such as human capital, education, social capital, and environmental issues.

Furthermore, Desdemoustier et al. [18] suggested smart city consists of unique characteristics such as digital infrastructure, ICT usage, business-led development, creative industries, social capital, and environmental and social sustainability. Additionally, Giffinger [5] listed six main dimensions of a smart city, such as smartness for the (1) economy, (2) people, (3) governance, (4) mobility, (5) environment, and (6) living. Likewise, the Malaysian Smart City Framework comprises six dimensions mentioned above, with an additional dimension called digital infrastructure. According to Malaysia's smart city, the smart city concept was mainly based on three themes: (1) using ICT to address urban problems, improve urban management, quality of life sustainability, efficiency, and security, (2) enhance economic activities, and (3) public participation and urban innovation [11]. Hence, the Malaysian government has identified key national urban challenges and listed 16 top-down policies translated into 36 strategies and 112 initiatives to address urban issues [10].

3 The Concept of Smart Government

Smart governance is one of the aspects of the smart city. The concept of smart government is becoming an important discussion topic in the growing discourse of smart cities [19]. Smart governance focuses on transforming local government towards transparency, efficiency, and openness to the people through the use of ICT and the formulation of effective smart city policies [6]. Gil-Garcia et al. [21] suggested that one way to understand the smart government is to consider it as an implementation of emerging technologies and innovation in the public sector, which is based on specific contexts and problems. In summary, Guendez et al. [19] identified 14 components that determine the smartness of government, including (1) innovation,(2) integration, (3) citizen-centricity, (4) equality, (5) efficiency, (6) effectiveness, (7) evidence-based, (8) entrepreneurialism, (9) creativity, (10) sustainability, (11) citizen engagement, (12) openness, (13) resiliency, and (14) tech-savvy. Most of the components listed above are similar to the concept emphasized in e-government literature.

Similarly, the smart government took the e-government concept and expanded it with new ones, such as data-based decisions, creativity, entrepreneurialism, and resilience [22]. Thus, the smart government can be interpreted as an expansion of the e-government concept, which uses information and technologies to improve government services [23]. In addition, the smart government also attempted to use emerging technologies to fulfill the promises made by previous modernization initiatives, such as new public management and e-government [19]. The government started to take the concept of e-government to a whole new level, realizing the power of data they hold can help enhance service delivery, engage with citizens, and improve the community's livelihood, thus enabling themselves to transform into the smart government itself.

Moreover, the growing popularity of social media, mobile apps, big data analytics, and mashup technologies allows citizens to interact with the government in new ways [24]. The use of mobile technology has created the term M-government where the interaction between the government and the people becomes more accessible and increases the participation of the people in government activities. This situation can have a positive impact on people's lives and also on the economy. Furthermore, open data were also an important indicator for smart government. There will be no smart government without open data and open action toward transparency, collaboration, and participation. In Malaysia, the government has initiated several strategies and initiatives towards a successful implementation of smart government strategies (see Table 1), including promoting information disclosure and open data from the government, enhancing the quality and scope of e-government services, and elevating the use of data sharing platform across government agencies [11].

Table 1: Malaysia Smart Government Strategies, Initiatives, and Indicators [11]

Strategies	Initiatives	Indicators
Strategy 1: Promote information disclosure and open data from the government	1. Publish annual meeting minutes, financial statements, and budgets on respective government websites 2. Live broadcast and post videos of non-sensitive government meetings on government entity's websites 3. Develop and publish standard operating procedures for information requests 4. Share datasets on the existing open data portal 5. Utilise electronic procurement architecture	1. Website publication of the following documents by government entities: • Annual meeting minutes • Financial statement • Budget 2. Percentage of government entity procurement conducted online
Strategy 2: Increase the scope of e-government services	1. Identify key services to be brought online 2. Utilise digital documents	1. Percentage of inventoried open datasets that are published by a government entity
Strategy 3: Increase the quality of e-government services	1. Rationalise overlapping e-government applications and services 2. Establish customer satisfaction assessment in e-government services 3. Publish the delivery time of e-government services	1. Number of transactions in e-government services per year 2. Percentage of users satisfied with e-government services provided per year
Strategy 4: Elevate the use of data-sharing platforms across government agencies	1. Assess the suitability of different types of data-sharing platforms with existing government ICT architecture	1. Government-to-government (G2G) data-sharing platforms used by a government entity 2. Percentage of datasets shared by a government entity on a G2G data-sharing platform 3. Number of downloads per shared G2G dataset

4 The Function of Local Government

In Malaysia, the administrative system is considered unique because of the division of jurisdiction into three levels: Federal Government, State Government, and Local government. Each level has different jurisdictional boundaries [25]. Local government is the third and final tier of government, known as Pihak Berkuasa Tempatan (PBT). Local government consists of two main

divisions: rural district councils and urban councils. Urban councils are divided into city councils and municipalities [26]. Municipalities can be upgraded to cities once they fulfill certain criteria. The city councils were led by the Mayors, and municipalities and districts were led by the president who was appointed by the state and federal governments. The difference between councils was based on the distinction between more progressive and financially more robust urban areas and less progressive rural and less urbanized areas.

