Active Idealism of a Smart City: A Case of Putrajaya

Kok Yoong Lim(✉), Peter C. Woods, and Ah Choo Koo

Faculty of Creative Multimedia, Multimedia University, Cyberjaya, Malaysia
`kylim@mmu.edu.my`

Abstract. Smart city is a popular concept used widely by policy makers and administrators to promote socio-technological advancement in urban cities. In a disquisition of idealism of the smart city, it would be fruitful if we could at the same time highlight some of the challenges to achieving the very idealism we advocate. To speak of utopianism without any serious reflection, refining and re-examining in putting the ideals into practice is mere rhetorical idealism and failure to plan. This paper sets out to investigate how the city of Putrajaya, aspiring to become a smart city, can manage the expectations to realize that ambition. We present a narrative exploring the practical challenges Putrajaya has been facing in its ongoing efforts to be a smart city. Active idealism as put forward in this paper refers to the recognition of the humanistic ideals that are to be manifested or practiced in individuals and society.

Keywords: Smart Cities · Active Idealism · Putrajaya · Quality of Life

1   Introduction

'Smart' is a polysemous word, capable of many different meanings in English, ranging from quick witted and able to respond intelligently, to being hurt by a wasp sting. This use of the word 'Smart' associated with a technology has probably been one reason for the apparent desire for all cities to be seen as smart.

A search for the word, 'smart cities' on the Internet will return findings nearly every major city worldwide, and many smaller communities consider themselves to be smart cities. Malaysia is no exception. Capital city, Putrajaya and other cities such as Cyberjaya, Penang, Petaling Jaya, Shah Alam, Melaka City, Johor Bahru Nusajaya, etc., are calling them as smart cities with their specialities. Meaning to say, city councils or municipalities take proactive measures to embrace digital technology, to promote to their citizens, and potential investors that they embrace smart technologies, particularly ICT, IoT and AI. Adoption of technology are highly promoted at all levels of user groups and in various applications such as e-government, city surveillance, building surveillance, energy usage and monitoring, waste tracking solutions etc.

1.1   Active Idealism of a Smart City

While having active discussions of smart cities at the government and top level of administration of the city authority, there are other discussions such as at the grassroot level of green and social activist or artists on the implication of smartness towards the people lives.

Socialist and artists views should not be denied from participating in smart cities formation and discussions. Hence the purpose of this paper is to investigate how the city of Putrajaya, aspires to become a smart city, can manage the expectations to realize that ambition of real smartness.

We also present a narrative exploring the practical challenges faced by the city that plays a role as the capital city of Malaysia.

Section 2 describes some background of Putrajaya Smart City Framework, Sect. 3 presents challenges framework versus the smartness of Putrajaya, and finally in Sect. 4, the author reflects on the active idealism versus reality of smart cities achievements generally in Malaysia.

2   Introducing Putrajaya as a Case of Smart City

Modern city development in Malaysia is considered to be from 1996 with the implementation of the Multimedia Super Corridor (MSC). During that time (25 years ago), Malaysian Prime Minister, Tun Dr. Mahathir Mohamad officially inaugurated the MSC program. The MSC was envisaged as stretching from the international airport KLIA the 70 km to Kuala Lumpur. Within this corridor would be the advanced digital research and development of various institutions and companies in the ICT area. Two new smart cities, Putrajaya, the government city, and Cyberjaya, the creative multimedia city, were planned to be central to the corridor. It was to accelerate the adoption of a knowledge-based society framework towards the achievement of Vision 2020 and to transform Malaysia into a modern state by then. In addition to the new cities in the MSC, which are now over 20 years old and reaching some level of maturity, several other cities and states present themselves as being or becoming smart.

Putrajaya has been designed to be the Malaysia new capital city and the central location for Malaysian government ministries and agencies since 1999. Its aesthetic, environmentally friendly and sustainable design represents Malaysian heritage and cultural values of the nation. Putrajaya is designed to be an 'intelligent garden city' with various kinds of smart initiatives and infrastructure and many green areas. The Putrajaya Smart City Blueprint 2019 envisions transforming the city from a Garden City into a Green City by the year 2025 [1]. The city aspires to become a more green, sustainable, and liveable city.

All cities are unique with their own challenges and complexity. With the integration of smart solutions and technology, Putrajaya as smart city has faced another layer of challenges and opportunities. Malaysia has typical regional challenges such as reducing the crime rate, resolving the problems of the urban and rural poor, attracting, and retaining talents, and ensuring a civil society. There is weak awareness and lack of sufficient expertise to address energy efficiency, and incorporation of green or smart technologies.

