Section 1. Demography and ethnography

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SEMARANG SMART CITY GOVERNANCE MODEL

Abstract. Problems and challenges in the globalization era require a city having a smart solution in solving increasingly dynamic and heterogeneous problems. But as the concept of smart cities develops, each region has its own concept and way of solving the strategic issues of the city in different ways, if the challenges and problems of different regions will also give rise to different smart city concepts based on the region situation and conditions. This can be understood because the smart cities concept in Indonesia that can be a pattern to be a guideline for all regions does not yet exist and big cities concept in the world is also different as well as dimensions vary. Therefore, during the time development, the concept of Semarang Smart City needs to be reconstructed following the situation and urban conditions faced. This study aims to find out the right reconstruction concept in smart city governance in Semarang City so that it can be used as a concept to answer various things related to smart city governance comprehensively. The method used is a qualitative method with a descriptive and comparative approach, data collection use interviews, observations, and FGD. Based on this study, it was found that the Governance of Semarang Smart City compare the declaration of smart cities in 2013 presented many differences. The differences that exist show that the condition of solving strategic issues is more subtle and measurable. The factors that support the implementation of Semarang Smart City for the period 2013–2020 are formed 7 factors, namely leadership factors, public policy, E-Gov / SPEB, Institutional Relations, Social Communities, Stakeholder Interaction and Religious Aspects. From these factors give rise to new current factors that can support the implementation of smart city governance in the future, namely there are factors of the Industrial Revolution 5.0, The Concept of New Order (post-pandemic), Patterns of Cross-Functional Relations. The concept of Smart City governance used by local governments in Indonesia is the smart city governance

model from the study that has accommodated factors affecting on the smart cities' dimensions in the future, as well as not only support smart city governance based on ICT but also non-ICT based on sustainable development goals in order to prosper the community.

Keywords: Smart City; Management System; Semarang City; Globalization Era; and Strategies Issues.

I. Introduction

The situation and condition of a city cannot be separated from the dynamic process of factors or elements that affect it in the regional autonomy era. This era of regional autonomy made many of the once centralistic authorities dicentric. This causes the role of local governments in this case districts and cities to be high because in real terms that directly overshadow the population in a region. On the basis of the implementation of regional autonomy and the rapid development of globalization plus the growth of information technology in all life lines, the complexity of urban problems will be more challenges and problems faced in the future and more heterogeneous compared to past situations and conditions.

The population growth takes various problems that is oriented onto the lost of basis function infrastructure in order it is able to decrease pleasure feeling and life quality (Gil-Garcia [8]; Gil-Garcia et al. [13]; Nam & Pardo [8]). In the other side, this social problem no less complicated in their level and complexity (Gil-Garcia et al. [13]; Hara et al. [16]). Some experts argue that the population may not be a threat to the city, but the consequences of changing economic and technological power force the city to face competition and the burden of intercity competitiveness (Giffinger et al. [11]; Lazaroiu & Roscia [20]). Those Challenges to competitiveness and sustainable development simultaneously impact quality of life issues in cities, such as issues relate on housing, economy, culture, social and environmental. To achieve a good position, cities need to identify strengths and opportunities and ensure competitive advantage over cities of other levels (Lazaroiu & Roscia [20]). The strategic issues of the city that have been known have been handled, in the future will arise new strategic issues or old issues able to reappear due to increasingly heterogeneous urban development.

The government as a development policy maker as well as a development manager have to be able to expand people's access to resources aiming to realize the welfare of their people. Various matters related to basic services, social protection, availability of infrastructure and government services and other services that are in accordance with the authority become the government's responsibility for the survival of urban communities. Based on this condition, the availability of various public services is a responsibility that must be intervened by the government to improve living standards and reduce various development problems.

Nowadays, people are increasingly modern in urban areas, have a myriad of expectations, such as a comfortable living and work environment, the existence of adequate public areas, and the ease of managing all forms of public services. For this reason, the concept of *Smart Cities* is a highlight discussion and continues to be echoed in various cities in the world, including in Indonesia. For the Indonesian context, Smart Cities are cities that have the capability to manage all resources effectively and efficiently in solving urban problems with innovative, integrative, and sustainable solutions to improve the life's quality (Pratama [30]). This issue is also a solution for local governments in highlighting various problems that are often found in the city they lead.

Many comparisons about the implementation of Smart Cities in cities in the world that can be used as the best implementation such as Singapore (examples of neighboring developed countries), India (examples of large population countries such as Indonesia) and America (examples of developed and influential countries in the world). According

to the study from (Veselitskaya et al. [34]) of the Russian University stated that the city has become a key element in the national administrative system that shapes the future appearance of the earth. From the results of their study, identified drivers and obstacles to smart city development. Those Common factors for all cities contributing to development are advanced infrastructure, widespread use of ICT, citizen involvement in urban development, as well as increased public and private partnerships. The barriers to development are conflicts of interest of the city government, citizens and businesses; information security issues. According to (Calder [6]) stated that Singapore is not only a smart country that is adept at providing high levels of national welfare and security at minimal cost to its citizens, but also smart cities that create livable urban environments by featuring quality housing, home ownership, easy and efficient transportation from one place to another. place, and impressive innovation in resource management and environmental protection. Singapore is able to focus on these issues more intensely and efficiently than most nation-states.

