

CHAPTER II

THEORETICAL FRAMEWORK

2.1. Smart City Concept

The concept of smart city is defined in various contexts and manners. There are range of objectives and variants to development. It was conceived since 1994 and developed by the international organization European Union (EU) and Organization of Economic Cooperation for Development (OECD) as part of the innovation towards sustainable development goals in the ICT-driven world (Cocchia, 2014).

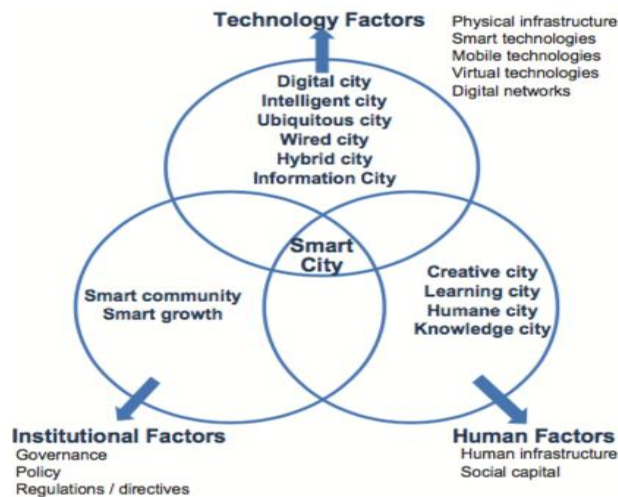
Hollands (2008) defined smart city as a “city labelling” phenomenon. For Nam and Pardo (2011), smart city has a multidimensional components such as technology, people and institutions, aligned with the core values of the integration of infrastructure, technology-mediated services, strengthening human infrastructure, governance for institutional improvement, and citizen engagement (Nam and Pardo, 2011).

Few studies have attempted to address the factors influencing the development of a smart city in relation to public governance, information technology, and e-governance, following six components: social, management, legal, technology, and sustainability (Joshi et al., 2016). D'Aniello, Gaeta, and Orciuoli (2017) address smart city through the interconnection among actors, key performance indicators, and standards of public organization. This interconnections of components are identified as follows: economy people, government (the administration), mobility, the environment and quality of life (Baldascino & Mosca, 2016). The term was interpreted into different field of activity; smart economy (competitiveness); smart people (social and human capital); smart governance (participation); smart mobility (mobility and ICT); smart environment (natural resource); and smart living (quality of life) (source?)

Smart city is intertwined with the capability and capacity to strengthen good governance, public policy, and intelligent people (source?). Therefore, the creation of smart city must be inspired by those factors and components in determining the real mechanism

of an effective smart city. The capability refers to the issues pertaining to the quality of life in urban areas, social problems as factor for a change affecting the ability of stakeholders to act and present functioning resources. Baldascino and Mosca (2016) argues that capability can measure the influence of policy for the development of smart city strategies (Baldascino & Mosca, 2016). Highlighting the three key factors influencing the creation of smart includes technology, people and institution (Nam & Pardo, 2011).

Figure 2.1. Key components of smart city concept



Sources: adapted from (Nam and Pardo 2011)

It is important to look into the connection between the factors and applications (Nam and Pardo, 2011). First,

technological factors can transform a city to a smart city through the significant use of ICT. However, technological infrastructure is not a sufficient component in building a functioning smart city (Baldascino and Mosca, 2016); (Nam and Pardo, 2011). This view refers to integrated technological network which provides ICT system to help the public organization on the alternative course of actions related to accessibility and availability of information system. Details of technological components of smart city should be complemented with network equipments and service oriented system. For example, internet-aided government is more capable to transform into an old government to new government.

Secondly, the important of human resource and education has implication to the process of sustainable development. It addresses the other factors such the roles of human actions, social capital, and literacy in smart city, where smart people as the main component of smart city. Several components of the human roles such human conduct, human subjectivity, and functioning human life are linked to the creation of a smart city (Vanolo, 2014). Hence, smart people are linked to the quality of life, improved public

participation, creativity, cultural, and public knowledge. Smart people are invested with norm and moral that can create certain way and address to building a smart city (Vanolo, 2014).

Third, the importance of institutionalization of ICT-aided government has implication to government structures, governmental powers, and regulatory process that impact to the firm of smart city. The assessment on regulatory powers will depend on how policymakers approached, assembled, and implemented in a particular setting. However, the local government's regulatory policy on ICT applications is changing the role of cities in bringing solutions, and how policies are being circulated and implemented. In other words, the presence of ICT-aided governmental support in governance is the main act in the implementation of smart city. Moreover, institutional structures enable smart city to be integrated in strategic support services and activities towards transparent governance, networking, and partnership (Nam & pardo, 2011).

This was corroborated by the study on the development of smart city through governance network (Palomo and Navio, 2017)

. Government network refers to the pattern of social relations and interaction among the actors. Governance network aims to create good partnership interaction through the following; formalized coordination pattern, network understanding, regulated rules to improve the ability of decision making process, consensus building and building informal relationships (Palomo and Navio, 2017).