Local government acts as a medium or intermediary between the state government and the people, whose role is to provide services and ensure that every policy is implemented relatively for all levels of society. Being on the front line, local government is considered an important administrative body at the local level because it provides the services closest to local people. The local government jurisdiction in Malaysia is governed by the Local Government Act 1976, which states that the local government [27]: (1) is responsible for planning in its administrative area, where it is important to oversee the development and contribute to the community by playing an active role in the development of the country, (2) responsible for waste collection, street lights maintenance, maintenance of recreational parks and activities related to public health, (3) as the authority to collect income from multiple taxes in its territory, make its own local laws and ordinances, and issue licenses or permits to businesses in its area. Therefore, Malaysian local governments are in the hotspot of providing services that are responsive, efficient, and effective in order to meet the growing demands and needs of their respective residents.

5 Roles of E-Government in the Local Government

Today, e-government and smart city concept begin to converge and relate to each other [28]. Smart governance is one of the smart city dimensions having its roots in e-government. The smart government also focuses on citizen participation in the decision-making process, similar to e-government as a process to reinvent the public sector through digitalization and new information technology to increase citizen participation [29]. E-government is considered one of the broader parts of the smart city concept, which focuses on transforming local government by utilizing ICT and improving local government efficiency [6]. E-government leverages the capabilities of information systems and information technology capabilities to deliver effective public service at the local, municipal, and national levels. E-government specifically offers communication channels and management platforms for agencies, businesses, and citizens and their interaction either separately or collectively [30]. Through e-government, government services and information are available electronically 24 hours per day and seven days per week. Thus e-government is expected to improve the efficiency of governmental services.

For more than 20 years, governments worldwide have been making significant financial and human resources investments in developing an information system that could improve government services and interaction with citizens through the internet [31]. The introduction of e-government holds its promise to promote democracy, reduce fraud, improve efficiency and increase citizen participation in government [32]. Moreover, establishing e-government systems has brought numerous operation benefits for local municipalities and their employees. E-government is considered the government of the future, which puts forward digitally-enabled solutions by cities of rich, poor, large, or small [9]. Due to the nature of e-government to deliver online services to its citizens, e-government needs to activate and facilitate citizen participation in e-platforms such as websites, mobile applications, social media, and other Internet-of-Things (IoT) platforms [10]

In Malaysia, the role of local government is to provide better services for a better livelihood in its locality through ICT. Nowadays, the function of digital technologies goes beyond economic processes and is widely used in government structures and organizations [33]. Therefore, several e-government applications were introduced to facilitate the process, such as the e-PBT online portal. The e-PBT Online portal is a service gateway by the Local Authority (PBT). Among the services provided through this portal are the checking and payment of PBT service accounts such as Assessment Tax, Business Premises Rent, and Compounding. This portal also provides online business license application services. Most PBTs provide their respective online service portals and can only be accessed through the respective PBT portals. Customers who have service accounts in several different PBTs need to access each relevant PBT portal to make a check or payment. To

make it easier for customers, the Local Government Department developed the e-PBT Online Portal as an online PBT service gateway for PBTs. Currently, there is an e-PBT 2.0 System as the main accounting and revenue management system in PBTs. The e-PBT online portal can make it easier for citizens to make applications, check and pay for services in PBT locally online without having to go to the PBT counter or different access websites for each PBT. Furthermore, along with the advancement of information technology and a vision to make PBT a world-class agency, e-PBTPay was specially developed to provide convenience and comfort to the public in making payments. Various types of payments, such as assessment tax, compound, and rent, can be made using online banking applications.

An electronic system for processing and submitting applications for progress control was introduced, known as One Stop Centre (OSC) Online. It is also an electronic platform to retrieve information and two-way communication for that information related to progress control. Furthermore, to improve service quality and delivery, Public Complaints Bureau (BPA) has developed and launched a complaint management system called SISPAA. SISPAA has been used in local government agencies to speed up and simplify the complaint process by the public, and citizens can access this system at any time with internet access.

The introduction to the aforementioned systems shows the Malaysian government's commitment to public sector reforms and to introduce innovation to improve the operations of its public organizations. No doubt that there has been a lot of effort and expenditure made over the last 20 years to introduce e-government modes of service delivery within and between government organizations and to the public and businesses. E-government has affected large numbers of government activities and processes at the national and local levels. Using e-government systems at the local level has eased the interaction between citizens, businesses and governmental employees, and government organizations to access online governmental services without any third-party intervention.

6 Conclusion

In conclusion, smart government is one of the important aspects of the smart city dimension, which focuses on using data and ICT to improve city operations. Despite the development of e-government in local government in Malaysia, it raises the question of whether the application is friendly to the users or whether the employees fully utilize the system to improve job performance. As the prominent actor in providing public services, the government is expected to provide access to all layers of society with an integrated system that is friendly to users. In the future, it is expected that Malaysia could improve its performance in this field and advance in the digital arena, thus following the footsteps of advanced countries and becoming the global leader in e-government.

Therefore, to conclude, this article analyses the roles of e-government in Malaysian local authorities as part of smart city implementation. It guides the decision-makers and administrators on the application of e-government in smart city projects. This article contributes to a better understanding of e-government roles for the local authority as the lowest tier and closest to society. A better understanding will contribute to the efficient functioning of the smart city ecosystem through government and leadership, which are essential to improve citizens' quality of life.

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