In addition, its institutions have unusual coordination mechanisms, such as EDB, and a lack of stimulation, which make for a broad and integrated policy approach that synergizes with the rapid advancement of the Digital Revolution. In addition, the research by (Hall et al. [15]) Brookhaven National Laboratory, Upton, New York, America states that in the long-term vision of Smart Cities, systems and structures will monitor their own condition and make their own improvements, as needed. The physical environment, air, water, and surrounding green spaces will be monitored in a non-intrusive manner for optimal quality, thus creating a better, cleaner, efficient, and safer living and working environment and offering these advantages within the framework of the most effective use of all resources.

As in developed countries, the concept of smart cities in Indonesia is indeed being encouraged by several Ministries or State Institutions. Unfortu-

nately, there is no generic regulation that regulates this smart city in Indonesia. Even every institutional in the Central Government defines and describes this smart city in a different perspective according to the authority of the affairs it has. There is not yet a single word on the concept of smart cities that can be a national reference for the region. Even regions when creating or drafting smart city master plans use different dimensions of smart cities.

In Indonesia some major cities that are developing the concept of smart cities include: Jakarta, Surabaya, Bandung, Makassar, Tangerang, South Tangerang, Medan and others including Semarang City. They are not only metropolitan cities that initiated smart cities concept for the area, but also medium cities and small towns did not miss initiating this concept. Through the smart city acceleration program by the Ministry of Communication and Information, the Movement Towards 100 Smart City Program, so that many cities continue to develop this concept in succeeding this program. In this program, smart cities concept is classified out in 6 dimensions, namely: *smart economy, smart people, smart government, smart mobility* and *smart living*. These six dimensions are expected to be the answer to various problems faced by the city or district, but in its implementation, it must still be adjusted to local wisdom by looking at the characteristic conditions of the region and the needs of the people in the region. In addition to the Ministry of Communication and Information, the Ministry of Home Affairs through Government Regulation No. 28 on Regional Cooperation (Peraturan Pemerintah (PP) Nomor 28 Tahun 2018, 2018) also participated in rolling out smart city programs. Where the ministry wishes in the final stages of Smart City, a city able to become a competitive city based on technology with the support of synergy of cooperation between local governments and stakeholders.

The development of smart cities in Semarang city is not only to provide bureaucratic efficiency by utilizing information and communication technology

(ICT) but also how to build a society by making ICT and non-ICT facilities as a supporting factor or enabler. In the end, a new era of urban and district development as well as its development in Indonesia in recent years gave rise to smart city programs as a concept in urban management. The trend of smart cities has grown widely and adopted many cities although there has been no mutual agreement on it. (Gil-Garcia [12]) believe that intelligence should be seen as a continuous set-in which government officials, communities, and stakeholders think about and implement initiative that observe to make cities smarter, a better place to live and work. According to (Caragliu et al. [7]) mentioned that Smart cities are if cities invest in human and social capital as well as traditional (transportation) and modern communication (ICT), infrastructure that encourages sustainable economic growth and high quality of life, with prudent management of natural resources, through governance participatory.

Smart City successful can be achieved when the city places a strong foundation against possible factors that include institutional, technological, and human governance (Angelidou [2]; Anindra et al. [3]; Chourabi et al. [8]; Gil-Garcia et al. [13]; Myeong et al. [26]; Nam & Pardo [27]). The governance component of institutions is important in Smart Cities. In addition, leadership factors are the main key to the success of smart cities. In this study will be explained related to leadership factors, public policy, government factors, and urban social. According to (Zygiaris [36]) mentioned that many regional leaders struggle with urban transformation to create healthy environmental, social, and economic conditions through the effective use of innovation with stakeholders that are aligned with the city's identity and human resources. It is also supported by the orientation of policies and strategies in smart cities, policy making towards proactive and impactful policies both locally and globally as well as interpreting social inclusiveness, economic growth, and sustainability with new managerial paradigms at all levels of decision making (Visvizi

et al. [35]). The revolution of government towards E-Government in the past has brought significant changes to the electronic management of the region so that it is only developed and adjusted. Ultimately E-Government where these studies have investigated how new technologies can be used to strengthen the quality and effectiveness of government (Benjamin & Danziger [5]; Gil-Garcia [8]; Hoetker & Fountain [18]; Meijer & Bolívar [25]). Stakeholder interaction between departments will provide greater opportunities for resources and integrated coordination (Conduit & Mavondo [10]). Another important thing is that smart cities will evolve and lead to community-centered technologies with the goal of being resilience and sustainable urban development (Marsal-Llacuna & Segal [23]).

The supporting factors of this smart city are close to what Semarang City has done in the implementation of smart cities. Where the concept of participatory governance is echoed in the slogan "Moving Together" by inviting regional development stakeholders namely 4 P (Government, Entrepreneurs, Residents and Journalists) to participate in the city's development to realize the desire to "Build a Commonly Owned City". Therefore, Semarang Smart City as delivered by (Albino [1]; Barrionuevo et al. [4]) applied all available technologies and resources in a smart and coordinated way to develop urban centers that are at once integrated, livable, and sustainable. Through various programs both ICT-based and non-ICT. The concept of Smart City rolled out by the Mayor of Semarang City is quite unique, because it uses various ways or methods that are compiled and its realization invites all urban development stakeholders from the neighborhood level (convinced to build a commonly owned city) to the international realm (large-scale program) through the slogan "Moving Together".