Issue such as green and environmental protections, social issue on affordable housing and optimising use of resources to improve efficiency.

Smartness concept added to a new city like Putrajaya (since its formation) with opportunities and challenges. Some discussions on smartness in meeting technological needs and users / citizens' needs should be discussed.

3   Framework of Smartness vs Challenges

Smartness framework and discussion of smart cities usually can be viewed from a simpler perspective, namely the design, implementation, and maintenance aspects of a smart cities. We know that all cities are confronted with the future impacts/challenges of climate change, pandemic, resource scarcity, social cohesion, rapid urbanisation, and digital inclusion.

3.1   Design Challenges (of Smart Cities)

The first design challenge is inclusiveness of the design. Designing smart city services requires the analysis of the needs of governments, business operators and the citizens. The second generation of smart cities have been shifting the principles from technology-centric to citizen-centric. Thus, one of the challenges at design phase is to ensure that the needs of the citizens as end users are considered. Citizens will be contributing the data, receiving the city data from other sources, and taking part in the decision-making process to improve their quality of life.

Secondly, survivability of the systems and services is the challenge that needs to be considered while designing smart city systems and services. In order for a business or service to be sustainable and expandable in the smart cities' environment, the ability to leverage the technology such as mobile application is a must. Mobile application accessible via smartphone is the effective way to connect users with other devices, to engage users, to allow them to provide and receive information in real time, to improve decision making and to complete tasks in hand effectively. Therefore, designing mobile applications for smart cities needs strategic planning. Careful design of User Interface and User Experience (UI/UX) that are both user friendly and attractive is a crucial step to develop successful applications for businesses or community services.

One of the highlighted technological challenges faced by Putrajaya while designing the smart city is in deciding on what are the suitable infrastructures to be built and when is right time to invest on. Putrajaya installed expensive fibreoptics during the time of the installation. Old technologies are costly and could be outdated fast. A risky and costly technological decision has been made and has revealed to be one of the technological challenges faced by the city.

3.2   Implementation Challenges

Choosing the right technologies to be developed and the right timing to implement them is crucial. Development and implementation of smart city services require careful selection of technologies, preparation of network infrastructure such as broadband and decision to

combine and integrate the selected technologies together. Smart city environments that are usually exposed and dynamically changing making the implementation of services such as mobile applications and IoT systems for smart cities even more critical. Mobile applications have to operate within limited power, processors and capacity of mobile devices while fulfilling the demand of life critical smart city demands. On the other hand, IoT implementation concerns issues related to cybersecurity, data privacy, reliability, resource consumption and compatibility.

Choosing the right supports for technologies to use such as the suitable development, testing and running platforms, the best third-party services such as Cloud and the suitable hardware that are compatible for cross-platform applications and seamlessly connected with the selected network is a challenge in this stage.

Next, the consistency and data flow management to ensure real time information representation in all interconnected devices are also the critical concern during implementation. Developers need to build the right systems and later testers and quality assurance personnel need to verify that the systems fulfil stakeholders and end user requirements.

Finally, on top of building impressive systems with amazing user experiences, developers need to ensure that the systems are reliable, following security standards, functioning smoothly without bugs and glitches as well as cost and resource effective to survive and sustain in smart cities digital environment.

A key factor when considering the successful implementation of smart cities is governance. It is an institutional or process challenge because of the complex multi-ministry, inter-agency relations and multi-tiers of government process and planning. Malaysia is a federation of states, with federal government and territories, state, and local councils. These layers of governance to some extent may cause decision making and policy making slow.

Putrajaya, as any other smart cities in Malaysia had been struggling with the lengthy projects' development process at governance level. This could be due to many reasons either because of the bureaucracy for authority agreement and political decision or funding approval by the official departments. The process that was previously dependent on old technology is very challenging to both the authority and the project developers in which an upgrading is needed. To overcome the issues, in 2019, Putrajaya Corporation (PjC) has launched One Stop Center (OSC) to receive, record and monitor the development projects in Putrajaya [2]. By leveraging on ICT and later GIS, the projects development process can be monitored from anywhere and at any time. The OCS managed to solve the pending development submission and approval processes that normally take several months to just two weeks.

3.3   Maintenance and Sustainability Challenge of Smartness

Fulfilling continuous smart city demands is a challenge at this stage. Long term deployment and maintenance of smart city services requires the smart city services to be resilient, sustainable, and compatible to endure economic insecurity, climate change and disaster events. The technology is expected to ensure business continuity, to be adaptable to constant uncertainty, to be able to emerge out of unprecedented disruption. Reliability is always the critical maintenance issue. Maintaining IoT sensors and detection devices that continuously collect data on everything is complicated and costly.

