

Measuring Smart City Implementation to Improve the Quality of Public Services in Jambi City

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ABSTRACT

The city of Jambi is part of the movement towards 100 smart cities in 2017, along with Bandung and Sleman. The purpose of this study is to measure the implementation of smart cities to improve service quality in Jambi City by using a two-dimensional smart city approach, namely; smart government and smart living. Furthermore, the research method used in this study is a qualitative approach with the help of Nvivo 12 Plus software. The type of data in this study uses primary and secondary data obtained from social media, online media, and journal literature. The results of the study explain that access to public information disclosure can still not be said to be transparent, it is also strengthened that the rules regarding smart city councils still do not exist. Explaining and reaffirming the 2018-2023 RPJMD in chapter IV Jambi City faces problems and challenges in implementing smart cities and e-government, with the main problems not yet optimal implementation of the Electronic-Based Government System (SPBE), and smart city supporting regulations. It is a record of the government how to optimize all innovations that have been implemented, some applications do not run smoothly, and even are not active which are only made to meet needs without considering sustainability. Smart city comes hand in hand with the principle of Sustainability development. It is a record of the government how to optimize all innovations that have been implemented, some applications do not run smoothly, and even are not active which are only made to meet needs without considering sustainability. Smart city comes hand in hand with the principle of Sustainability development. It is a record of the government how to optimize all innovations that have been implemented, some applications do not run smoothly, and even are not active which are only made to meet needs without considering sustainability. Smart city comes hand in hand with the principle of Sustainability development.

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I. Introduction

The city becomes the center of urbanization of society, which causes population growth to continue to increase rapidly[65], This is a challenge for the city government to create innovations to improve the comfort of city residents[50]. The occurrence of urbanization, especially on a large scale, has an impact on socio-economic development to the environment at the city to state level[99]. Facing the complex problems of cities, corporations, non-profit organizations and local governments together with communities use ICT to incorporate more technologies, improve living conditions, and protect the environment[26].

The idea of bureaucratic reform to realize good governance by adopting IT-based public services, as well as the need for service innovation by the government[16] [20]. IT implementation is an alternative for the city government to provide a fast response and the right solution in dealing with the difficulties of a growing city[88]. The way cities regulate policy making and urban expansion is changing as a result of information and communication technologies[95]. When the concept of smart city comes to solve various problems in urban context, such as mobility, public safety, energy efficiency, and emergency response, smart city has emerged as a key component.[66].

In fact, the growing population living in cities has presented many problems for the government, which requires new policies and methods to improve the quality of urban life. Smart city projects were

then created to address growing concerns about effective resource management by leveraging evolving communication and sensor technologies[74]. The term smart city is a new and transdisciplinary term. Recently characterized as innovations that improve urban life in terms of people, life, economy, mobility, and governance, mostly through information and communication technology[10].

Empirical applications of smart cities reveal the same heterogeneity. Smart cities cover all sectors of urban life, including tourism, commerce, industry and agriculture, as well as logistics, research and education. All urban infrastructure is affected by smart city programmes, including public and private buildings, factories and transportation services. Knowledge management in urban environments must be supported by strong information and communication infrastructure, and the sustainability of smarter cities may have a positive impact on water, energy and mobility[25].

Smart city projects are sometimes described as a panacea that is able to solve all urban problems, such as pollution, local public transportation problems, injustice, economic crisis, and so on. However, neither the smart city vision nor effective smart programs and activities generally meet aspirations[64]. The main difficulty is the ability to efficiently build urban areas while improving the quality of life of residents, the environment, people and technology all of which must be designed in an integrated and sustainable manner in the city of the future[68].

Given that no two cities are alike in terms of characteristics and challenges, as well as the demands and expectations of their inhabitants, and financial resources are not sufficient to complete all the necessary smart projects. It is very difficult to identify measures that better respond to specific local needs without a complete strategy on the objectives of the smart city policy plan[89]. Indonesia is one of the leading countries in developing sustainable and livable smart cities. However, before the government can launch smart city efforts, it must first assess the readiness of each target city[58].

