Implementation of Smart City in Magelang through the Magelang Cerdas Application

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Abstract. Magelang Smart City Application is an application that provides information and public services for the people of Magelang City. The outbreak of the COVID-19 in 2020 led to restrictions on mobility for the people and the implementation of WFH for State Civil Apparatus in the Magelang City Government. In response to this, the the government utilizes the Magelang Smart City Application as a means to provide public services and information. The objectives of this study are (1) to identify the outlook of the Magelang Smart city Application and (2) to identify the effect of the Magelang Smart city application on public services in Magelang City. The method used is a descriptive qualitative method. Primary data was obtained from in-depth interviews with related agencies, while secondary data was obtained through related agencies. The results of the study indicate that the Magelang Smart City Application is an implementation of Smart Governance which provides integrated public services and incorporates public services from the Magelang City Regional Apparatus Organization. This application is immensely influential on public services as it allows the government to continue providing public services and information to the people by optimizing the use of features in the Magelang Cerdas Application.

Keywords: application, smart city, ICT, COVID-19

1. Introduction

The Magelang Cerdas application is an innovation from the Magelang City Government in improving the urban setup in Magelang City by implementing the smart city concept. It is stated in Law Number 23 of the year 2014 concerning Local Government [1] that in order to improve performance, the government can innovate. The referred innovations are all forms of renewal in the administration of Regional Government. Magelang City is one of the participants in the “100 Smart Cities Movement” Program [2]. The “100 Smart Cities Movement” program aims to help cities or regencies to be able to design or plan their regional Smart City Master Plans in the hope of further maximizing the use of existing technology in improving public services and maximizing the potentials that exist in the sectors available in the city or regency [3].

One of the most essential dimensions of a smart city is providing services using the latest technology and building smart infrastructure in order to be able to deliver effective services to all people living in the city. This smart city concept will be achieved if it can be understood and supported at the highest level of city government and contributes to the daily needs of the people. This system can be defined as a system that utilizes digital technology to effectively improve performance and welfare and can reduce costs and resource consumption as well as to engage more effectively and actively with its people [4].

In this era of the Covid-19 pandemic, the government has been making various efforts to suppress the transmission of the Covid-19. In the Presidential Instruction Number 6 of the year 2020 [5], it is
stated in the point of obligation to fulfill health protocols both for individual and also for the community to wear masks, to wash hands and to maintain distance as well as to lessen the number of crowds. During the Covid-19 pandemic, public services in Magelang City started to be limited to reduce the number of transmissions of positive Covid-19 patients. This is stated in Magelang Mayor Regulation Number 30 of the year 2020 concerning Guidelines on The New Normal Adaptation To be Productive and Safe From Corona Virus Disease 2019 [6] for the People of Magelang City, where there are instructions to lessen crowds and also the establishment of SOPs for offices and industries in Magelang City.

The top-down policy implementation model developed by George C. Edward III is known as “direct and indirect impact on implementation.” There are four variables that determine the success of public policy implementation, and those are communication, resources, disposition, and bureaucracy. Communication is one of the important variables that influences the implementation of public policy and greatly determines the success in achieving the goals of public policy implementation. Effective implementation will occur if decision makers know what they are going to do and good communication will produce comprehensive information. There are three indicators that can be used to measure the success of the communication variable according to Edward III, and those are transmission, clarity, and consistency.

One of the conditions for running an organization is ownership of resources. According to [7], resources are grouped into information, materials, equipment, facilities, capital, and human. Resources are crucial to measure the extent to which policy implementation can be carried out. According to Edward III in [8], the existence of tendency is one of the factors which has important consequences for effective policy implementation in an area. There are positive and negative tendencies. Bureaucracy is one of the things that is most often associated with a program implementation where the existence of bureaucracy does not always refer to the local government but also to private organizations, educational institutions, and so on, for instance, a bureaucracy created to carry out a certain policy. According to Edwards III [8], there are two main characteristics of bureaucracy, which are Standard Operational Procedure (SOP) and fragmentation.

