



RESEARCH ARTICLE

Stakeholders' readiness in the development of an Islamic smart city [version 1; peer review: awaiting peer review]

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Abstract

Background - Smart City integrates systems with the latest technologies to enable fast track of information and decision making by individuals, government, businesses, and public. Smart City connects people and information to manage public amenities, control crime rates, enhance services effectiveness, create vibrant, competitive, and innovative cities, and improve quality of life. Islamic Smart City can be defined as a smart city that incorporates the Islamic Syariah from Al-Quran and Hadith as a way of life; and impart the main component of Islamic Syariah compliance in individual and organisational behaviour aspects such as ethics, cleanliness, trust, security, and others. This research aims to explore the stakeholders' readiness in four aspects of technology, human, institutional and Islamic factors, which are important in the development and implementation of the Islamic Smart City.

Methods - This qualitative research design collected data through interviews with 20 selected stakeholders.

Results - The findings provide the state government with insights into stakeholders' readiness, which is crucial to the development of Islamic Smart City. The findings also show that the stakeholders' readiness in the technology is high; but it is lacking in the Institutional and Islamic factors.

Conclusion: This research provides insights that the development of Islamic Smart City requires major concern such as ensuring the stakeholders' readiness for technology, human factors, the institutional and the Islamic factors are met.

Keywords

Islamic, Smart City, Development, Stakeholders, Readiness

Open Peer Review

Approval Status AWAITING PEER REVIEW

Any reports and responses or comments on the article can be found at the end of the article.



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Introduction

The existing Smart City integrates systems with the latest technologies to enable fast track of information and decision making by individuals, government, businesses, and public. It connects people and information to manage public amenities, control crime rates, enhance services effectiveness, create vibrant, competitive, and innovative cities, as well as to improve quality of life. The new concept of Islamic Smart City introduced in this paper can be defined as a smart city that incorporates the Islamic Syariah from Al-Quran and Hadith as a way of life; and impart the main components of Islamic Syariah compliance in individual and organisational behaviour aspects such as ethics, trust, security, etc. Scholars agreed that the concept and the success factors of Smart City had never been discussed within a comprehensive understanding or solid conceptualisation.¹ Thus, this research is the first to understanding the vital components of an Islamic Smart City.

Problem statement

The main objective of an Islamic Smart City development is to address urban issues efficiently, in particular to improve the city’s sustainability and quality of life via integration of smart technologies; with the main focus of imparting Islamic values in its development. However, the main question in this research is about the governments’ readiness for its development. This research will explore the issues of government readiness in implementing the development of an Islamic Smart City. Stakeholders are the ones who are directly or indirectly involved in the development of the fundamental components that contribute to the success or failure of an Islamic Smart City, thus their opinions should be taken into consideration when deciding on various strategies, planning and implementations. The aim of this research is mainly to explore the stakeholders’ readiness in four aspects: technology, human, institutional and Islamic factors, which are important in the development and implementation of an Islamic Smart City.

Literature review

A city is considered smart “when investments in human and social capital and modern transport and communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources”.² In addition to these fundamental factors, an Islamic Smart City incorporates all the Islamic religious values of lives of people living in the smart city.

Figure 1 shows three fundamental components of a Smart City that includes the Technology Factors, Institutional Factors and Human Factors.¹

Technology factors

Islamic Smart City uses the latest technologies to connect people and information to create vibrant, green, competitive, and innovative cities whilst improving quality of life.³ Various initiatives in relation to technology development or availability of digital workers may influence development of Islamic Smart City.⁴ Government must invest in upgrading knowledge and skills of digital workers to support fast growth technologies, via formal education at schools, vocational centres, colleges or universities. New generation must be equipped with digital capabilities to support development

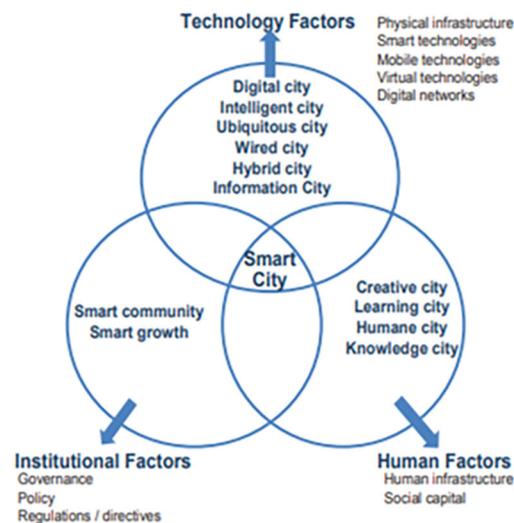


Figure 1. Fundamental components of Smart City. (Source: Taewoo and Pardo, 2010).¹

of technology infrastructure of Islamic Smart City. Future digital workers must also be capable in designing new technologies, systems, platforms, gadgets, or equipment to avoid importing from other countries.