Yet even within emerging model of smart city, growing concern is raised on the sustainability issues within the ambit of sustainable development. Ahvenniemi et al. (2017) asserts the significance of considering human capital in the development of smart city. The development of human resource and social capital leads to better service and infrastructure through participatory governance. Interestingly, smart cities bring together technology, government and society to achieve smart economy, smart economy, smart environment, smart people, smart living, and smart governance (Ahvenniemi et al. 2017); (Cocchia, 2014); (Travis, 2017); (Aelenei et al. 2016); (Garcia-Ayllon and Miralles, 2015); (Massana et al. 2017); (Holler et al. 2014); (Allwinkle and Cruickshank, 2011).

2.2. Acceptance and Use of Technology

The principles of community participation methods have been tried and tested in controversial determinations (Bull et al., 2008) and transportation planning (Bickerstaff and Walker, 2005). Sovocool (2014) notes that there are three benefits in engaging the society; firstly, democratic governance is enhanced since all citizens participate in the decision-making process. Secondly, communities are often more accustomed to the ethical problem of a situation, and thirdly, greater acceptability can often be achieved by involving those affected by the situation. Most relevant to society is a strong and emerging relationship between public involvement and learning, improving behavioral change (Bull et al., 2008). As found by Weblert et al (1995) in this study:

"...When citizens are engaged in working on mutually acceptable solutions for a project or problem affecting their community and private life, they become responsible citizens of democratic and democratic enforcement."

The concept of acceptance and use of technology is important, contributing to the urgent debate about the city's future. An industry develops around the vision of 'Smart City', estimated

to be worth more than that \$ 20 billion in annual market value by 2020 (Pike, 2013). But more are now arguing that this vision is flawed and will not provide the citizenship or economic benefits it claims. The idea of acceptance and use of technology and as co-creator refers to a rich intellectual background in both urban design and technology design. Digital culture has spawned collaborative code ethics, and there has been a tendency of application of thought and method from open source software development to other domains. This idea resonates with a tradition in town planning first articulated by Patrick Geddes at the turn of the 20th century, and held by Jane Jacobs in the 1960s when he demanded that the city's institutional planning make room for citizen's voice and views.

Citizens are apt to be more skeptical and cynical toward governments. At the same time, they are demanding more from the governments and want to be able to direct input on public issues that affect them (Scott, 2006). These developments pose higher requirement on public organizations to develop their e-government efforts. Citizen adoption of e-government for smart city has been defined in many ways by several researchers. Warkentin et al.

(2002) describe adoption as the citizen's intention to engage in e-government (smart city) for receiving and providing information and requesting government services. Gilbert and Balestrini (2004) refer to it as 'willingness' to use e-government services while Carter and Bélanger (2005) define e-government adoption as 'intention' to use e-government services. Kumar et al. (2007) take a different approach and describe e-government adoption as a multidimensional construct, including 'frequency of using e-government services', 'scope of usage', 'preference of the government website over other websites' and 'preference of the online medium over other mediums of transactions with government'.

Analyzing the acceptance of information technology, this study utilizes the the UTAUT theory. UTAUT (Unified Theory of Acceptance and Use of Technology) is one of the latest technology acceptance models developed by Venkatesh et al (2003). UTAUT combines the successful features of eight leading technology acceptance theories into one theory. The eight major theories incorporated in UTAUT are the theory of reasoned action (TRA),

the technology acceptance model (TAM), the motivational model (MM), the theory of planned behavior (TPB), the combined TAM and TPB, the model of PC utilization (MPTU) , innovation diffusion theory (IDT), and social cognitive theory (SCT). UTAUT proved to be more successful than using just one of the eight theories in explaining up to 70 percent of user variants. After evaluating all eight models, Venkatesh et al. found seven constructs that appear to be a significant direct determinant of behavioral intention or user behavior in one or more models.

The constructs are performance expectancy, effort expectancy, social influence, facilitating conditions, attitude toward using technology, and self-efficacy. After further testing, they found four major constructs that play an important role as a direct determinant of behavioral intention and use behavior, performance expectancy, effort expectancy, social influence, and facilitating conditions. While others are not significant as a direct determinant of behavioral intention. There are also four moderators: gender, age, voluntariness, and experience positioned to moderate the impact of the four major constructs on behavioral

intention and use behavior. Figure below shows the linkages between these determinants and these moderators.