The Magelang Cerdas Application is one of the applications built based on the Smart City Masterplan of Magelang City [9] as well as Presidential Regulation Number 95 of the year 2018 concerning Electronic-Based Government System [10]. In the Smart City Masterplan of Magelang City, the Magelang Cerdas Application is one of the Quick Wins for the Magelang City Government. This application is included in the e-government service, known as Government to Citizen (G2C) because it connects the local government with the people of Magelang City. A system is required to integrate all data to be more effective, efficient, and on target, especially in the public administration field [11]. The Magelang Cerdas Application is one of the implementations of ICT and smart city in Magelang City. Apart from that, the Magelang Cerdas Application is also one of the means and media for the Magelang City Government in carrying out optimal public services in the midst of the Covid-19. Therefore, we have some research problems that comes. First, what is the description of Magelang Cerdas Application. Second, how does Magelang Cerdas Application affect the public services in Magelang City. This research was done before by Siti Wedaretno Mursalin in 2013 in Bandung City with the title Implementasi Kebijakan Smart City di Kota Bandung with the same method using Direct and Indirect Impact on Implementation by George C. Edward III. With that research problems, the objectives of this study are (1) to identify the outlook of the Magelang Cerdas Application and (2) to identify the effect of the Magelang Cerdas Application on public services in Magelang City. The benefit of this research especially for the Magelang City Government is to provide analysis and consideration that the government plays an important role in determining policies, especially to make a smart city, one of which is through the Magelang Cerdas Application as a place or platform for the Magelang City Government, Regional Apparatus Organizations, Public Service Providers, and the community in the city to interact and integrate for the better development of Magelang City.

2. Method

This study used a descriptive qualitative method. The result of the qualitative descriptive method is empirical information and based on facts or reality. This study used a method that refers to the theory of Direct and Indirect Impact on Implementation by George C. Edward III, using four main indicators, such as communication, resources, disposition, and bureaucracy. This method is used to find out how
far the implementation of smart city in Magelang City. Furthermore, in-depth interview was conducted to obtain data about the effect of the Magelang Cerdas Application usage in public services in Magelang City, especially during COVID-19 Pandemic. In-depth interview is chosen to getting deep information from the informant about Magelang Cerdas Application. To collect the data, for the primary data it used in-depth interview method from Department of Magelang City Communication, Informatics and Statistics and Department of Magelang City Population and Civil Registration. The person who has been there in in-depth interview was The Head of Technology and Information Department of Magelang City Communication, Information, and Statistics, and The Head of Information Management of Population Administration and Data Utilization of Department of Magelang City Population and Civil Registration, and Website Maintenance Technician of the Department of Communication, Informatics and Statistics of Magelang City. The reason why they are chosen because in this Covid-19 situation a lot of public services used online services and among them including population service, health services, and public services under the auspices of Department of Magelang City Communication, Information, and Statistics, Information Management of Population Administration and Department of Magelang City Population and Civil Registration. After that, the data will be collected and processes in a transcript with data triangulation.

3. Result and Discussion

3.1. The outlook of the Smart Magelang City Application

The Magelang Cerdas Application is an application made by the Magelang City Government in collaboration with PT. Gamatechncno and was launched on May 24, 2017. This application is an application built based on several legal foundations, including Presidential Regulation number 95 of the year 2018 concerning Electronic-Based Government System [10], more specifically on the point of integrated public service portal (public service portal was built to integrate electronic-based public services to ease the users in accessing government services). In addition, there are regulations concerning this matter contained in the Mayor Regulation Number 47 of the year 2018 concerning Guidelines on Implementation of System Interoperability in the Magelang City Government [12] and Magelang Mayor Regulation Number 51 of the year 2019 concerning the Electronic-Based Government System for Magelang City [13].

The Magelang Cerdas Application is included in the Quick Win of the Magelang City Government and is contained in the Smart City Masterplan of Magelang City [9]. The Magelang Cerdas Application is included in the Mission I of the year 2016-2021 Regional Medium-term Development Plan of Magelang City on Improving the quality of human resources apparatus to be more professional by optimizing technological advances as the basis for the establishment of a clean and responsive local government to fulfill the aspirations of the people, able to develop and manage local potential in the context of the effectiveness and efficiency of service to the people supported by people participation in order to improve the welfare of the people [14]. This application is part of the smart governance dimension, which includes participation in decision-making, public services and socialization as well as transparency in governance, strategy, and public policy, involving in the development of e-governance [15].
This application has the following tagline, One Stop Public Service and Information Portal with One Touch. The meaning of the tagline is to create an information portal and administration of public services in one touch, which is through the Magelang Cerdas Application. Services that were integrated at the beginning of the establishment of the Magelang Cerdas Application included economic services, e-banking, population administration services, news portals, permit services, access to CCTV owned by the Magelang City Government, tax services, education services, and health services. There were numbers of application developments carried out by the Magelang City Government until 2020. The innovations developed by the Magelang City Government during the Covid-19 pandemic were the Police Menu, Culinary & Shopping Menu, and the Ask the Doctor Menu. At present, there are twenty-three services and these services have been integrated and can be accessed by all people who have the Magelang Cerdas Application. Not only integrated by the Magelang City Local Apparatus Organization, but several services are integrated with other parties outside the Magelang City Government such as Health Care and Social Security, e-banking (Central Java Bank), police services, MSMEs, Culinary Services, and Ask Doctor.
Implementation can be measured based on the concept of Direct and Indirect Impact on Implementation by George C, Edward III as the following: communication, resources, disposition, and bureaucracy.