In Indonesia, certain cities are pursuing the smart city concept, as the Central Government encourages Local Governments to use ICT to improve social welfare[54]. The three pillars that IBM uses to understand smart cities are planning and management services, infrastructure services, and community services [36]. Through the 6 pillars of a smart city, namely Smart Governance, Smart People, Smart Living, Smart Mobility, Smart Economy, and Smart environment urgency [10]. The smart city concept, which is a big issue in big cities around the world, encourages the active role and participation of the community in city management using a citizen centric approach so that there is a more dynamic and close interaction between residents and service providers, in this case the local government.

The city of Jambi is part of the movement towards 100 smart cities in 2017, along with Bandung and Sleman. Bandung city has become the center of attention for smart city research because its success is proven by national and international achievements[1] [33] [45] [92]. This research can be a reference for the government in making policies, related to the shortcomings and obstacles as well as the achievements of implementing smart cities in Jambi. The novelty offered in this study measures the implementation of smart cities in Jambi City from the two dimensions of smart government and smart living which are basic services. Therefore, the research objective is to measure the implementation of smart cities in Jambi City, from two dimensions, namely, smart governance and safe living based on Jambi City Regional Regulation Number 1 of 2019 concerning Smart City Implementation, the parameters used belong to Bondy Cohen.

II. Methods

The city becomes the center of urbanization of society, which causes population growth to continue to increase rapidly[65], This is a challenge for the city government to create innovations to improve the comfort of city residents[50]. The occurrence of urbanization, especially on a large scale, has an impact on socio-economic development to the environment at the city to state level[99]. Facing the complex problems of cities, corporations, non-profit organizations and local governments together with communities use ICT to incorporate more technologies, improve living conditions, and protect the environment[25].

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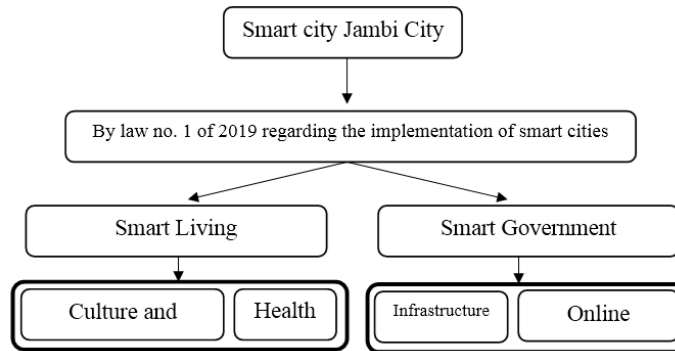


Figure 1 Theoretical framework

III. Result and Discussion

Urgency The smart city master plan serves as an important foundation and guide for the evolution of current and future city concepts. This master plan assists the government in determining laws, regulations, and urban development directions and priorities[4]. Smart City Masterplan, as a specially designed plan based on the vision, identity, and character of the city, makes it easier for the government to describe the typical urban problems[44]. The smart city master plan also ensures that the transition process towards smart city ideas, both at the planning, implementation, and monitoring and evaluation stages, goes according to plan.[93].

The Jambi City Regional Regulation emphasizes that through the implementation of a smart city, it is intended as a framework for implementing regional autonomy and assistance tasks, in addition to the need for efficient and effective facilities and infrastructure services. Jambi City Regulation Number 1 of 2019 concerning the Implementation of Smart City in article 1 paragraph (9) defines a smart city as "a smart city concept designed to assist various community activities, especially in an effort to efficiently manage existing resources, as well as provide easy access to information to the public, to anticipate unexpected events in advance"[55].