The uniqueness of Semarang Smart City is the character of smart city cases that have faster stages and development processes in implementing themselves as smart cities. Therefore, it is certain that each

region determines programs and activities in solving the strategic issues of the city in different ways, if the challenges and problems of different regions will also give rise to the concept of smart cities that are different based on the situation and conditions of each region. Even then not necessarily all regions in resolving regional strategic issues by using smart cities concept. This can be understood because the concept of smart cities in Indonesia that can be a guideline for all regions does not yet exist and the concept of big cities in the world is also different. Related to this, this study will review and analyze to introduce the right concept of smart city governance in Semarang City so that it can be used as a concept to answer various things related to smart city governance comprehensively.

II. Research method

The research method used in is a qualitative research approach. According to (Collector & Module [9]; Sugiyono [9]) explained that in qualitative methods are also the same basically, meaning data is also a source of theory that explains phenomena that are then developed also in research during its work collecting data. The Consideration of using qualitative research methods is to get an in-depth illustration of the phenomenon or problems that actually occur in this research. The data used is primary and secondary data. As for the data collection methods used in the study are as follows: interviews, observations and FGD. The technique used in the selection of research informants is the *purposeful sampling* technique, in which the informant is determined intentionally and selected on the basis of certain considerations. The considerations used to establish informants are the phenomena to be observed and the informant's understanding of the governance of Semarang Smart City. Informants comprise stakeholders of Semarang's Smart City development. In this research will be held a step of interview activities with internal and external government parties, stakeholders, academics, practitioners / experts. The analytical tools used are *Comparative Before and After* analysis as well as descriptive analysis /Explanatory (McNabb [24]).

III. Result and discussion

The challenges of increasingly broad and competitive local government, positioning *good governance* are the build upon of all cities in various countries. This is evidenced by the increasing number of governments able to creating breakthrough innovations through the concept of smart cities. Along with the times, various cities also do not desire to left behind in developing various facilities relate on community service. The results of the study in detail in order to achieve the expected research objectives. The research results in this chapter contain of Semarang Smart City governance before and after it was declared, they are classified on Semarang Smart City analysis used for the completion of urban strategic issues as well as the analysis factors that support the governance of Semarang Smart City in the period 2013–2020 which will be outlined following the formation of smart governance concepts in the future.

3.1 The History of Semarang Smart City

The history of Smart Cities begins from the situation of urban conditions whose problems are increasingly complex and heterogeneous. One of the causes is the increasing number of residents in urban areas that have implications for government services. The Rapid and growing urbanization is one of the phenomena in the urban era. The motivation of cities to pursue smart city visions are multifarious. The vision of Smart Cities is rapidly evolving as it need to create a city that can be a place to live, work, study and play comfortably, safely, and sustainably. This is because each city has its own set of problems that run the whole from infrastructure to community necessity that wish to be addressed. At the same time, the emergence of new information and communication technologies enables increased democratization of people's production capacity and empowers communities to participate in the dynamics of urban development innovation through the concept of smart cities.

– **Before the Semarang Smart City Declaration**

One of city in Indonesia that has implemented the concept of smart cities is Semarang City. In 2013, the concept of smart cities was first declared in Semarang City under the leadership of Semarang Mayor named Mr. Hendrar Prihadi. Before the declaration of Semarang Smart City in 2013, Semarang City Government already had a Masterplan Information Technology (MPIT) in 2010–2015. In the MPIT, the master plan presented consists of plans: Applications, Infrastructure and Human Resources, in which it is explained about the problem of ICT conditions existing five years and solutions formulated to solve the problem of governance from the ICT side. It proves that before the declaration in 2013, Semarang City Government had started preparing plans for a smart city. But the plan has not led to various dimensions of smart cities, because only in the smart government dimensions and ICT-based smart city support things that have been implemented.

Various things about public services that must be provided as the necessity of urban communities become various challenges, such as: government services, education, health, settlements, transportation, security and other social problems. These problems cannot be solved quickly and precisely if they still use conventional solutions. Urban conditions that existed at that time gave the need for collaboration of urban ecosystems into the concept of *"Be Smart City"*. In this concept, all regional development interests are involved to create the city transform to be better.