First, communication. Communication is a very important aspect in the implementation of a policy. In the implementation of smart governance in the Magelang Cerdas Application, the communication that exists between Local Apparatus Organizations, the Magelang City Government, and PT. Gamatechno is working well. According to the information obtained from the key person, Mr. Wikan Kanugroho, Head of the Information Technology and Statistics Division of Magelang City, the communication that was established during the building, execution, and maintenance went very well. If there is an addition of a new service menu, the relevant Regional Apparatus Organizations, the Department of Communication, Informatics and Statistics of Magelang City, and PT. Gamatechno will hold a coordination meeting regarding service innovations to be launched. In addition, communication related to public services in the Magelang Cerdas Application is maintained by establishing contact with Regional Apparatus Organizations related to the Department of Communication, Informatics and Statistics of Magelang City.

Implementation will run effectively when the objectives to be achieved are understood by the parties responsible for the performance. Based on this, it is very important to know the clarity of the goals to achieve and the accuracy of the communication, so that the implementers, team members, and relevant Regional Apparatus Organizations can carry out their duties smoothly so there won’t be bad communication regarding duties and responsibilities. The obstacle is the flow of communication. The correct flow of communication is to contact the City Government first. However, because this required a longer period of time, the Department of Communication, Informatics and Statistics of the Magelang City directly contacted the relevant Regional Apparatus Organizations when holding a coordination meeting related to the Development and maintenance of the Magelang Cerdas Application.

Based on the observation in the field, another obstacle that occurred related to communication is the internal communication of Regional Apparatus Organizations regarding the use of the Magelang Cerdas Application. Sometimes, the communication was only limited to the main team who are members of the Magelang Cerdas Application Development team, thus the information only revolved around certain individuals. When the individual is replaced or absent, miscommunication may occur regarding major information.

Second, Resources. The referred resources consist of information, materials, equipment, facilities, capital, and human. In this case, human, facilities, and capital are the things that the authors pay more attention to. This is because the application is one of the Quick Wins of the Magelang City Government, therefore human resources, facilities, and capital are very influential things to study. According to the information obtained from the key person, Mr. Wikan Kanugroho, Head of the Information Technology and Statistics Division of Magelang City, a crucial resource that must be considered is human resources. This is because the Regional Apparatus Organizations in Magelang City lack human resources who are experts in the IT field. Even the Department of Communication, Informatics and Statistics of Magelang City lacks IT experts in relation to the development and programming field.
Until 2020, the distribution of State Civil Apparatus (SCA) with educational background in IT wasn’t balanced. As seen in picture number one, a lot of SCAs have completed education equivalent to D3 (Diploma) with a total of 49 people, Bachelor’s degree with a total of 38 people, and Master’s degree with a total of 5 (five) people. The unbalanced distribution of SCA can be seen in Figure 2, where the Department of Education has the highest SCA with an IT background amounting to 14 (fourteen) SCAs. According to data obtained from the Department of Communication, Informatics and Statistics of Magelang City, SCA with a master’s degree education background are spread across the Magelang City Regional Development Planning Agency (one person), Department of Communication, Informatics and Statistics of Magelang City (two people), and Tidar Regional Public Hospital (two people). This unequal distribution is certainly one of the major concerns for the Magelang City Government in implementing smart governance in Magelang City. This definitely becomes an obstacle because not all Regional Apparatus Organizations can easily carry out smart governance in their respective fields. This certainly becomes obstacle because not all Regional Apparatus Organizations are able to easily carry out smart governance in their respective fields. The quality of human resources that can accelerate the development of new technology will help facilitate the administrative system of an area which can affect the service quality [16].

The existing facilities are deemed sufficient to run the operation of Magelang Cerdas Application. In terms of capital or funding, no significant problem was found because the planning for the Magelang Cerdas Application was very thorough. This is because the fund has been prioritized as the Magelang Cerdas Application is a Quick Win from the Magelang City Government. At the moment, the problems and obstacles faced are related to the lack of skilled human resources in the IT field and the unbalanced distribution of SCA in Regional Apparatus Organizations in Magelang City.