The latest collective understanding about an Islamic Smart City is that it relates to a city development that used different types of Internets of Things (IoT) sensors to gather data and information, which later can be used to integrate or manage internal assets, manpower, resources, and other services that have been received or delivered to the public. Information that is collected from the public, any devices or assets that are used in managing traffic system, hospital administration, universities, power plants and others, are solely for the benefits of societies.^{5,6}

Institutional factors

The institutional factors are other contributors to the success of an Islamic Smart City, with substantial focus on de-regulations of the existing legal aspects inclusive codes, rules and regulations and the law of different states in this country.⁷ This is to ensure that the utilisation of new technologies is not harmful, lead to more crimes or against the Islamic values. Government support and governance policy are key to designing and implementing an Islamic Smart City, that include variety of organisational factors derived from the clever community discussions or smart development initiatives: not only to support government policies, but also the connection between government agencies and nongovernmental groups, and its governance.⁸

The administrative ecosystem (initiatives, framework, and interaction) promotes an Islamic Smart City to be developed in such ways of integrating an efficient governance, strategic and promotional tasks, networking, and collaborations in order to enable an Islamic Smart City development. The government must focus on the real-time utilisation of online data and information systems to reduce problems with silo management in delivering quality services especially by the public sectors to the communities.⁹ This is to ensure the effectiveness of public services and reduce the problems faced by the companies in delivering the services in the right manners.

A smart government in an Islamic Smart City initiative must put efforts via partnering with departments, agencies, subsidiaries and other stakeholders in utilising available technologies and resources. Smarter governance on the most fundamental level requires more citizen-centred activities and services. It is important to prepare organisations to thoroughly understand the legal and regulatory barriers.¹⁰ A citizen-centred approach is the central spirit of governance. Stakeholder's consideration (i.e., end-user groups, end-users, IT experts, legislation or service domain specialists, and public directors) is crucial for the Islamic Smart City architecture and technologies implemented to be accepted by all parties.

Human factors

An Islamic Smart City re-conceptualised its emphasis on human infrastructure, to create balance with development of digital technologies infrastructure. The government must allocate huge investment in developing human capital in technical and management aspects of the Islamic Smart City; such as tolerance, technology, and talent to attract creative workers with the two components of tolerance and talent in human infrastructure.¹¹ "Smart people" with advanced education, mastering specific expertise, open-mindedness, creative, innovative, high connectivity in communication can support development of an Islamic Smart City that provides intelligent solution to the public and business communities that transforms work, leisure, community and everyday lifestyles.¹²

Effective smart cities could integrate the government of the Islamic Smart City with the entire communities via the top-down and bottom-up integrative technologies' platforms with all the sectors and publics.¹³ Government and communities must work together in ensuring the success of an Islamic Smart City development. The communities must unite to utilise the new information and communication technology (ICT) in their daily lives with business platforms for its online business transactions under citizen-centred integrative operational and services delivery system. Transforming a conventional city to an Islamic Smart City requires an integration of technologies within the communities, with engagement in Islamic life values to harmonise the differences in a homogeneous technology platform, appropriately design within the communities' capabilities, regardless of their ideologies, religions, culture, and other elements.¹⁴

Islamic factors

The evolution of an Islamic Smart City begins with the municipality of Islam Smart City process that emphasises the implementation of Syariah laws and standards, while integration of technologies being the focus of the overall city development. There are three main elements that make up the driving line in the formation of Islamic Smart City: the formation of *Ukhuwwah* and social integration, the city carries a warning message, and a balanced development between human values and nature environment.¹⁵ The communities of public, government and businesses must have good relationships and understanding between each other to ensure that they have consensus in the technologies to be implemented in the public services and business transactions.

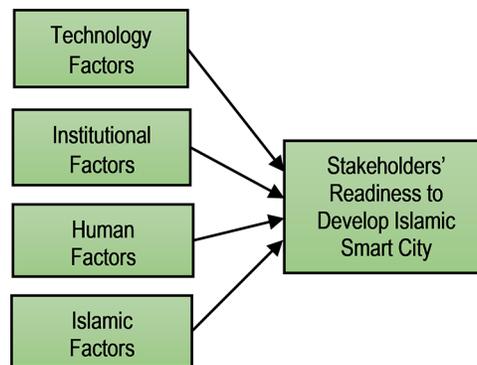


Figure 2. Research theoretical framework.

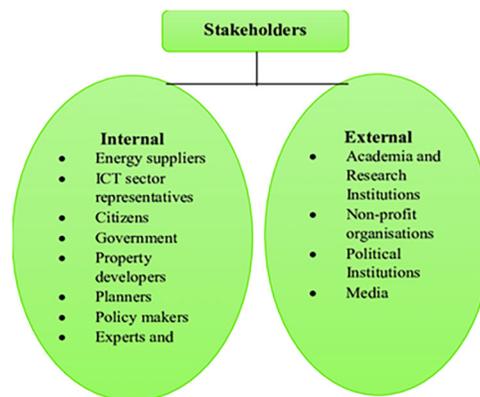


Figure 3. Stakeholders of Smart City.