Based on the regulation, the implementation of a smart city in Jambi City is intended so that resources can be managed efficiently and effectively, in order to overcome various city challenges by using innovative, integrated and sustainable solutions in the field of infrastructure in providing government services, public services, healthy and clean environmental services, economic services and so on, in order to improve the quality of life of its citizens and provide a sense of satisfaction within the framework of realizing a happy and prosperous Jambi City. While the purpose of implementing a smart city is to realize Jambi City as a smart city that helps people manage existing resources efficiently and provides convenience in accessing the right information to the community and anticipates unexpected events.[80].

In line with the research objective to measure the implementation of smart cities in Jambi City from the two dimensions of smart governance and smart living. First, smart government does not have a widely accepted definition, but is often interpreted as the next step of e-government with governments using technology and innovation to improve performance.[51]. The above definition is in line with the Jambi City Regulation Number 1 of 2019 concerning the Implementation of Smart City in article 1 paragraph (10) regarding what is meant by smart government "concepts or further steps from e-government by utilizing technology and innovations used by the government for better performance. better.

Measurement of smart government in the online service working area is measured by two indicators; online procedures, and online payments. In principle, these government services to support and realize a smart city must be accessible by citizens using cellphones, or others by prioritizing the use of technology that can be accessed through websites or applications

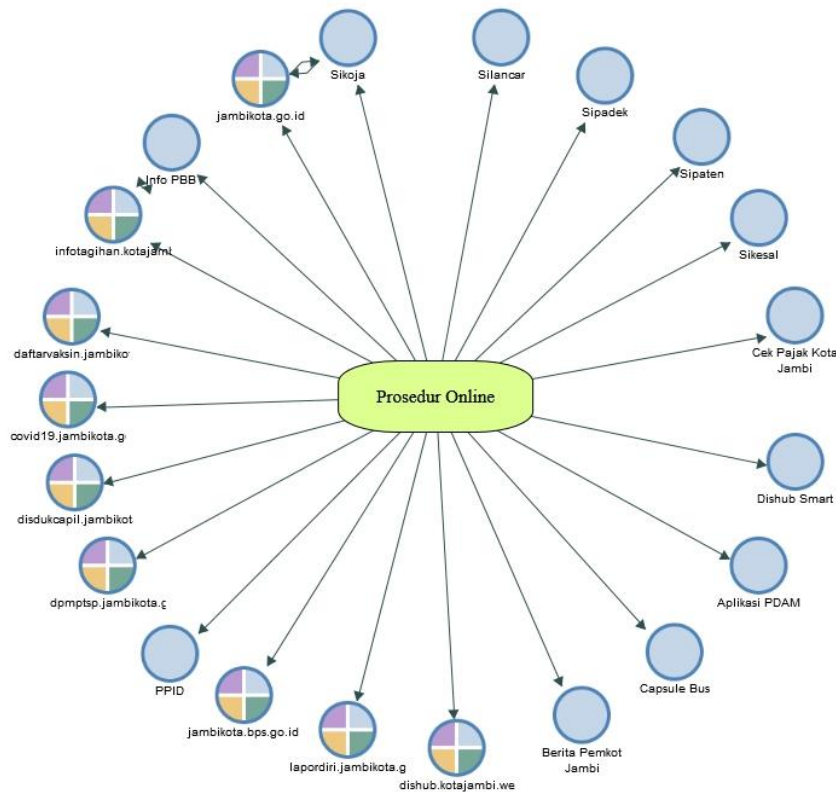


Figure 2 Smart Government Online Procedure

. From the findings, there are 15 forms of applications and 9 websites owned by the Jambi City government to support public services that can be accessed via cellphones or laptops or anything else, the findings are corroborated in other studies.[32]. The 15 applications consist of; Sikoja (Jambi City Information System) this application is based on Android and IOS, but Sikoja services can be accessed through the website <https://jambikota.go.id/>. Sikoja is an application that almost covers all forms of services that support smart cities in one hand, accessible services such as complaints, emergency numbers, education, health, licensing and billing info and CCTV.[81]. The existence of CCTV supports one of the dimensions of a smart city, namely Smart Mobility, where application users can see city monitoring through CCTV, city points where traffic jams occur.[21]; [70].