Third, disposition. The implementers’ support in implementing smart governance in the Magelang Cerdas Application, one of which is by establishing cooperation with PT. Gamatechno in developing the Magelang Cerdas Application so that the application can develop well and the public services menu can be accessed properly until now. The Department of Communication, Informatics and Statistics of Magelang City has carried out its duties well in planning, developing and running the Magelang Cerdas Application in accordance with the Road Map contained in the Smart City Masterplan of Magelang City.

Fourth, bureaucracy. What is meant by bureaucracy here is the bureaucratic structure. In implementing smart governance in the Magelang Cerdas Application, a decree has been issued regarding the assignment and management of the Magelang Cerdas Application. It is clearly stated there is a specific team which is part of the management of the Magelang Cerdas Application. However, since 2021, the management members have been handed back to the respective Regional Apparatus Organizations related to honorarium restriction for SCA, therefore, previously specific team members become non-specific. There is good synergy between the Magelang City Government, the Department of Communication, Informatics and Statistics of Magelang City, PT. Gamatechno, and Regional Apparatus Organizations related to the Smart City vision and mission of the Magelang City and the
implementation of smart governance in the Magelang Cerdas Application. In addition, there is an SOP for the operation of the Magelang Cerdas Application. Thus, in the operation, maintenance, and development process there are clear steps that must be taken so that not just anyone can perform the operation, maintenance, and development of the Magelang Cerdas Application.

3.2. The influence of the Magelang Cerdas Application on public services in Magelang City

Prior to the COVID-19 pandemic, the Magelang Cerdas Application had been used by the Magelang City Government as a means of providing public services and public information for the people of Magelang City. The Magelang City Government has used the Magelang Cerdas Application as one of the implementations of smart governance by using the application as a means of public service and public information for the people of Magelang City.

Innovation can be shown by the use of ICT-based applications in several public services as part of smart city implementation [17]. The innovations made by the Magelang City Government during COVID-19 according to data from the Department of Communication, Informatics and Statistics of Magelang City, were the addition of Police Services, Culinary & Shopping Services, and Ask Doctor. The existence of the Magelang Cerdas Application in Magelang City is one of the alternatives for the public service sector in Magelang City to break the chain of COVID-19 transmission in Magelang City. This is due to the limitation of the number of visitors in the tourism sector, the religious sector, the culinary sector, and the public service sector. Therefore, public service providers in Magelang City must innovate in order to continue to serve participants optimally even when it is hindered by the COVID-19 Pandemic. The Magelang Cerdas Application can provide a meeting space for providers and public service users, albeit virtual space.

![Figure 4 Statistics of Magelang City Online Population Administration Services in 2020](Source: Department of Communication, Informatics and Statistics of Magelang City, 2021)

Population Administration Service is one of the services that is often accessed by the people of Magelang City. The people’s mobility is highly restricted due to the COVID-19 pandemic, thus, administration needs related to population documents are impeded. However, the Magelang City Government, through the Magelang City Population and Civil Registration Agency, provides online services to people in need of population administration services through the Population and Civil Registration Service Agency website which can be accessed, one of which is through the Magelang Cerdas Application, so that people have no difficulty in finding the website address. Public services continue to run optimally by utilizing other facilities through different space which is the virtual space. In 2020, there were 9441 people who requested online population administration services.
Ask the Doctor is one of the newest services in the Magelang Cerdas Application. The Magelang City Government is attempting to provide mental and physical health services for the people of Magelang City who are still wary to travel outside their homes. This service presents a new space for the public and doctors who have been appointed by the hospital to be able to interact and respond to the illness of the patient. This service is very useful during the COVID-19 Pandemic due to the imposed mobility restrictions and as a form of preventing the COVID-19 transmission in Magelang City. The response from the doctor can be public or private depending on the health case and the privacy of the patient.

The requests for information experienced a significant increase in 2020, especially until June. Mobility restrictions and the imposition of Large-Scale Social Restrictions in 2020 impacted the need for online information. A total of 1625 online requests for information were recorded through the Magelang Cerdas Application. The Magelang City Government could still provide maximum information and fulfill information request services during the COVID-19 Pandemic through the Magelang Cerdas Application. Through the Magelang Cerdas Application, requests for information can be sorted to be more organized and make it easy to detect what their needs are for.
One of the ways to provide information regarding the COVID-19 Pandemic from the Magelang City Government to the public is through the Magelang Cerdas Application. Information related to the number of active cases, recoveries, and deaths can be notified through the available infographics such as the figure number 8.

