Social Attributes and Public Participation towards Smart City Development

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Abstract

This paper objective is to gauge the level of social attributes and public participations encompassing aspects of smart people and smart living which are some of the characteristics lie in the social aspect of the smart city system. Data samplings of 100 returned questionnaires answered by respondents in Subang Jaya, Malaysia, were analyzed to simulate the findings. Results indicated that the social attributes of smart people and smart living among the communities in Subang Jaya are at moderate levels while their appreciation and participations to the attributes are at high level. The city combination of modern infrastructure, advanced usage of information technology, effective strategic plan by local authorities, and close collaboration of public and private enterprises can ease the process towards achieving a smart city status. This natural cycle chain of behavioral change among the communities in Subang Jaya that promotes the social attributes of smart people who embrace smart living could be used as a model for smart city development in Malaysia.

Keywords: Public participation, smart people, smart living and emerging smart City.

1.0 Introduction

A Smart City is a developed urban area that creates sustainable economic development and high quality of life by excelling in multiple key areas; economy, mobility, environment, people, living, and government. Excelling in these key areas can be done so through the strong human capital, social capital, and/or ICT (businessdictionary.com/*definition*/smart-city). A smart city concept initially was introduced to the government by city developers to meet the demand of modern technology, effective interactions, efficient transportation and diversity of public infrastructure which are the basic necessities demanded by the urban population in a city. Smart urban development improves the city delivery system by implementing higher technology interfaces in the governance systems (Belissent & Frederic, 2013). However, the concept of a smart city had further evolved to cover a more sustainable approach to be a well-performing city built on the 'smart' combination of endowments and activities of self-decisive, independent and aware citizens. The 'smart' combination consist of 1) smart environment, 2) smart governance, 3) smart mobility, 4) smart business 5) smart people and 6) smart living (Giffinger, et.al (2007). European countries are far ahead of

Asian countries in innovation and integration of technology in built environment due to the outcome from European researchers that have various studies to improve their technology in city development. Flexibility on the social change and good public participation in the city development are characterized as Smart People (Giffinger et all (2007).

1.1 Problem Statement: Smart City Approach in Malaysia

The concept of Multimedia Super Corridor was initiated to motivate the Malaysian citizens in the effort to adopt technology as a way of life and as a preparation to the world globalization (Mohamad, 1998). The government has a strong awareness of the importance of cities development therefore they push emphasis the development of smart cities under the Tenth Malaysia Plan (10MP). Malaysian government role in the development of cities has been done in various manners but it is crucial to acquire firm support from the community in need towards the development. For instance, the current government projects towards smart city development are Putrajaya administrative centre, Cyberjaya, Subang Jaya, Iskandar Malaysia, and MyRapid Transit (MRT) which is the latest project in urban transportation (Rahman, 2011). So far the push for smart city status primarily comes from government initiatives with minimal involvement from the community.

1.2 Research Objectives

The main objectives of this research are 1) to identify the features and attributes in smart city development, and 2) to identify the level of public participation encompassing aspects of smart people and smart living towards smart city development using the new Subang Jaya Township with an established young population as a model.

1.3 Literature Review: Evolution of Smart City and Smart Behavior Changes

A smart city is a fuzzy concept with many interpreting definitions. The principle of a smart city is a city occupied with smart technologies which improve the service system of the city but requires high investments from the public authorities (Buscher & Doody, 2013). The adoption new city model as a smart city provide citizens with more lively, functional, competitive, interactive and modern way of life resulted from the innovation and integration of latest technology where making citizens more aware of the technology by having a direct relationship to it (Azkuna, 2012). A smart city has the ability of the system occupied in the city to deliver its attributes to the best performance in order to provide an efficient, responsive and sustainable environment to the users (Giffinger et al., 2007). Nam & Pardo (2011) had categorized various terms used to define Smart City into three dimensions: technology, people, and community. Technological dimension covers terms such as Intelligent City, Digital City, Wired city, Hybrid City, Information City, and Ubiquitous City. Human dimension covers terms such as Creative City, Learning City, Knowledge City, and Humane City. While Community dimension covers terms such as Smart Community. Smart people are one of the characteristic lies in the social aspect of the smart city