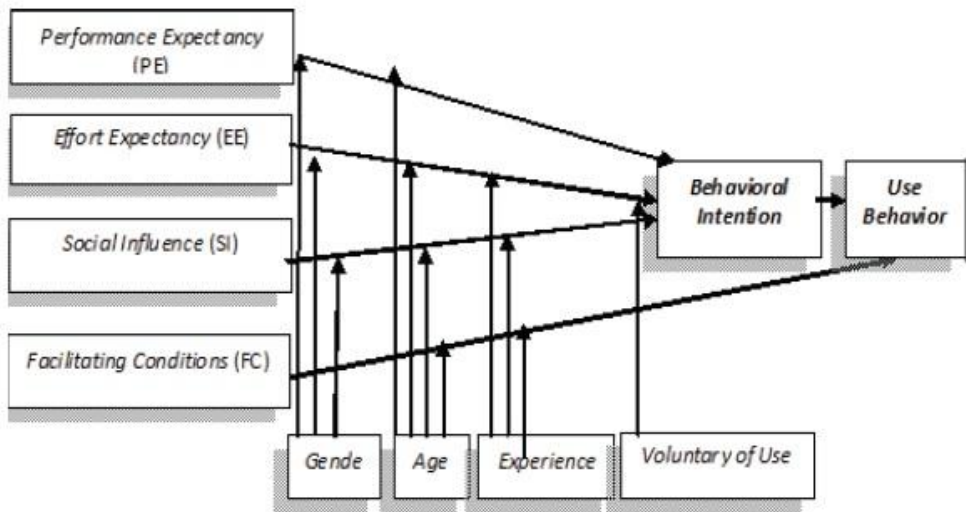


Figure 2.2. UTAUT Model 1 (Venkatesh, et al. 2003)

UTAUT conveys four key constructs: performance expectancy, effort expectancy, social influences, and facilitating conditions (Venkatesh et al. 2003). Performance expectancy refers to the degree to which an individual perceives that use of a new innovation can improve his/her performance. Effort expectancy measures the degree to which an individual perceives that the innovation will be easy to use. These two constructs are similar to those seen in TAM. Social influence refers

to the degree to which an individual perceives that an important person around him/her feels that he/she should use the innovation. Finally, facilitating conditions measure the degree to which an individual perceives that organizational and technical infrastructure exists to support the use of the system.

Williams and colleagues (2015) reviewed 451 articles to analyze UTAUT utilization. Of this sample, 407 articles simply cited the originating theory, 16 used UTAUT to employ non-quantitative methods, and 12 used a small number of the available UTAUT constructs. Only 16 researchers actually used and tested all UTAUT core constructs in full. Of these 16 studies, all provided statistical data for the independent constructs of UTAUT as per the originating theory. The studies were carried out in different countries across various fields (Al-Gahtani, Hubona, and Wang 2007; Curtis et al. 2010; Zhou, Lu, and Wang 2010).

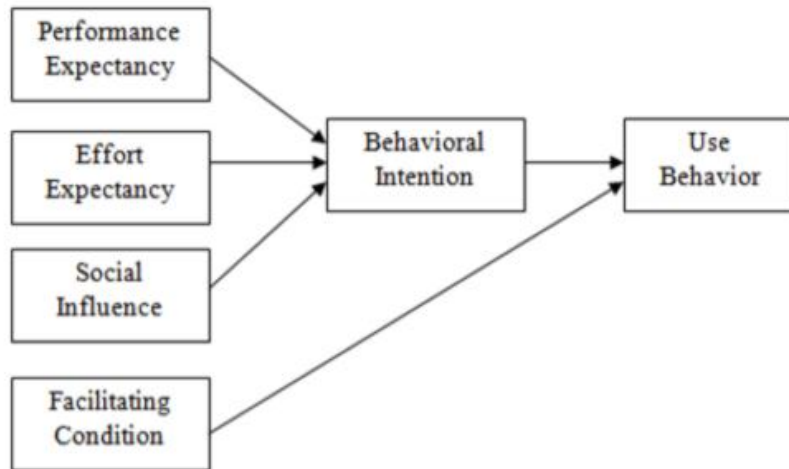


Figure 2.3. Model Research 2 of UTAUT (Venkatesh, et al. 2013)

Performance expectancy is a UTAUT construct aimed at measuring a person's confidence level that using a system can assist a person in achieving job performance (Venkatesh et al., 2013). Performance expectancy is a variable that can be referred to as the ability to gain significant benefits after using a system (Adenan, 2015). Performance expectancy is a representation of five constructs including perceived usefulness (technology acceptance model), external motivation (motivational model), work correlation (model of personal computer utilization), relative

advantage (innovation diffusion theory) and expectancy to the achievement (social cognitive theory) (Adenan, 2015).

Then, effort expectancy is the level of effort of each individual in the use of a system to support his work (Venkatesh et al., 2013). According to Adenan (2015), effort expectancy refers to how easily one thinks in using a system. Effort expectancy is a representation of three constructs including consciousness of easy to use (Technology Acceptance Model), systematic complexity (Model of Personal Computer Utilization) and operating simplicity (Innovation Diffusion Theory) (Adenan, 2015; Venkatesh et al., 2013). In the success of receiving a technology, Adenan (2015) mentions that the design of a system such as a virtual platform can allow users to navigate it easily or not. Davis (1989) in Chang (2012) found that an application is acceptable to its users when an app is easy to use.