– **After The Semarang Smart City Declaration**

Starting in 2013, Semarang City has declared the Concept of Semarang Smart City under the leadership Mayor named Mr. Hendrar Prihadi. In 2017, Semarang City became one of the first 25 districts / cities to be selected to participate in the Movement Towards 100 *Smart Cities* to encourage the creation of 100 smart cities in 2019. The concept of smart cities in Semarang City has experienced its development annually and will still continue to grow. Smart City development in Semarang city was done after the declaration in 2013. But before the declaration from 2003 to 2013, Semarang City had made development phases towards smart cities or so-called in the transition period from *E-Government* to *E-Government* and *Digital Government Service*.
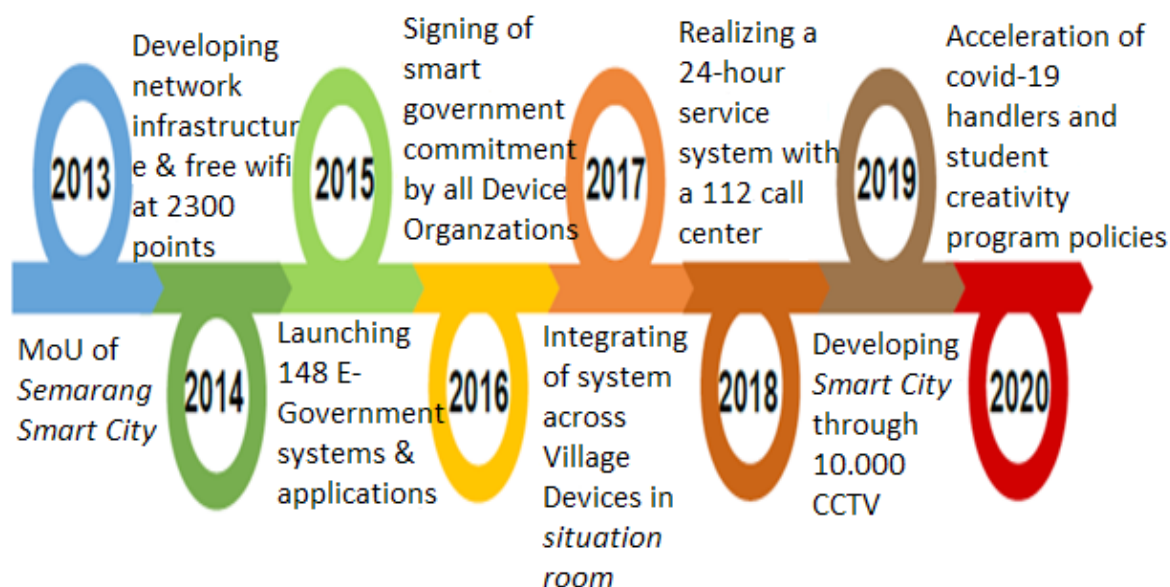

Figure 1. Timeline of Semarang Smart City Implementation

In contrast to the conditions in previous years, after entering the beginning of 2020 precisely starting from March there are several conditions and changes that are felt, namely corona virus transmission and the enactment of policies by Semarang City Government in dealing with COVID-19 pandemic. If looking at the case of COVID-19 pandemic from the regional resilience framework, the leadership and institutional dimensions have a very important role in handling the pandemic. Every step and all forms of pandemic management require adequate leadership and institutional involvement, because without it all countermeasures become ineffective. Therefore, Semarang City Government prepares an institutional structure that is very important for the handling of pandemics.

Based on the description conditions before and after the declaration can be observed that these declarations of smart cities present many differences, especially in the use of ICT in the industrial revolution from 4.0 to 5.0. The differences show that the conditions for the implementation of development are much better after the declaration of smart cities.

3.2 Implementation of Semarang Smart City in The Last Five Years

Policy implementation becomes a very important stage in the policy structure, because through this procedure the policy process, especially smart city policies as a whole can be influenced by the success rate or not achievement of goals. According to (Van den Bergh et al. [33]) mentioned that the view that smart cities become a typical phenomenon discussed in local government agencies and municipal associations. Currently, Semarang City has a Semarang Smart City Policy contained in Semarang Mayor's Regulation No. 26 in 2018 on Semarang Smart City Masterplan, the policy refers to Long-Term National Development Plan abbreviated as RPJPD in the period 2005–2025 and RPJMD in the period 2016–2021. The priority policy in RPJMD was completed with Semarang Smart City Master Plan. In essence, Semarang Smart City is a derivative of the implementation program from Regional Long Term Development Plan abbreviated as RPJMD Semarang City in 2016–2021 where each RPJMD mission is lowered into RPJMD strategies.

The target of Semarang Smart City so far has been in accordance with the achievements of Semarang City RPJMD in 2016–2021 and Masterplan of Semarang Smart City. These Programs related to smart city innovation will continue to be carried out by Semarang City Government until it reaches the sustainable Semarang Smart City. This is in line with (Nam & Pardo [27]) opinion that smart cities connote representing urban innovation in public policy and city management as well as technology in their region. A smart city is not as a status of how smart a city is but as an attempt by a city to make itself smart. In the end, Semarang Smart City policy contained in Semarang Mayor's Regulation No. 26 in 2018 is also adjusted by looking at the condition of urban characteristics or local wisdom of Semarang City.

Urban development, especially in Semarang City continues to grow and develop continuously. This is triggered by the increasing rate of urbanization. A number of major cities in Indonesia including Semarang City face challenges and strategic issues that include a high percentage of people living in slums, expansion and dominance of the informal sector, lack of basic urban services (especially water, sanitation, and energy), unplanned suburban expansion, socio-political conflicts over land, vulnerability to high natural disasters, and the city's poor mobility system. To be able to act as a trigger for economic and social development, A city must be able to handle these challenges through good and effective urban planning as well as governance. Today, many developing countries do not yet have good urban planning and design strategies. Urban structuring practices tend to be inadequate to address endemic and expansive challenges, therefore governments should have adequate capabilities to facilitate agreements between citizens now and in the future.

In the face of the future challenges, smart cities have to be able to solve all aspects of strategic issues

and problems within their cities. This is reinforced by urban theory according to (Marot [22]) mentioned that in urban studies it covers almost all aspects that may come from urban experiences. Smart city initiatives are expected to solve all issues of urban problems and community necessity in this region.

Based on the problem related by the adjustment of regional conditions, global, national and regional issues, the strategic issues of Semarang City can be classified into 10 Mayor Priority Programs, such as follows:

1) Bureaucratic Reform Index;
2) Poverty Rate;
3) Open Unemployment Rate;
4.) Contribution of trade and services to the Gross Regional Domestic Product;
5.) Investment Value;
6.) Contribution of Processing Industry category to Gross Regional Domestic Product;
7.) Human Development Index;
8.) Percentage of flooded and rob areas;
9.) The rate of economic growth;
10.) Gender Development Index.