Next, the existence of the Silir application is a one-stop integrated service licensing application for the City of Jambi which is managed by the Jambi City Investment and One-Stop Integrated Service Office (DPMPTS). Besides being accessible through the application, it can also be accessed through the website <https://www.perzinan.jambikota.go.id/>. Furthermore, the Sipadek application becomes a means for correspondence and is interconnected between OPD (Local Government Organizations), sub-districts to urban villages. The Sikesal application is an application that connects the community with the government through complaints and complaints about the situation in the city of Jambi[28]. Sipaten is an application with an integrated administrative service system for sub-districts and villages, through the Sipaten application it allows the people of Jambi City to access government services that are the main tasks of sub-districts and villages such as micro and small business licensing, marriage certificates, certificates and others. The Jambi City Tax Check application is useful for viewing vehicle tax costs that will be paid.

Jambi City PPID (Information and Documentation Management Officer) is an application that provides government news and documentation, public information. Available services through the Jambi City PBB Information application and website

<http://infotagihan.kotajambi.web.id/> provide information on the amount of the PBB bill (Land and Building Tax). To provide information about the City of Jambi related to the economy, such as rising food prices, as well as development to tourism, the Jambi City News application stretcher. Provide convenience for the community through the PDAM (Regional Drinking Water Company) application to view payment bills. Dishub smart and cupsul bus applications are representatives of smart mobility,

through the smart dishub application and website <http://dishub.kotajambi.web.id/> can find out the parking location and the number of empty places for parking [43], while the Capsul bus is the current mode of transportation with the application of IT, which can monitor and determine the user's pick-up location. [53].

Jambi City Statistics Application and website <https://jambikota.bps.go.id/> provide information services related to numbers. Finally, the Sidak application (the Jambi City DPRD Information System) through this application helps the performance of the council secretary in maximizing the services of council members.

The Jambi City Government has also developed a website to provide services related to the COVID-19 pandemic. To provide updated information to the public about the development of the case, it can be accessed through the page <https://covid19.jambikota.go.id/>. for people infected with COVID-19, the government provides services for them to be able to report themselves through the website <https://lapordiri.jambikota.go.id/> it is also useful for tracking those who interact with the victim. Meanwhile, to make it easier for the public to get the COVID-19 vaccine, the government provides a page <https://Listvacin.jambikota.go.id/> thus the government is present in the community to get vaccines by utilizing IT.

Meanwhile, those relating to online payment indicators can be identified in several categories. First, the tax managed by the Jambi City BPPRD (Tax Management and Regional Restoration Agency), there are 9 tax sectors that can be paid independently through mobile banking applications and ATMs; hotel tax, restaurant tax, entertainment tax, parking tax, groundwater tax, street lighting tax, advertisement tax, BPHTB tax, non-metallic mineral and rock tax, and Land and Building Tax (PBB). However, it cannot be done by all banks, currently it can only be done at Bank 9 Jambi, which is a regional bank in Jambi Province. Online payments that can be made by the community are PDAM (Regional Drinking Water Company) payments for the City of Jambi City, for online payments M-banking, ATM, SMS Banking can only be made through Bank 9 Jambi, [69]; [75]. Next, online payment for public services Capsule Bus is a mode of public transportation that uses the method e-ticketing payment (Kurniawan et al., 2020).

Furthermore, in the smart government dimension in the infrastructure working area with sensor indicators, it explains how the city in implementing smart cities has applied information technology that is infrastructure in nature to support the smart city concept. Jambi City has installed CCTV in several offices in order to monitor the performance of the existing bureaucracy, monitoring can be done from the command center room which is named Jambi City Operation Center (JCOC). (Michael, 2020), besides that, it has also implemented an Employee Attendance Information System (SIAP) where this electronic attendance is implemented using eye retina and has been connected online.