system. Smart people or also describe by social and human capital is defined as educated citizens with a high level of education, good quality in communication by integrating social and public life which also has the openness attitude towards the outer world (Giffinger et al., 2007). From a general view, the social factors effect to the development of a smart city has indicated from not only the infrastructure developed but also the attitudes of the urban inhabitants itself. The way of life may also be an indicator to the social aspects of the inhabitants living in the smart city. Giffinger et al. (2007) have described that smart living encompasses of excellence facilities in housing, health, security, education, culture, tourism and social cohesion. Smart behavioral change is defined as the response of urban population towards the smart system developed to facilitate their daily routine. Smart systems stimulate a response in attitudes which new activities and choices are introduced, produce a definite change in the process of consuming and sharing resources simultaneously contributing good impact in the development of low carbon city (Buscher & Doody 2013). The study on smart behavioral change is salient to foresee the community way of thinking and attitudes towards the better innovative technology implementation in the development of city infrastructure, without exploiting the natural resources and ensure the sustainable urban development. The positive behavioral change towards smart city thinking possibly based on the community realization in experiencing sustainable infrastructure and greater quality of life.

1.4 Developing Subang Jaya as a sustainable smart city with community involvement

Subang Jaya was selected for this research as it represents a typical example of a newly formed residential township with a huge potential to become an emerging smart city. It is the 5th most populous city in Malaysia located in the state of Selangor. Rapid increased of the population as a residential township and fast rising developments, caused the separation of Subang Jaya from Petaling Jaya municipality in 1977 with formation of its own municipality, the Majlis Perbandaran Subang Jaya (MPSJ). The city is now dubbed as the main education hub of Klang Valley, as there is a wide variety educational institution established in the township. MPSJ has put in their best effort towards development of smarter city planning where the alliance of municipalities and private sectors has moved Subang Jaya way forward in implementing the smart informative infrastructure as one of the smart city characteristics (Malek (2009). MPSJ has set its sights on turning Subang Jaya into a "Green City" by 2030 and has embarked on an action plan that combines the MPSJ 2012-2030 strategic plan, the MPSJ Local Plan and the MPSJ traffic and transportation plan. "The tagline 'Support Green' is in line with MPSJ's aim of getting the community to support their efforts to develop a green city (The Star, 2014). MPSJ took the initiative to develop the Biomass City by selecting Serdang as the pilot project in 2012 through the Green City Action Plan 2030. The MPSJ Biomass City focuses on nine key areas involving community service, environment, engineering, green city, information resources, safe city, human capital development, municipal services and environmental beautification. The smart initiative

also received support from the Solid Waste Management Department, Putra University Malaysia (UPM) and researchers from the Japan Ministry of Fisheries and Forestry (The Star, 2013). In early 2016, MPSJ launched their "Smart, Precise, Impactful and Cost-Effective" (SPICE) program by taking a new diligent approach to their services in term of cleanliness, infrastructure, landscaping, and parking in the 21 zones under its care as part of the initiatives towards becoming a smart green city (The Malaysian Insider, 2016). The Energy, Green Technology and Water Ministry had selected Subang Jaya as one of the flagship townships to test their "Low Carbon Cities Framework and Assessment System (LCCF)" where the ministry had embarked on "The concept of smart cities with infrastructures and services to create better environmental, social and economic conditions that enhance the cities' attractiveness and competitiveness" (Bernama Online Oct 18, 2015).

2.0 Methodology

This research adopted qualitative and quantitative methods. Qualitative method is the formulation of secondary data through literature review from books, journals, newspapers, web pages, conference proceedings etc. to justify research objectives, determine research questions and understand the research background regarding smart city. Quantitative method is a collection of primary data involved a pilot survey to develop suitable questionnaires, distribution and collection of questionnaires through personal approaches and online approaches. The questionnaires were divided into three (3) sections with Section A focused on respondents demographic profiles, section B covered questions on objective 1 and section C on objective 2. One hundred and twenty-five (125) questionnaires were distributed and one hundred (100) valid responses were collected. Analysis of data from collected questionnaires was done using IBM, SPSS Statistics Software to enable the formulation of findings and to make a conclusion.

3.0 Result and Discussion

Section A – Respondents Demographic Profiles.

Table 1 demonstrated the statistical data of respondents based on ten demographic questions in term of gender, age, race, religious preference, primary language of communication, duration of residency, purpose of living in Subang Jaya, level of academic qualification, monthly income and respondents' awareness regarding a smart city.