Based on the mayor's priority program above to overcome the dynamics of urban issues and develop solutions to urban problems. This is what encourages Semarang City Government every year to create smart city innovations as well as producing an urban environment that supports community's lives. This is supported by the statement from (Turgel et al. [32]), the concept of smart cities can overcome the crisis situation and take the urban environment to a new stage of development. One of them is creating a city governance management system and several services as well as elements into an integrated digital city ecosystem that fulfill the city community's necessity, businesses, authorities, and ever-evolving environmental conditions.

3.3 *Those Factors Management of Semarang Smart City Governance 2013–2020*

Genuinely, the concept of smart cities is also able to apply human resources, social capital, and modern telecommunication infrastructure to realize sustain-able economic growth and high quality of life, together with prudent resource management through community participation-based governance. So that the concept of smart cities can be understood through a framework or scope that is influenced by several factors. In this sub-chapter will be explained the factors that support the inclusion of smart cities formed based on the thinking of the author. These factors include leadership factors, public policy factors, government factors (development relations and E-Gov / Electronic-Based Government System), urban social factors (social community, stakeholder interaction, religious aspects).

– **Leadership**

The Perceptions regarding smart cities need to understand the condition and situation of smart cities. Therefore, the condition of the city is very complex from developing the city itself so that from the complement we can see how to build a development ecosystem that will determine whether smart urban planning programs able to succeed or not. By paying attention to complexity, one of the keys can be seen from leadership.

At the time of the leadership of Semarang Mayor named Mr. Hendrar Prihadi has solved some critical problems in Semarang City. He also often makes direct visits to the field to observe the condition of existing problems. But it needs to be further understood environmental policies has to be more effective and responsive to the community, and directly addressed. This is in line with the research conveyed by (Zygiaris [36]) that many regional leaders are struggling with urban transformation to create healthy environmental, social, and economic conditions through the effective use of innovation with stakeholders that align with the city's identity and human resources. Thus, the way of solving urban problems carried out by the Mayor of Semarang City will be improved by using information technology as a solution. This is in line with (Giltinane [14]) in Leadership Theory the need to understand leadership styles able to help to be more effective in leader

roles, requiring collaboration with or management of others as well as considering leadership thinking and practice by identifying strengths and weaknesses. Therefore, as a regional leader, it is necessary to create a new order concept (post-pandemic) in the future as a form of mitigation efforts that are carried out quickly and appropriately so that the city is able to survive pandemic conditions and immediately get out of the crisis.

– **Public Policy**

Public policy is part of the government's system. Implementation of public policy will be effective when measures and objectives can be understood by individuals responsible for policy performance. So far, the public policy rolled out in Semarang Smart City has been in accordance with the direction of smart cities although not all are in accordance with community expectations. In the future, the policies of Semarang smart city programs must be able to answer the targets and program itself come from smart city implementation policies and implemented by all parties including the community rationally.

COVID-19 pandemic is a challenge for local governments, especially the Semarang City Government which is facing its effects from the COVID-19 pandemic. In an effort to deal with COVID-19 in Semarang City, The Government issued a policy to suppress the spread or transmission of COVID-19 in the people of Semarang City. This policy factor able to roll out new factors in the form of policies related to the concept of a new order (post-pandemic). The policy in question is Restriction of Community Activities (PKM). Conceptually, PKM is different from Large-Scale Social Restrictions (PSBB) especially in terms of leniency in activities. Some types of restrictions include school activities, office activities, activities in public places, religious activities, socio-cultural activities, and the use of public transportation. This is because the people of Semarang city have different characteristics with areas such as DKI Jakarta that apply PSBB, especially from the characteristics of its people. Not all residents of Semarang city have enough savings (either money or food) to survive if policies such as PSBB to lockdown even applied in Semarang City. Given that this pandemic caused a fairly severe shock for the community and the region, so the selection of the right policies will help the region increase its resilience in facing pandemic.

It cannot be denied that the COVID-19 pandemic and its effects will also be accommodated as a renewal of dynamics process of formulating government policies. The policy formulation created by Semarang City Government is in line with the statement from (Visvizi et al. [35]) conveyed that in the orientation of policies and strategies in smart cities, policy making towards proactive and impactful policies both locally and globally as well as interprets social inclusiveness, economic growth, and sustainability with new managerial paradigms at all levels of decision-making. Therefore, if public policy is carried out optimally the impact is very good for the development of Semarang City as the community able to access all development information, increase efficiency, effectiveness and performance and community participation are increasing.

– **E-Government/Electronic-Based Government System**

Along with the era of the Industrial Revolution 4.0 surely information and communication technology (ICT) becomes something that has to be implemented so that public services and government management in Semarang City Government are not left behind or involved in the progress's era. The implementation of Electronic-Based Government System (SPBE) will affect the readiness of various things that should be done, both the readiness of the Government and its people. According to (Indrajit [19]) conveyed that *E-Government* as a new interaction mechanism between the government and the public as well as other interested circles, involving the use of information technology (especially the internet) with the aim of improving the services quality. So that *E-Government* becomes the implementation of electronic-based government to improve the

quality of public services efficiently, effectively and interactively.