The application of CCTV is also implemented on some roads throughout Jambi City, this application supports city monitoring services from smartphones from the Sikoja application. Allows users to see points of the city where traffic jams occur. The use of CCTV is also useful for enforcing tickets Electronically (E-TLE). The Jambi City Government uses ATCS as a traffic monitoring system that is very useful for manipulating congestion with a traffic engineering scheme. (Michael, 2020). The Jambi City Government to support the smart city program builds a Fiber Optic (FO) cable network and has been built for 100 KM, reaching 40 OPD including sub-districts and two regional hospitals. [75]. To ensure the quality of the air, the Jambi city government uses the following tools: AQMS (Air Quality Monitoring System) the use of these tools supports smart living and smart environments [27].

Jambi City is following up on the Minister of Health Regulation related to an integrated emergency response system, the Jambi City government is present in establishing the Public Safety Center 119 Jambi Emergency Services (PSC 11I JES) which is regulated in Mayor Regulation Number 7 of 2017. (Public Safety Center) 119 Jambi Emergency Services (JES) Jambi City is a service center that guarantees the needs of the community in matters relating to medical emergencies in Jambi City which is the spearhead of services to get a quick response. A medical emergency is defined as a condition of a person that can be life-threatening and has the potential to cause injury if not treated immediately. [79].

As time goes by and the application of smart city principles that are adaptable and sustainable, the Jambi City Government combines all community service numbers into a call center 112. This service

is also emphasized as a smart city program related to home care serving the community in emergency events such as fires or accidents that require health services, natural disasters to emergency events related to public security and order.[56]. Call center service 112 which was formed to represent the contribution to sustainable development goals including Healthy and Prosperous Life (SDG 3), as well as the ninth development goal concerning industry, innovation and infrastructure.[52].

A. *Smart Living*

Underlying the smart living concept in the Jambi City Regional Regulation Number 1 of 2019 concerning the Implementation of Smart City Article 1 paragraph (13) smart living is to offer convenience to monitor your residence only through your mobile device anywhere and anytime. The targets and priority programs for the implementation of smart cities in Jambi City are clearly explained in Article 11 paragraph (5) that has a target to create a decent, comfortable and efficient living environment. This embodiment gave birth to innovations initiated through the Kampung Bantar (clean, safe, and smart) and empowered awakening programs (Build an Intensive and Integrated Village based on Self-Help).[41].

The Kampung Bantar and Bangkit Berdaya program is a representation of the smart city implementation in the smart living pillar which has succeeded in bringing Jambi City to achieve achievements and recognition nationally and internationally, which was received in an innovation nomination, namely the "Nominator for the Peace Prize for Local Government in Bogota at UCLG 2016" Meanwhile, the Berdaya Berdaya program has also received an international award, namely the IOPD Award Recognition in the Best Citizen Participation category in Montreal, Canada.(Humas MenPANRB, 2020), the award places Jambi City in the 30th best ranking out of 7,000 regencies/cities in the world that have inspiring social innovations which prioritizes community participation.

Innovation Ampung Bantar offered by the Jambi City Government with a settlement-based approach, basically this concept accelerates city growth and development through the smallest RT-based system (Rukun Tetangga) so as to reduce development inequality between regions, improve the quality of welfare and the quality of the community's economy. Interestingly, the bantar village program implements standardization into 3 indicators of clean, safe, smart[42]. Clean indicators apply a clean environment by relying on the principle of mutual cooperation, creating a beautiful environment with family medicinal plants growing, then waste management is carried out by every RT that has an independent waste bank. Through the waste bank, it becomes a means of learning for the community to separate waste that has useful and economic value[13]; [47].