Social influence is the degree to which one considers it important to others convincing themselves in using the new system (Venkatesh et al., 2013). Social influence refers to a person's feelings to feel that the person who is important to him thinks that

he should use an app (Venkatesh & Davis, 1996; Adenan, 2015). Social influence according to Venkatesh et al. (2013) is a representation of three constructs including subjective norms (theory of reasoned action, technology acceptance model and theory of planned behavior), public image (innovation diffusion theory) and social factor (model of personal computer utilization). Social influence depends on the influence of the environment, including volunteerism, and other contexts between the individual and the influence on the organization (Hartwick & Barki, 1994; Karahanna & Straub, 1999; Adenan, 2015). Moore & Benbasat (1991) in Chang (2012) posit that the use of a new technology is able to elevate the status of an individual in a social environment. Also, the behavior of individuals is affected by the way in which they believe others will see them as a result of using a technology.

Facilitating conditions is the level of one's belief that corporate and technical infrastructure are available to support the use of the system (Venkatesh et al., 2013). In addition, facilitating conditions are also included in a person's belief in the facility's environment including the range, the network and the availability

of devices to make a person's beliefs accept a technology (Thompson et al., 1991; Venkatesh et al., 2013; Ayu, 2014). Facilitating conditions are able to describe an individual's level in accepting a technology based on the support of facilities provided by organizations and technical devices that support the use of a system. The device may be a system used, training, manuals or other (Venkatesh & Davis, 1996; Adenan, 2015). Variable facilitating conditions are representations of three constructs, among others, control of conscious behavior (technology acceptance model and theory of planned behavior), promoting condition (model of personal computer utilization) and compatibility (innovation diffusion theory).

Behavioral intention, interest in the utilization of a system is the intention of the user using the system continuously assuming that they have access to the system (Venkatesh et al., 2013). Behavioral intention is defined as a measure of the strength of one's intentions to perform certain behaviors. In the basic concept of user acceptance models that have been developed, behavioral intention becomes the intermediate construct of perceptions of the use of

information technology and actual use (use behavior). The role of behavioral intention as a predictor of use behavior has been widely accepted in a variety of user acceptance models (Venkatesh et al., 2013). In several studies, Ayu (2014) on the acceptance of instant messenger application, Dwiratry (2011) regarding online shopping acceptance, and Kristoforus (2013) on behavioral analysis of educational information system usage at a university behavioral intention used as the last bound variable. Thus, the relationship between behavioral intention and use behavior is ignored. Bendall-Lyon & Powers (2004) in Leoman (2014) states that, behavioral intention is the result of customer satisfaction processes. Consumer behavior is not only related to tangible goods, but also includes the use of services, activities, experiences, and thoughts (Hoyer and Macinnis, 2008; Leoman, 2014). Behavioral intentions can be measured The behavioral intention scale measures the likelihood that consumers will act in a certain way in the future, such as buying more products or recommending them to friends (Hoyer and Macinnis, 2008; Leoman, 2014).

Based on the figure above, here several indicators explanation about someone use technology:

1. Performance expectancy

Performance Expectancy is defined as how high a person is believes that using a system will help him to gain performance benefits at his job. The indicators used to measure Performance Expectancy are:

- a. The usefulness of perceptions is how far a person believes that using a particular system will improve the performance of his work.
- b. The relative advantage is how the capabilities of a system improve the performance of individual work.
- c. The results outcomes are a relation to the consequences of behavior. Based on empirical evidence, they are separated into performance expectations and personal expectations.

2. Effort expectancy

Effort Expectancy is defined as the level of convenience associated with the use of a system. The indicators used to measure Effort Expectancy are:

- a. Ease of use of perceptions is how far one believes that using a system will be free from difficult attempts.
- b. Ease of use is how far using a perceived innovation is easy to use.

3. Social Influence

Social influence is defined as the extent to which an individual perceives interests believed by others who will influence it using a new system. The indicators used to measure Social Influence are:

- a. The subjective norm is the perception of a person that most people who matter to him think he or she should or should not do the behavior.
- b. Social factors are the internalization of a person about the subjective culture of the reference group and the specific interpersonal agreement that a person undertakes with others in specific social situations.

4. Facilitating Condition

Facilitating Conditions are defined as the extent to which one believes that organizational and technical infrastructure is available to support the system. The indicators used to measure Facilitating Conditions are:

- a. Perceptual behavior control is a reflection of perceptions of internal and external constraints on behavior and includes self-belief, resource facilitation conditions, and technological facilitation conditions.
- b. Facilitating conditions are objective factors in the environment in which the observers agree to make an action to be easy to perform, including the provision of computer support.

5. Behavioral Intention

Behavioral Intention is defined as a person's desire to perform a certain behavior. Indicators used to measure Behavioral Intention are: attitude considerations are considerations of attitudes toward behavior and normative considerations to use the technology in the future.

6. User Behavior

Use behavior is defined as the user's actual use of a technology. The indicators used to measure Use Behavior are: the intensity of use is to describe how often users use information technology.