With regard to the definition of Electronic-Based Government System (SPBE) Application which is one or a set of computer programs and procedures designed to perform the duties or functions of SPBE Services, Semarang City Government has also distinguished applications in two parts. The first is that the general application is the same SPBE Application, standard, and used for use by the Ministry / Central Government Agency and the Provincial Government with the Semarang City Government. Second, special applications are SPBE applications that are built, developed, used, and managed by Semarang City Government to fulfill special necessity that are not other agency needs. But for its implementation, the integration of Electronic-Based Government System (SPBE) application development in Semarang city government is coordinated by the Communication, Information and Communication Office of Semarang City. More than 400 applications have been owned by the Semarang City Government with the main domain on the (www.semarangkota.go.id) and all regional device organizations that make applications, all of which are installed on the Semarang City Government Portal. This portal has services with 4 languages (Indonesian, Javanese, Chinese, English).

Basically, the delivery of public information services related to data integration in Semarang City has been listed in Semarang Mayor Regulation No. 11 in 2020 concerning the Implementation of One Semarang City Data. This is indicated by the existence of *"Semar Satata"* as a one-data system which is a seriousness form of the Semarang City Government in carrying out the data integration process. One Semarang City Data becomes the government's data governance policy to produce accurate, up-to-date, integrated, and accountable data, as well as easily accessible and shared between central agencies, regional devices through the fulfillment of data standards, metadata, data interoperability, by using reference codes and master file.

Figure 2. Portal one data Semarang City

– **Institutional Relation**

Smart city institutions will oversee the sustainability of development programs that have been initiated by local governments. This institution falls into the dimension of government, where support from the government and policies for government is needed as the basis of the design and implementation of smart cities. The institutional structure of this smart city is to conduct analysts, integrators, evaluators, and align information technology relationships along with governance (Oktaviyani & Nugraha [28]).

In order to control Semarang Smart City has been formed Development Team with the involvement of Semarang City development stakeholders (Penta helix). All Semarang City Government (OPD) organizations will take an important role in the development of Semarang Smart City. It is understood that the concept of strengthening development, re-setting development and field development should be carried out by policymakers. The biggest challenge of all operationalization is the coordination, integration, synergy and collaboration of all urban development stakeholders.

The relationship between development is one of the factors that support the implementation of smart city governance. This is in line with the statement from (Hasibuan & Krianto Sulaiman [17]) where smart city governance will describe the structure of formal and informal relations to manage affairs

through a collaborative approach *(join-up)* between government agencies, the business world, and the community.

– **Community's Social**

In creating a global society, competitive, as well as smart and livable cities, each region has to be set the right policies by preparing the concept of quality future city development through the concept of smart city governance. The development of smart cities in Semarang already has a concept that involves all elements of *stakeholders*, both from government, public, entrepreneurs and journalists (4P) "Moving Together" in line with the principles of *Sustainable Development Goals (SDGs)*.

– **Stakeholder Interaction**

In supporting the realization of smart cities, a collaboration is needed that gathers various stakeholders and communities. Smart city governance is expected to provide a wide innovation space to solve various problems faced by the government, society, business people, and various stakeholders. Stakeholder interaction is needed to synergize all city development policies and governance, especially in Semarang City. Stakeholder interaction able to make it easier to integrate data spread across sectors and build information throughout the city as well as sharing and exchanging information and data (Li et al. [21]). Information disclosure able to align the interests and balance of risk sharing among all parties in realizing smart cities. In the future, there will be a pattern of cross-functional relationships to create interactions between stakeholders that able to solve urban problems to harmonize smart city development policies and governance in Semarang City.

– **Religious Aspect**

Religious harmony is a very valuable capital for the survival of the entire community. This is where the importance of relations between religious people as a communicative relationship that is not only limited to religious figures but also the involvement of community leaders and government bureaucratic of-

ficials. Friction in the interests of the community is sometimes also charged with religious issues.

Various pluralism in Semarang City makes the Government facilitate by forming an interfaith forum to support work programs directed at the creation of harmonization with others towards the welfare of inner birth. The activities of the interfaith forum in Semarang City is a special attraction for interfaith relations activists in Indonesia generally. Semarang city government is very interested in localizing friction that may occur by involving various elements of society including religious figures or leaders. The role of religious leaders and community leaders is required to participate in solving this problem. To accommodate various interests related to interfaith relations and also relations between community leaders across ethnicities so is interfaith, in Semarang City there are already various forums so are community harmony.

3.4 Smart City Governance Concepts in Future

The concept of Semarang Smart City Governance is inseparable from national policies that strengthen and force local governments to realize community-oriented governance. This is what was initiated by Semarang City Government so that it needed to strengthen the management capacity as well as coordination system of integrated government implementation in and between agencies, especially in Semarang City Government. In addition, the importance of strengthening Smart City Governance policies is comprehensive and integrated. Therefore, to realize smart city concept, the governance needs to prioritize the provision of effective and efficient public services accompanied by increasing the capacity of the apparatus so as to provide excellent and optimal services to the community.

Aspects of governance able run optimally by improving public service performance, city management and the effectiveness of regional leadership strategies. The concept of smart city governance needs to prioritize the provision of effective and efficient public services accompanied by increasing the capacity apparatus so as to provide excellent and optimal ser-

vices to the community. Smart city governance is not only a technological issue alone, but also should learn smart governance as a complex process of institutional change on the vision of regional governance itself (Meijer & Bolívar [25]). Innovations linked to developing urban governance approaches that able to create cities smarter (Nam & Pardo [27]). Smart City-based development not only prioritizes efficiency and effectiveness in bureaucracy based on information and communication technology (ICT), but also uses non-ICT-based urban infrastructure and services in building communities in areas such as economy, environment, mobility, and governance as well as other areas related to urban problems. Therefore, a smart city governance concept is needed that can be implemented in various regions.