Table 1: Demographic profiles of respondents

VARIABLES	RANGE	No.	(%)
GENDER	MALE	34	34%
	FEMALE	66	66%
RACE	MALAY	48	48%
	CHINISE	36	36%
	INDIAN	14	14%
	OTHERS	2	2%
AGE	18-29	66	66%
	30-49	30	30%
	>65	2	2%
RELIGIOUS	MUSLIM	46	46%
	CHRISTIAN	12	12%
	BUDDIST	28	28%
	HINDU	10	10%
	OTHERS	2	2%
PRIMARY LANGUAGE	BAHASA	38	38%
	ENGLISH	36	36%
	MANDARIN	10	10%
	TAMIL	6	6%

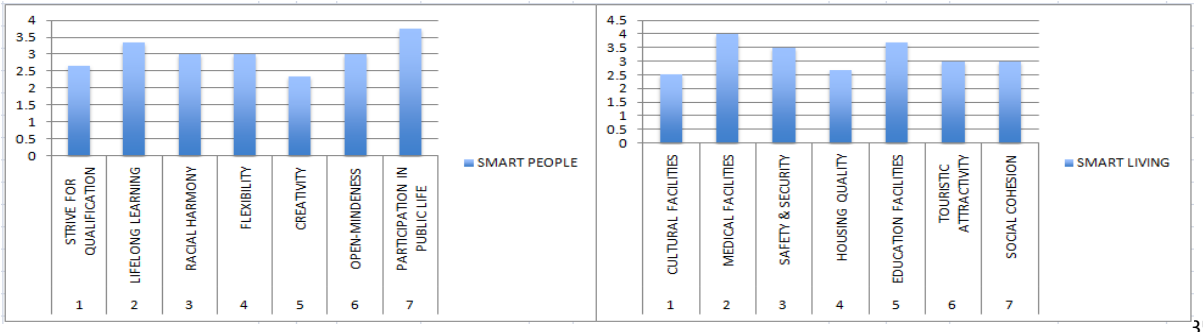
VARIABLES	RANGE	No.	(%)
YEAR OF RESIDENCE	<9 YEARS	20	20%
	10-19 YEARS	54	54%
	20-29 YEARS	16	16%
	>30 YEARS	10	10%
RESIDENCE STATUS	STUDYING	20	20%
	PERMANENT	54	54%
	WORKING	16	16%
	INFRA USERS	10	10%
QUALIFICATION	CERTIFICATE	19	19%
	DEGREE	75	75%
	MASTER	4	4%
	DOCTORATE	2	2%
MONTHLY INCOME	<1000	46	46%
	1000-3000	20	20%
	3001-6000	41	41%
	>6000	8	8%
KNOWLEDGE ABOUT SMART CITY	YES	74	74%
	NO	26	26%

Demographic profiles analysis of 100 respondents indicates that Subang Jaya population has a similar distribution of racial backgrounds and religious beliefs with the rest of Malaysia. It is an established new upper-middle-class township whereby 54% of respondents are permanent residents with 74% lives in the township less than 20 years. 75% of them possess degree qualification with 41% of them earn monthly incomes of RM 3001-6000. Internet savvy female youths of 19 to 30 years old forms the majority of respondents at 66%. The survey also shows 74% of respondents are aware of the smart city since the majority of them are already using the latest technology and embracing smart living in their daily lives.

Section B – To Identify the Attributes in Smart City Development.

This section which is to satisfy the first research objective provides statistical data of respondent's responses on attributes to indicate features of a smart city. This section divided into two subsections which respectively consist of the questions based on smart people and smart living features. There are seven (7) questions for each subsection. Smart people as the first subsection consists of questions regarding social features namely; 1) strive for qualification, 2) lifelong learning, 3) racial harmony, 4) flexibility, 5) creativity, 6) open-mindedness, and 7) participation in public life. Smart living as the second subsection consists of questions regarding infrastructure amenities namely; 1) health conditions, 2) safety and security, 3) education facilities, 4) housing quality, 5) tourism attractions, 6) cultural activities, and 7) social cohesion. Findings of this section using average means of maximum 5 are as shown in table 2;