On other hand, there are some research in Indonesia using UTAUT model, for example Sedana (2009) with the title Utaut Application Model To Understand Acceptance And Use Of Learning Management System Case Study: E-Learning Expension Sanata University Dharma showed that most respondents have a level of performance expectancy, effort expectancy, social influence, facilitating conditions, and use behavior is high, while the level of behavioral intention majority of respondents classified as moderate. Spearman correlation test results indicate that performance expectancy, effort expectancy, social influence and facilitating condition each have positive and significant correlation (p -value <0.01) on behavioral intention. Similarly, behavioral intention has a positive and significant correlation with the use

behavior (p-value <0.05). While facilitating condition has no significant correlation with the use behavior.

In addition, Putra & Ariyanti (2014) with the title The Influence of Factors in Modified Unified Theory of Acceptance and Use of Technology 2 (UTAUT 2) on Prospective Users' Intention to Adopt Home Digital Services PT. Telkom in Surabaya, has analyze that Based on the results of the study it can be seen that all exogenous constructs have positive integrity towards endogenous constructs. Hedonic motivation, social influence, price value, facilitation conditions, business expectations, and performance expectations has an effect of 0.260; 0.194; 0,138; 0.116; 0.094; and 0.090. Moderate variable age (time) moderate influence facilitation conditions and price value towards intentions (behavioral intention) user candidate to adapt Home Digital Services in Surabaya. Moderate type moderation variables genitals (gender) only moderate adsp performance expectations, social influence, and price value towards intentions (behavioral intention) user candidate to adapt Home Digital Services in Surabaya. Changed UTAUT2 in this study can predict

54.8% behavioral intention use of Home Digital Services PT. TELKOM in Surabaya.

2.3. Smart Citizen

The idea of smart citizen is an important, contributing to the urgent debate about the future of the city. An industry is developing around the vision of 'Smart City', estimated to be worth more than that \$ 20 billion of annual market value by 2020 (Pike, 2013). However, now debating this flawed vision and will not give citizenship or economic benefits that they claim. Thought of smart citizen as a co-creator refers to a rich intellectual background in both technology design and urban design. Digital culture has spawned collaborative code ethics, and there has been a tendency to apply thought and methods from open source software development to other domains. This idea resonates with the tradition in urban planning that was first articulated by Patrick Geddes at the turn of the 20th century, and held by Jane Jacobs in the 1960s when he demanded that institutional city planning make room for the voices and views of citizens.

The smart citizen is a platform to generate participatory processes of people in the city. Connecting data, people and knowledge, the purpose of the platform is to serve as a node to build productive and open indicators, and distributed tools, and after that the collective development of the city for its own inhabitants. Smart citizen needs to be realized by members of the government and also the entire community to build a good country with good governance as well and not left behind by the current era. Here are the smart citizen criteria (Handiawan, 2017):

- 1) Active, to run a good government, of course needed an active community, not passive. If viewed from the viewpoint of smart city is the community support and active use what has been applied by the government for the community.
- 2) Be Cooperative, the community must also support government programs in creating a good country. Such as, report if there is a complaint through an application that has been made by the government, obey the rules of the government program. This means that applications made

by the government are useful for the community, and not in vain.

- 3) Self Control, to be a good society of course we must be able to control ourselves. A good society is when the community knows what its position is and does what it should (norms of rights and obligations). For example, when there is a program to implement smart city, then if the wise community is done is trying to understand what is smart city and support the government because for the benefit of society in general.
- 4) Express Opinion, which should be able to express and channel if the opinions. Whether it's against fellow community and the government. Because the government requires the input or opinion of others as well for the more developed cities and become more advanced than ever.

Besides this, the smart citizen factors are revealed by Giffinger et al. (2007) stated that there are 7 factors that can be said that the community is a smart citizen smart citizen, namely:

- 1) Level of qualification (level of qualification), what is meant is that the community has a good life qualification, such as supporting the existence of technology, able to adapt to the changing times of an increasingly modern.
- 2) Affinity to long life learning (meaning for lifelong learning), meaning that with the changing times that are so modern it is expected that intelligent people willing and able to always learn to face the increasingly modern life.
- 3) Social and ethnic plurality (social and ethnic culture), with the changing era that increasingly sophisticated and modern, it is expected that the intelligent community still hold firmly the culture it has from the time of the ancestors, so that although there is a change in technology but social and cultural identity there is.
- 4) Flexibility, intelligent community capable of flexible, able to adjust, able to adapt to existing developments.
- 5) Creativity, with the sophistication of increasingly modern technology, intelligent people are able to think and do

creative things that can bring the city to be better and more innovative.

- 6) Open mindedness, not only the government is required to be open or transparent, but from the society is expected to be open in any aspect especially in terms of services provided by the government in order to achieve synergy between government and society.
- 7) Participation in public life, this is very important because without the participation of smart city community will not be realized. For example reporting complaints against programs run by the government, even with infrastructure.