VISSION AND MISSION	Regional Strategy Issues	Smart City Governance Factors	Smart City Dimension	Smart City Indicator	Smart City Programs / Activities	Smart City Achievement Targets

Smart City Governance Model

RPJPD (Based on Milestone)

RPJMD (According to the periodization of the regional head for 5 years)

Empirical Condition Area

Effecting Factors

Regional Strategy Issues

1.City Theory
2.Smart City Theory

Smart City Concept

1. Leadership
2. Public Policy
3. E-Governance/ STBE
4. Institutional
5. Relation Community Society
6. Stakeholder Interaction
7. Religious Aspect

Smart City Dimension

Smart City Indicator and Target

1.Dimension from Ministry of Communication and Information Technology
2.Garuda Smart City Model

Findings of Current Factors That Affect

Implementation of Smart City Governance

1. Revolution Industry 5.0
2. Concept of a New Order (Post-Pandemic)
3. Cross-Functional Relationship Patterns
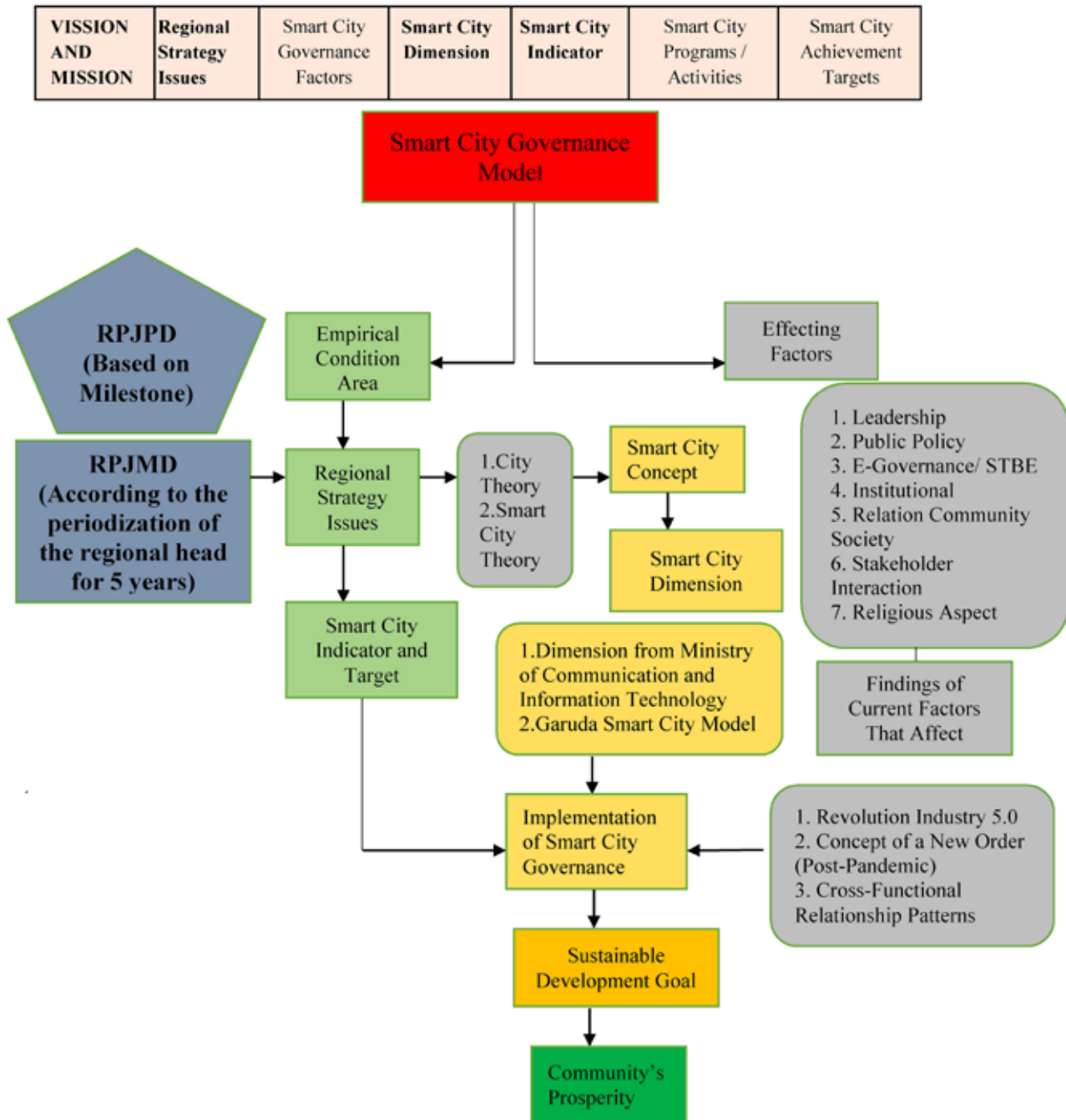
Sustainable Development Goal

Community's Prosperity

Figure 3. Smart City Governance Concept Model

The concept of smart city governance should pay attention to the empirical conditions of the area as well as factors that affect it. Regional empirical conditions are more effective at solving strategic issues of the region. The issues of the city's strategy do not need to be examined further because it is already listed in Regional Long Term Development Plan (RPJMD) and takes from the Long-Term National Development Plan (RPJPD) *milestone* results in the year concerned. In addition, strategic issues are solved with Urban Theory and Smart City Theory, so that the concept of smart cities will emerge. In the framework of smart city governance, basically strategic issues already have clear and measurable indicators and targets. The concept of smart city governance follows 2 patterns, namely from the Ministry of Communication and Information and Garuda *Smart City Model* (GSCM). Based on these 2 dimensions, the implementation of smart governance has to be based on ICT- non-ICT and pay attention to sustainable development goals. Thus, the indicators and targets of the implementation of smart city governance have the main goal of prospering their people.