Table 2: Attributes in Smart City Development

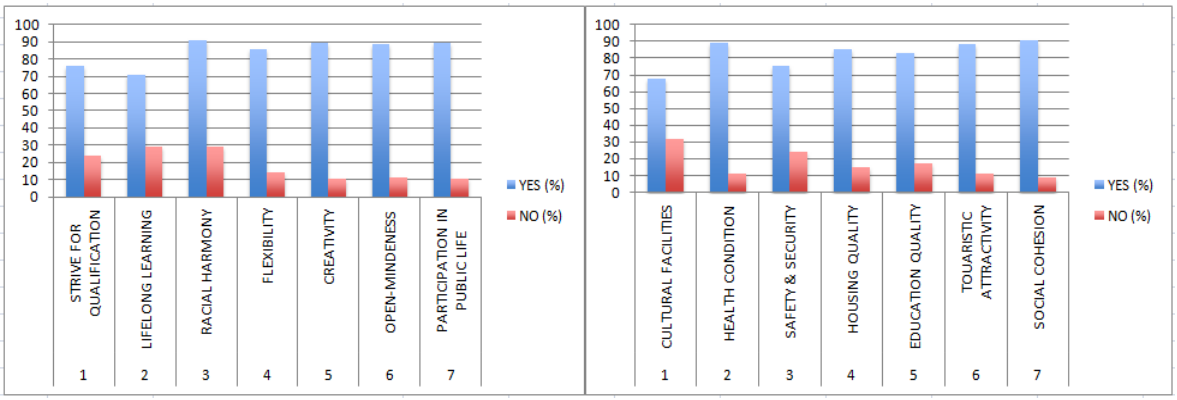


Findings of survey for this section show that smart people characteristics and smart living attributes available in Subang Jaya are at moderate level. The findings indicated that in term of smart people characteristics on "participation in public life" and "lifelong learning" is at high level. With the exception of "creativity" at the low attribute level, the rest of the attributes are at moderate level. In term of smart living only medical facilities is at high level. Consistent with the finding on smart people, cultural activities are at low level while the rest of activities for the smart living are at the moderate level. Problem of low level attributes for "creativity" and "cultural facilities" need to be addressed by the authorities. The positive side of the finding is that while "strive for education" is at the moderate level, pursue for "life-long learning" is at the high level of attribute which suggest positive community perception on acquiring new knowledge and lifestyle aspect of smart city.

Section C – To Identify the Public Participation in Achieving Better Social Standard Towards Smart City Development.

This section is to satisfy the second research objective which provides statistical data of respondent's responses on public participation in achieving better social standard towards smart city development. This section divided into two subsections which respectively consist of the questions based on smart people and smart living features. All seven (7) questions for each subsection under Section C used similar headings as Section B, arranged in chronological order to assist respondents in establishing relationships between social attributes and public participation aspects of smart city development. Findings for Section C based on 'Yes and No' answers by respondents converted into percentile in table 3;

Table 3: Public participation in achieving better social standard towards smart city status



Smart People **Smart Living**

Research analysis shows that communities in Subang Jaya are participating well in the development of the township as an emerging smart city. In term of smart people, at least 70% of respondents participate in activities organized towards achieving better a social standard for the communities. The findings indicated that the community have high level of attributes for being open-minded, flexible, and practice racial harmony in their daily life respecting the diversity of cultural background and religious

beliefs. In term of smart living, with the exception of appreciation of cultural facilities which are at moderate level, the remaining infrastructure amenities are highly patronized and appreciated by the communities. This proves that the communities in Subang Jaya are at high level of behavioral change encompassing aspects of smart people and smart living based on the public participation in achieving better social standard towards an emerging smart city development.

4.0 Conclusion

The study indicated that majority of respondents are familiar with the concept of "smart city" beyond the common definition of a city occupied with smart technologies which improve the service system provided by the public authorities. Analysis also indicated improved level of community perception regarding "smart people" and "smart living" attributes as the characteristic lies in the social aspects of the smart city system. The overall smart city social attributes in Subang Jaya are at moderate level while the appreciations for the attributes by the community are at high level. More efforts are needed from public authorities in collaboration with the communities to elevate the attributes which are at low and medium level to the high level in particular low social attributes for "cultural facilities". Improved level of education, disposable income and social awareness on community-based activities can promote higher level of appreciation and participation towards the social attributes in the making of Subang Jaya as an emerging smart city. This natural cycle chain of behavioral change encourages the social attributes of smart people who embrace smart living. Their eagerness for participation towards activities which promote better social standard should be quickly exploited by public authorities to elevate smart city attributes from moderate to a high level. The government initiatives for smart city status alone will not be fully effective without direct involvement from the communities as they are the one who will benefit from the eventual outcome. Successful attempt to make Subang Jaya as a smart city may trigger other new township in Malaysia to emulate similar model.

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