Table 2.1. The characteristic of Smart Citizen

Behavioral Intention	User Behavior
Affinity to long life learning	Active
Open Mindedness	Flexibility
Social and Ethnic Plurality	Participation in public life
Level of Qualification	Be Cooperative
	Express opinion
	Self Control
	Creativity

Source: Data compiled by the author (Fridayani, 2018)

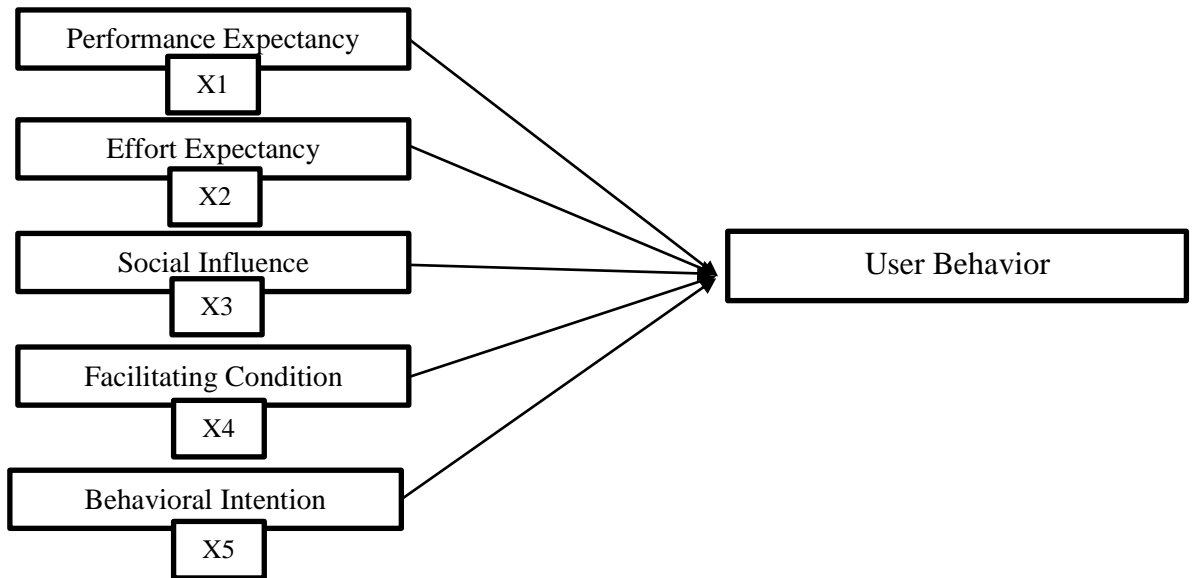
The results of the literature review above proves that smart city is important to realize a prosperous society. Many studies in several countries including Indonesia which states that ICT is very influential on the realization of smart city. Besides that, government, environment, and life also influence the realization of smart city. Quality and special attention to the city environment, education level, multimodal accessibility, and using ICT for public services correlate with the wealth of the city, this encourages to achieve sustainable urban development and a better city. The presence of ICT supports the realization of smart city and sustainable development.

Therefore, to realize the concept of smart city, need to evolve not only the concept of ICT and government but also includes the concept of Smart Citizen. Such as disseminating new technology which will be used in city problem so that can give solution in the problem. The existence of intelligent citizens will be easier to realize the smart city.

2.4. Research Model

As mentioned previously, the research employed the Theory of UTAUT as its core theory in examining the factors that form the use behavior. The research however have modified Venkatesh Theory of acceptance and use technology that there are 4 indicators influence which are performance expectancy, effort expectancy, social influence, and facilitating condition. In addition, the research also employed the behavior intention to intervening variable of use behavior. For clearer illustration, the Figure 2.4 below presents the Research model.

Figure 2.4. Research Proposed Model



Source: This is compiled by the author (Fridayani, 2018).

2.5. Conceptual Definiton

2.5.1. Smart City Concept

From several the theories above, Nam and Pardo (2011) argued that smart city there are three components. First is technology that consist of Physical infrastructure, smart technologies, mobile technologies, virtual technologies, digital networks. Second is human factors that consist of human infrastructure and social capital. Last is institutional factors that consist of governance policy and regulation. Beside,

Monfaredzadeh and Krueger (2015) smart city as the new strategy for economic, social and ecological sustainability for infrastructure. Smart city can lead to network of innovation, creative partnership, capacity building, which follow technical, social, environmental, and cultural developments (Deakin *et al.*, 2016).

Therefore from the definition and concept above, the smart city could be future concept designed to assist various things in people's lives and implement technology based system especially in the effort to manage resources more efficiently, and provide easy access to information to the public. The conceptual basis is the use of digital data and large scale information technology systems for urban planning and management. Moreover, the important component to implement smart city are technology, human resources, and institutional factors.

2.5.2. Acceptance and Use of Technology concept

The concept of acceptance and use of technology according to Weblar (1995) in Bull *et al.* (2008) is when

citizens are engaged in working on mutually acceptable solutions for a project or problem affecting in their community and private life, they become responsible citizens of democratic and democratic enforcement. Additionally, acceptance and use of technology is a platform to generate participatory processes of people in the city, connecting data, people and knowledge. Furthermore, based on the UTAUT theory, Venkatesh *et al.* (2013) smart citizen could be measured. Analyzed by several indicators which are performance expectancy, effort expectancy, social influence, and facilitating condition. Behavioral intention could be influenced by performance expectancy, effort expectancy, and social influence. Whereas, the use behavior will be influenced by facilitating conditions.