The safety indicator is applied by activating the Kamling Post (Mobile Security Post) where people take turns on night watch which will give other people a sense of security. In the midst of globalization and modernity that makes the lives of urban people so complex, the development of a security system and intimate social interaction is very important[94]. Smart indicators are implemented through the reading corner which is a library in the corner of the village that is managed by the community independently.

Based on the theoretical framework above, the measurement of Smart City Implementation in Jambi City in implementing the Smart Living dimension with 2 working areas, first, Culture and Welfare with the Gini Index indicator (to see the income/expenditure inequality of the population in an area, the Gini ratio ranges from 0-1 The closer to 1 indicates the higher the level of inequality, while on the contrary the Gini ratio of 0 indicates the existence of perfect income distribution, or everyone has the same income.)[59]. Based on the BPS Jambi Province, the ratio of districts/cities, Jambi City in 2017 the Gini ratio was 0.39, while in 2018 it was 0.33 and in 2019 the Gini ratio was still at 0.33. There was a decrease in 2018 of 0.06 and in the following year there was no change that described stagnation in reducing income inequality, but this ratio is included in the category of low inequality because it is below 0.4 points[18].

Health working area with Life expectancy indicator (life expectancy is an estimated number of years that can be taken by a person during life using an indirect approach), while the type of data used is children born alive and children still alive. This index is part of the Human Development Index). The life expectancy rate in Jambi City in 2019 reached 72.57, there was an increase in 2020 with a value of 72.65 and continued to increase to 72.71 in 2021. Although the increase was not significant, there was still an upward trend in the curve(BPS Jambi Province, 2021).

IV. Conclusion

The movement towards 100 smart cities is a breath of fresh air for local governments to be able to apply smart cities that are technically supported, from the preparation of the master plan. The city of Jambi became part of the movement, as well as a pilot project for Sumatra. The legality of implementing smart cities is regulated in Regional Regulation Number 1 of 2019 concerning the Implementation of Smart Cities. Various smart city innovations were born in Jambi City from the Smart Government dimension, namely 15 applications for public services, besides that it also supports through websites to make it easier for the community and this is a form of implementing IT in the field of governance. Infrastructure as a first step in the movement has been able to present multifunctional CCTV, the application of ATCS and E-TLE (electronic ticket) which is a new breakthrough that is widely applied in big cities with severe congestion levels, such as Jakarta and Bandung. Kampung Bantar and the Empowered Bangkit program have become an icon of smart city innovation that has brought Jambi City to prestigious awards at national and international levels. The program has proven to be able to alleviate poverty in Jambi City and become the best in Jambi Province in alleviating poverty. Until now, Jambi City has not presented the master plan in front of the public to be accessed, or it has not been made, even though there is a movement program towards 100 smart cities to facilitate the preparation of the master plan. Access to public information disclosure still cannot be said to be transparent, it is also strengthened that the rules regarding smart city councils still do not exist. Explaining and reaffirming the 2018-2023 RPJMD in chapter IV Jambi City faces problems and challenges in implementing smart cities and e-government, with the main problems not yet optimal implementation of the Electronic-Based Government System (SPBE), and smart city supporting regulations. It is a record of the government how to optimize all innovations that have been implemented, some applications do not run smoothly, and even are not active which are only made to meet needs without considering sustainability.

Smart city comes hand in hand with the principle of Sustainability development, with the main problem that the implementation of the Electronic-Based Government System (SPBE) is not yet optimal, and smart city supporting regulations. It is a record of the government how to optimize all innovations that have been implemented, some applications do not run smoothly, and even are not active which are only made to meet needs without considering sustainability. Smart city comes hand in hand with the principle of Sustainability development, with the main problem that the implementation of the Electronic-Based Government System (SPBE) is not yet optimal, and smart city supporting regulations. It is a record of the government how to optimize all innovations that have been implemented, some applications do not run smoothly, and even are not active which are only made to meet needs without considering sustainability. Smart city comes hand in hand with the principle of Sustainability development

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