Islamic municipality was born since the reign of the Prophet Muhammad P.B.U.H., and the first Islamic municipality was the city of Medina which is the 'Role Model' of global Islamic countries especially in the Middle East. Islamic municipalities aim to maintain the interests of the Ummah fairly without being individualistic.¹⁶ Development of an Islamic Smart City is part of civilisation's development, and many Islamic scholars believe that Muslim communities should not build a civilisation by liberating themselves of Islamic bonds. The Islamic rules must not be forgoing even though there are non-Muslim communities living in the Islamic Smart City. Based on the deliberations of the new concept of Islamic Smart City, the theoretical framework for this research is shown in [Figure 2](#).

Methods

In this qualitative research 20 stakeholders were interviewed in their workplace from April – May 2020 ([Figure 3](#)). Both written and oral consent were obtained from each stakeholder. They were contacted via phone and were willing to contribute information during the interview session.

All interview scripts were transcribed and themed on the readiness of the technology, institutional, human, and Islamic factors. The triangulation of data (using multiple sites) was also carried out to ensure the validity and reliability of this research.

Results

The results of this research found that the stakeholders' readiness in technology and human factors are high; but lacks the institutional, and the Islamic factors. These findings provide the state government with insight into stakeholders' readiness, which is crucial to the development of Islamic Smart City.

Discussion

The stakeholders have appropriate knowledge about the concept of Islamic Smart City and the applied technologies that can improve their daily life and work activities. Only a few groups including the non-government organisations and businesses with elder generation have difficulties in transforming into the latest technological changes.

The budget for technology advancement has become another issue for all the stakeholders since technology is fast changing. While it is costly to buy the latest equipment, software or system, all organisations have to face this challenge when upgrading their facilities with latest technologies in Islamic Smart City.

In the aspect of human factor, owners, and traders in industries such as *batik*, *keris*, *tembaga* and craft, are expected to face difficulties in coping with the development of new technologies. The vast majority of these business owners are elder generations, and this industry is inherited from one generation to another. The elderly crafters prefer to sustain with the manual and traditional production in promoting and selling their products. Moreover, the originality values of such hand-made products are much higher in the market.

The stakeholders' knowledge about how Islamic values would be incorporated in the Islamic Smart City are lacking despite years of religious education system. Fortunately, there are many implementations of advanced technologies in religious activities at mosques and public religious events. But somehow, the promotional activities, or dissemination of information about religious activities are not fully linked with the use of technology devices. Another reason may be due to the elder generations' preference on the traditional or conventional conducts when it comes to religious activities. Conversely, younger generations are more receptive to the incorporation of technologies with Islamic values.

As for the institutional factor, there is no specific legal framework available for an Islamic Smart City. One major issue in a multinational country like Malaysia is that the Islamic Syariah Law for Muslims is different than the Civil Law for non-Muslims. Nevertheless, the strong bond between the Muslims and non-Muslims will make it possible for them to accept the concept of Islamic Smart City. The Non-Muslims understand that the Islamic Syariah Law will positively affect prosperous living in a smart city.

Conclusions

This research contributes to a new knowledge for the establishment of Islamic Smart Cities globally, by imparting the Islamic values as a way of life in the era of new technologies. In order to become a smarter city, there is a need to ensure sustainable urban development as well as its connection with the rural areas being supported by the latest technologies.

There is also a need to redesign the conventional city with a top down and bottom-up strategic planning that focuses on the community building with ICTs and digital infrastructure. A holistic Islamic Smart City strategic framework must be based on integration of the ideological services applications.¹⁷

The integration process in constructing the strategic development framework requires the state government to consider all stakeholders that have connections with the planning of Islamic Smart City; since they will be the ones to engage with the ICTs and digital infrastructure design, planning, implementation, and continuous monitoring to ensure the success of an Islamic Smart City.¹⁸

The limitation of this research is that it only included main stakeholders in the interviews. Future research can be conducted using quantitative method with larger sample size, especially from professionals and public to enable the state government to design a long-term strategic framework that take into considerations all factors in ensuring the success of the Islamic Smart City project.

Underlying data

DANS: Stakeholders' readiness in the development of an Islamic smart city. DOI: [10.17026/dans-2zk-eqz4](https://doi.org/10.17026/dans-2zk-eqz4)

This project contains the following underlying data:

- Data set information Islamic_Smart_City_Paper: This dataset includes information on data collection, study population, and the interview transcript used in this study.
- The results of the respondents

Data are available under the terms of the [Creative Commons Zero](https://creativecommons.org/licenses/by/4.0/) "No rights reserved" data waiver (CC0 1.0 Public domain dedication).

Ethical approval

Ethical Approval Number: EA1182021 (Multimedia University).

Author contributions

RFRH as the main author contributed to the whole process of this research especially in meetings with the relevant person for the interviews. NAB assisted in the processing of the interview scripts. While JM monitored the production of this article.

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