Accordingly, the smart citizen could be understood by the theory of Venkatesh *et al.* (2013) that smart citizen is people who could accept the technology changes quickly and positively, then people will be more productive with easy and convenient

access. Additional, to analyze the smart citizen through the intensity the people in use the technology.

Then, based on the theory there are several indicators to analyze the citizen perception in using technology for smart city, namely:

1. Performance expectancy

Performance Expectancy in use technology on sleman smart citizen 2021 is defined as how high a person is believes that using a system will help him to gain performance benefits at his job. The indicators used to measure Performance Expectancy on citizen behavior of using technology on Sleman smart regency 2021 are:

- a. The usefulness of perceptions in use technology of Sleman Smart Citizen is how far a person believes that using a particular system will improve the performance of his work.
- b. The relative advantage in use technology of Sleman Smart Citizen is how the capabilities of a system improve the performance of individual work.

- c. The results outcomes are a relation to the consequences of behavior. Based on empirical evidence in use technology of Sleman Smart Citizen, they are separated into performance expectations and personal expectations.

2. Effort expectancy

Effort Expectancy in use technology on sleman smart citizen 2021 is defined as the level of convenience associated with the use of a system. The indicators used to measure Effort Expectancy are:

- a. Ease of use of perceptions is how far one believes that using a system will be free from difficult attempts.
- b. Ease of use is how far using a perceived innovation is easy to use

3. Social Influence

Social influence in use technology on sleman smart citizen 2021 is defined as the extent to which an individual perceives interests believed by others who will influence it using a new system. The indicators used to measure Social Influence are:

- a. The subjective norm is the perception of a person that most people who matter to him think he or she should or should not do the behavior.
- b. Social factors are the internalization of a person about the subjective culture of the reference group and the specific interpersonal agreement that a person undertakes with others in specific social situations.

4. Facilitating Condition

Facilitating Conditions in use technology on sleman smart citizen 2021 are defined as the extent to which one believes that organizational and technical infrastructure is available to support the system. The indicators used to measure Facilitating Conditions are:

- a. Perceptual behavior control is a reflection of perceptions of internal and external constraints on behavior and includes self-belief, resource facilitation conditions, and technological facilitation conditions.
- b. Facilitating conditions are objective factors in the environment in which the observers agree to make an

action to be easy to perform, including the provision of computer support.

5. Behavioral Intention

Behavioral Intention in use technology on sleman smart citizen 2021 is defined as a person's desire to perform a certain behavior. Indicators used to measure Behavioral Intention are: attitude considerations are considerations of attitudes toward behavior and normative considerations to use the technology in the future.

6. User Behavior

Use behavior in use technology on sleman smart citizen 2021 is defined as the user's actual use of a technology. The indicators used to measure Use Behavior are: the intensity of use is to describe how often users use information technology.

2.5.3. Smart Citizen

Smart Citizen is a smart society, which can accept technology changes quickly and positively, so people will be more productive with easy and convenient access. The smart

citizen factors are revealed by Giffinger et al. (2007) stated that there are 7 factors that can be said that the community is a smart citizen, namely:

- 1) Level of qualification (level of qualification), what is meant is that the community has a good life qualification, such as supporting the existence of technology, able to adapt to the changing times of an increasingly modern.
- 2) Affinity to long life learning (meaning for lifelong learning), meaning that with the changing times that are so modern it is expected that intelligent people willing and able to always learn to face the increasingly modern life.
- 3) Social and ethnic plurality (social and ethnic culture), with the changing era that increasingly sophisticated and modern, it is expected that the intelligent community still hold firmly the culture it has from the time of the ancestors, so that although there is a change in technology but social and cultural identity there is.
- 4) Flexibility, intelligent community capable of flexible, able to adjust, able to adapt to existing developments.

- 5) Creativity, with the sophistication of increasingly modern technology, intelligent people are able to think and do creative things that can bring the city to be better and more innovative.
- 6) Open mindedness, not only the government is required to be open or transparent, but from the society is expected to be open in any aspect especially in terms of services provided by the government in order to achieve synergy between government and society.
- 7) Participation in public life, this is very important because without the participation of smart city community will not be realized. For example reporting complaints against programs run by the government, even with infrastructure.

2.6. Operational Definition

The following research is presented in the form of some indicators about the perception smart citizen in use technology.