Its critical to ensure the reliability of the devices in collecting complete data to produce accurate analysis while at the same time effectively reserving resources. Therefore, making use of natural energy resources such as solar is better as compared to the hard wired and battery operational devices.

Another challenge during maintenance is security. Old infrastructure and outdated software are vulnerable to cybersecurity threats. Since funding is always limited, the hardware, infrastructure and software systems that are easy and cost effective to install, to update and to upgrade are always the preferred options. Embarking into a more secured encryption technology such as blockchain is encouraged to better maintaining security in the long run.

Maintaining trust by protecting the data privacy of users is a continuous challenge in smart cities. While encouraging users to participate in providing data and information, users privacy needs to be protected by not exposing anything that can reveal and overshare their personal information. Sharing private information in public network could jeopardize physical and virtual safety of the users. The Personal Data Protection Act 2010 (PDPA) took effect on November 15, 2013 establishes a broad cross-sectoral framework for the protection of personal data in commercial transactions. Apart from the implementation of the seven principles in the PDPA, the regulatory framework has not developed particular laws to control over internet privacy or digital privacy [3]. At this stage, it is a need to have systematic evaluation of the efficacy of the deployed smart city technologies, the initiatives, the policy, and regulations as well as the impact towards environment, ecosystems, internal organizations, community and businesses. The result of the evaluation of status of the initiatives is important to be analysed to identify the next steps that could further improve the smart city performance. The analysis could also be used to better predict the future of smart cities.

Improving safety and security from time to time is a constant challenge for a city. Limited or incomplete surveillance capability hinders the effort of the authority to monitor the safety and security of the residents. For Putrajaya, a central surveillance hub, Putrajaya Command Centre (PCC), that has been completed with sophisticated integrated technologies such as smart closed-circuit television (CCTV) with Intelligent Video Analytic (IVA) and panic buttons has been launched. The PCC has upgraded the monitoring capability of Putrajaya city management to check on the smoothness of the traffic, to detect suspicious incidents, to be alert on environmental issues, to ensure practicality of the infrastructure and to predict natural disaster. In total, there are 462 unit of CCTVs and 89 unit of panic button in the city [4]. The Putrajaya Smart City Blueprint [1] is to guide and provide recommendations to the Putrajaya Corporation and all related departments / agencies in Putrajaya for formulating policies, strategies, and action plans in the implementation of Putrajaya Smart City.

4   Reflections on Active Idealism on Smart City

Before any project of a smart city is viable, effective, and meaningful, the inclusion of the citizen is vital. In the European Manifesto on Citizen Engagement, points out that citizens and communities engagement are crucial in the implementation of smart cities [5]. The manifesto is a policy document that aims to encourage civic participation in the

smart cities design and co-creation of smart cities solutions to negate the top down and industry led approaches to smart cities projects. Putrajaya has an opportunity to become far more inclusive when the Prime Minister Datuk Seri Ismail Sabri Yaakob launched the 'Keluarga Malaysia' (Malaysian Family) concept for a new government based on the values of inclusion, togetherness, and gratitude.

Active idealism as opposed to abstract idealism is a commitment to reformulate, reframe and reimagine the ideal and the idealism will only be meaningful if it is actively pursued by the citizen and perfected for the citizen.

How does the citizen fit into the smart city vision? It would seem reasonable to assume that the benefit of investment in infrastructure would come to those who are probably paying for those investments through local and national taxes. It is reasonable to ask what facilities would be most valued by citizens. There are obvious targets that might be influenced by the introduction of smart technologies or policies. First for some would be cost, particularly those paid for directly from local taxes. Can smart technologies reduce transaction costs? This is in the realm of 'paperless' processes avoiding visits to council offices for example. The extent to which this "saves' resources is questionable but provides convenience for some and unfortunately increases the digital divide for others. Good examples occur where small cities and communities may have an advantage in simple methods of reporting. Examples would include submission of photos online of illegal refuse dumping or 'potholes' in the road. Some cities report significant improvement in response time from weeks to days. In part this is possible because the public are providing an immediate reporting of issues which under other circumstances could be delayed or missed completely. The responsibility lies with the authority to take advantage of this, as it is one area where improved public relations can occur.

5   Conclusion

We have to accept that smart cities development in every country have their own tempo, depending on their socio-cultural and economic circumstances. Challenges and obstacles are inevitable and they are redefining the options and opportunities for the perfection of smart cities concept. Technology can provide new innovative solutions but it must always be viewed as a means to an end at the service of the people who live in cities. We think that smart city concept should move forward with citizen-centric design and policy in search for essential better quality of life.

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