The results of the current analysis conditions that give rise to new factors for the development of smart city governance in the future show that the research arguments on smart city governance conducted today are not a drop of previous theories but instead provide the implementation of theories on how to implement the desired smart city governance. Prior to the study, researchers had found 7 factors that influence smart city governance. But after seeing the current condition emerged new factors for the development of smart governance in future. Previously existing factors include leadership factors, public policy, E-Government/Integrated Electronic-Based Government System (SPBE), institutional relations, social society, stakeholder interaction and religious aspects. Finally, smart cities can bring up new factors according to current and future conditions that did not exist before, here are 3 new factors are as follows:

1) Industrial Revolution 5.0;

2) Concept of a New Order (post-pandemic);
3) Cross-Functional Relationship Patterns.

IV. Conclusion and suggestion

Semarang city in organizing a smart city program takes a specific object, namely Urban Strategic Issues. Smart Cities are used to support the resolution of urban problems that become strategic issues. Furthermore, these strategic issues are taken from the 5 (five) year development regulation document, namely from the Regional Medium Term Development Plan (RPJMD). The governance of Semarang Smart City before and after it was declared by Mayor officer in 2013 showed that there are many differences that underlie these differences. As an overview before there is a smart city concept has already a solution to urban problems that are done but the planning and completion is still partially not comprehensive as well as ICT support has not been high. The conclusion that before and after the declaration of smart cities presents many differences, especially in the use of ICT from industrial revolution 4.0 to 5.0. The differences show that the conditions for the implementation development are much better after smart cities declaration.

The factors that support the implementation of Semarang Smart City for the period 2013–2020 are formed 7 factors, namely leadership factors, public policy, E-Gov / SPEB, Institutional Relations, Social Communities, Stakeholder Interaction and Religious Aspects. From these factors give rise to new factors that can support the implementation of smart city governance in future, namely there are factors of the Industrial Revolution 5.0, The Concept of New Order (post-pandemic), Patterns of Cross-Functional Relations.

The concept of Smart City governance that can be used by local governments in Indonesia that smart city governance model from this study has accommodated factors that affect the dimensions of smart cities in future, as well as not only support smart city governance based on ICT but also non-ICT. Smart city governance model results of this research analysis can be used by all Local Governments in Indonesia, especially regencies or cities, considering that it

has combined regulations that should be fulfilled by local governments in regional development planning and various theories of urban and urban smart cities academically as well as factors that affect smart city governance. Finally, smart city governance model is not only implemented in a certain period, but also pays attention to the fulfillment of the Sustainable Development Goals (TPB) which result for the welfare of the people of an area.

This model is effective and can be run by local governments, because to implement smart city governance begins by looking at Regional Long Term Development Plan (RPJMD) that should be made by the Local Government and in accordance with the regional period head. So that synergy and synchronization with the challenges and opportunities that will be faced by the region in the next five years in solving regional strategic issues and in the leadership of regional heads whose mass vision is used as the main intake of Regional Long Term Development Plan (RPJMD) preparation.

4.1 Suggestions

a. In fulfilling the improvement of public services and the development of community demands, through smart city programs, innovations are needed to be made in accordance with global developments by regional device organizations of Semarang City which have tended to be weak compared to private or non-governmental.

b. Smart City Governance is a sustainable development program that aims to provide convenience in order to achieve the desired development targets. Therefore, the stages of smart cities should be measurable and have clear targets as well as able to fulfill the Sustainable Development Goals (SDGs), so that various indicators of smart cities should be relevant to SDGs programs. Do not let smart city programs stop just because they feel the city is smart enough.

Moreover, the key to smart city success is sustainable development.

c. In smart city governance there are major actors that should be a concern, namely Human Resources (government and community apparatus). This is because the community is the *End-User* of smart city programs and government apparatus as the main part of smart city management of human resources. Capacity building for the apparatus and the community needs to focus more attention on the readiness and implementation of smart city implementation.

d. In the framework of smart city governance, regulations are needed in accordance with local wisdom so that in its implementation there are references or guidelines that can bind all parties in smart city governance. So that all lines in an area run in the same path. It is ineffective if the smart city program runs without any regulations attached to it.

e. There are several things that can be developed in the process of developing smart cities aiming to support several dimensions of smart cities, namely:

a) The use of various mobile applications for the ease and accessibility of information systems,

b) Digitalization of Industry (goods and services) through cyber marketing and digital mapping guide and,

c) Natural disaster management with an integrated emergency response system,

d) Utilization of Solar System and renewable energy alternatives in order to be environmentally friendly and energy independent,

e) Restrictions on the use of paper (paperless) as a form of office digital transformation and the use of digital signatures for the optimization of the signatures quantity regardless of time and place.

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