Along with the development of information technology, the provision of public information has begun to make use of social media and utilize virtual space or online. Existing obstacles related to physical space and time are starting to be resolved with the development of information technology [18]. This is proven during the COVID-19 pandemic where public information services are still working by utilizing virtual space and also social media, thus allowing people to constantly receive and access information.

The Monggo Lapor (Please Report) service is a two-way communication service for the Local Government and the people of Magelang City consisting of complaints, suggestions, criticisms, and other matters related to the performance of the Magelang City Government. The government provides this service by integrating all Regional Apparatus Organizations in Magelang City to solve common problems. One example is in figure number Nine where there is a complaint related to illegal parking, thus, the Department of Transportation, the one with the related main duties and functions, has the main task of answering and resolving the problem. The person who reported it can see the progress of the
aspiration or complaint by looking at the status of the aspiration. This service certainly makes it easier for the Magelang City Government to see the real faced problems and solve these problems effectively and efficiently, which enables the government to get closer to the public, albeit in virtual space.

“Some services that often involve physical meetings with numerous people, such as the service provided by Magelang City Population and Civil Registration Agency, are quite affected and influence the pattern of digital public service. Nowadays, the management of services related to things such as ID cards, Family Cards, Death Certificates, Birth Certificates, and so on is more dominantly directed via the digital service portal belonging to the Magelang City Population and Civil Registration Agency which can also be accessed through the Magelang Cerdas Application. Aside from that, Tidar Public Regional Hospital also requires prospective polyclinic patients to register online before they can be served at the polyclinic. The online registration service can also be accessed through the Magelang Cerdas Application. This means that public services that bear a high risk of spreading COVID-19 transmission are greatly affected by the existence of digital services, in relation to continuing to provide optimal service without bearing the risk of transmission.” (Informant: Website Maintenance Technician of the Department of Communication, Informatics and Statistics of Magelang City)

The occurrence of COVID-19 pandemic resulted in obstacles to provide offline public services in Magelang City. This is due to restrictions on mobility and room capacity both from the public and from the Magelang City Government. Through the Magelang Cerdas Application as a form of implementation of smart governance, the fulfillment of public services can continue to run well despite being online. This application is influential for the Magelang City Government in providing public services and public information by utilizing virtual space and also Information and Communication Technology, thus enabling the Magelang City Government and the Magelang City people to communicate and interact without worrying about distance constraints and provide maximum service in the midst of this COVID-19 Pandemic. The application or implementation of the smart city concept, especially on smart governance dimension in one area, in this case, case of Magelang City in particular can indirectly help the process of providing public services for Magelang City Government. Especially during this COVID-19 Pandemic. The use of smart city applications in one area can increase the effectiveness of government services for the community, where these activities can encourage the level of productivity, security, and welfare of the community [19]. Therefore, in the future there are still many things to improve, such as the importance of providing integrated service applications with an online basis and network access available in more areas in Indonesia [20].

4. Conclusion

The Smart Magelang public service application is built to integrate electronic-based public services to ease the users in accessing government services. There are 23 types of services that have been integrated and can be accessed by the public. Based on the theory of “direct and indirect impact on implementation” in disposition and bureaucracy, there are no obstacles, but in communication there are a few problems related to the flow of communication and human resources which still encounter many obstacles. More attention and improvement of human resources skills, SCA to be exact in the Regional Apparatus Organization are required in order to be able to carry out smart governance well, especially in the Magelang Cerdas Application.

The Magelang Cerdas Application is influential on public services in Magelang City in the form of presenting virtual space or new space for the Magelang City Government and the Magelang City people that is not limited by distance in providing public services and public information. During the COVID-19 Pandemic, the Magelang Cerdas Application eases the Magelang City Government to continue providing public services and public information in the maximum capacity and facilitates the government to stay connected to the people despite the imposed mobility restrictions.

This research was carried out by taking the point of view of the Magelang City Government. So that the results obtained are still in one point of view, from the point of view of the Magelang City Government as a provider of Public Services and Public Information for the people of Magelang City. To complete this research, research can be carried out from the perspective of the people of Magelang City as users of public services and recipients of public information from the Magelang City Government. The goal is to be able to see how far the implementation of a smart city in Magelang City through the Smart Magelang Application from the point of view of the community as users or those who
use these public services. So, a meeting point will be found between the point of view of the government and the people of Magelang City regarding the implementation of a smart city in Magelang City through the Smart Magelang Application. Also, Magelang City Government must improve their human resources especially in ICT, Database setting, Programing Website, Programing Mobile, and Ui/Ux designer.

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