The operational framework as follows:

Table 2.2. Citizen Perception Indicators in Use Technology

No	Independent Variable (X)	Indicators	Dependent Variable (Y)
1.	Performance Expectancy	1. Usability perceptions 2. Relative profits 3. Expected outcomes	User Behavior 1. User's actual use of a technology 2. Intensity of use
2.	Effort Expectancy	1. Convenience use of perceptions 2. Ease of use	
3.	Social Influence	1. Subjective norms 2. Social factors	
4.	Facilitating Condition	1. Control perceptions of behavior 2. Conditions of facilitation	
5.	Behavioral Intention	1. Attitude Considerations 2. A person's desire to perform a certain behavior	

Based on the indicators above, the following indicators explanation about the utilization of technology:

1. Performance expectancy

Performance Expectancy is defined as the extent of the person's belief that using a system will help him/her to gain

performance benefits at his/her job. The indicators used to measure performance expectancy in the use of technology in Sleman Smart Regency are:

- a. The usefulness of perceptions in use technology of Sleman Smart Citizen is how far a person believes that using a particular system will improve the performance of his work.
- b. The relative advantage in use technology of Sleman Smart Citizen is how the capabilities of a system improve the performance of individual work.
- c. The results outcomes are a relation to the consequences of behavior. Based on empirical evidence in use technology of Sleman Smart Citizen, they are separated into performance expectations and personal expectations.

2. Effort expectancy

Effort Expectancy in the use of technology is defined as the level of convenience associated with the use of a system. The indicators used to measure Effort Expectancy are:

- a. Ease of use of perceptions is how far one believes that using a system will be free from difficult attempts.
- b. Ease of use is how far using a perceived innovation is easy to use.

3. Social Influence

Social influence in the use of technology is defined as the extent to which an individual perceives interests believed by others who will influence it using a new system. The indicators used to measure social influence are:

- a. The subjective norm is the perception of a person that most people who matter to him think he or she should or should not do the behavior.
- b. Social factors are the internalization of a person about the subjective culture of the reference group and the specific interpersonal agreement that a person undertakes with others in specific social situations.

4. Facilitating Condition

Facilitating Conditions in the use of technology is defined as the extent to which one believes that organizational and

technical infrastructure is available to support the system. The indicators used to measure facilitating conditions are:

- a. Perceptual behavior control is a reflection of perceptions of internal and external constraints on behavior and includes self-belief, resource facilitation conditions, and technological facilitation conditions.
- b. Facilitating conditions are objective factors in the environment in which the observers agree to make an action to be easy to perform, including the provision of computer support.

5. Behavioral Intention

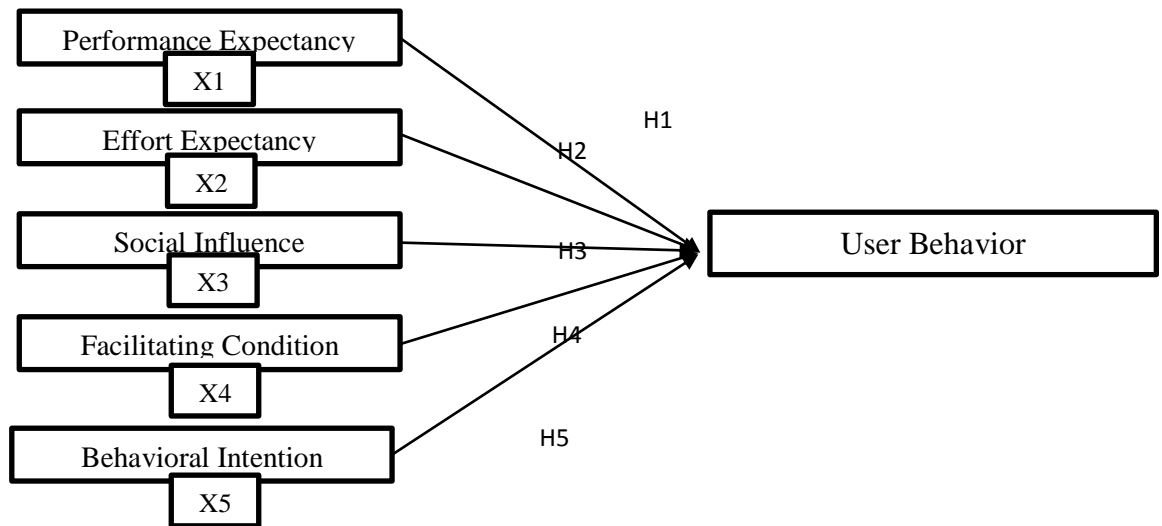
Behavioral Intention in the use of technology is defined as a person's desire to perform a certain behavior. Indicators used to measure behavioral intention are: attitudes toward behavior and normative considerations to use the technology in the future.

6. User Behavior

User behavior in the use of technology is defined as the user's actual use of a technology. The indicators used to measure user

behavior is: the intensity of how often users utilize information technology.

2.7. Research Framework



2.8. Hypothesis

- H1 :** The performance expectancy has a significant effect on user behavior.
- H2 :** The effort expectancy has a significant effect on user behavior.
- H3 :** The social influence has a significant effect on user behavior.
- H4 :** The facilitating condition have a significant effect on user behavior.
- H5 :** The behavioral intention has a significant effect on user behavior.