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Challenges of E-Government Implementation in The Region Archipelago Characteristics

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ARTICLE INFO ABSTRACT

Keywords: Challenges, E-Government, Archipelago Region

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Introduction

The Development of technology and information has encouraged local governments in Indonesia to utilize information technology tools to implement good governance. Based on Presidential Instruction No. 3 of 2003 on national e-government development policies and strategies, high-ranking state officials, including governors, regents, and mayors, implement e-government development policies.

The Covid 19 pandemic that has hit the world in the last two years has implications for limiting human activities, prompting the Government to utilize technology and information in carrying out government activities (Septiani, 2020) said that the implementation of e-government during the COVID-19 pandemic was a strategy to minimize the spread of the COVID-19 virus and streamline public services.

The results of research conducted (Suhardi et al., 2015)show that the implementation of e-government influences the implementation of good governance. In addition, the implementation of e-government provides many benefits.(Backus, 2001); (Elsheikh et al., 2008);(Choi et al., 2016) mention that the presence of e-Government can increase the quantity and quality of transactions that can reduce and minimize the potential for irregularities and violations.

Meanwhile (Al-Shboul et al., 2014); (Atmojo & Nurwulan, 2020)stated that basically, e-government is the use of technology and information devices such as computers and the internet to serve. In line with (United Nations, 2014) mentioning e-Government is the use of technology and information by institutions that can realize the relationship of citizens, business people, and the Government. Meanwhile, (Zulhakim, 2012, p. 5) mentions that the application of e-government is not just a transfer of government work from manual to computerized work or online work but is essentially a form of dynamic bureaucratic work that can adapt to an increasingly advanced technological environment.

Therefore, e-government is a new strategy carried out by the government by utilizing technology and information to provide services and convenience to the general public and provide opportunities for the public to administer government through access to technology and information. Therefore, in other words, one of the goals of implementing e-government is to achieve good governance.

However, the implementation of e-government is a challenge for local governments, which geographically have an area with archipelagic characteristics because they have limited communication and information infrastructure. The study results (Madubun et al., 2017); (Rahmatunnisa et al., 2018) stated that one of the problems faced by regions with archipelagic characteristics in administering Government is related to the support of information, communication and sea transportation infrastructure between islands.

One of the local governments that has these challenges is the Government of South Halmahera Regency, North Maluku Province, which geographically has the characteristics of an archipelago with limited telecommunications and information infrastructure. Based on data from the Information and Communications Office of South Halmahera Regency, the availability of telecommunications infrastructure until 2020 has only reached 75 percent. Therefore, the South Halmahera Regency Government is trying to get Base Transceiver Station (BTS) assistance through the Universal Service Obligation (USO) program, a sustainable program organized by the Ministry of Information and Technology implemented by BP3TI. The availability of such infrastructure such as data (xlaxiata.co.id, 2020) until 2020, 102 USO 4G BTS installations have been carried out in areas that are difficult to reach from the capital of South Halmahera Regency. In addition, as a form of support for the implementation of e-government, South Halmahera Regency, 2016 issued a policy to establish the Office of Communication, Information, Statistics and Encryption, which organizes affairs in the fields of Communication, Information and Regional Regulations. The South Halmahera Government Regulation Number 18 of 2017 concerning the Utilization of Information and Communication Technology in the Development of e-Government in the South Halmahera Regency Government (Kabupaten Halmahera Selatan, 2017)

This policy is a form of follow-up to Presidential Instruction No. 3 of 2003 concerning National e-Government development policies and strategies. And the Regulation of the Minister of Communication and Information Number: 41/Per/Men.Kominfo/11/2007 concerning General Guidelines for Governance of National Information and Communication Technology, which provides public services using technology and information (Kominfo, 2007)

However, it is recognized that the implementation of e-government in the South Halmahera Regency has not been maximized. The results of research(Hasan & Arief, 2018) regarding the implementation of the e-Government program in the South Halmahera Regency show that the level of e-Government implementation is shallow. Therefore more mature strategic planning is needed to improve e-government implementation in the South Halmahera Regency.

One factor that hinders the implementation of e-government is related to the availability of infrastructure and support for e-government resources in the South Halmahera Regency. (Indrajit, 2016: 12) states that the implementation of e-government must require the availability of adequate technology and information infrastructure. While the results of research (Risnandar, 2014) Broadly speaking, the problems faced in the implementation of e-Government are related to the availability of infrastructure, work support facilities and infrastructure and the availability of human resources, especially in the field of information and technology. Meanwhile (Atmojo & Nurwulan, 2020: 168) mention that the poor implementation of Indonesian e-government is due to poor state infrastructure and the readiness of citizens to implement e-government.

Based on this background, this study aims to look at the implementation of egovernment and the challenges faced, and the strategic policies of the South Halmahera Regency Government in maximizing the implementation of egovernment in the Archipelago area.

Literature Review

Understanding the Basic Concepts of E-Government.

The development of technology and information devices raises various concepts, both at a substantial level, but also from the terms used. The term Electronic Government (E-Government) often experiences several terms that are often developed, including Electronic Administration, Digital Government, Online

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Government, e-Service, and Mobile Government which are used interchangeably as a form of utilizing information and communication technology (ICT).

According to (Samsor, 2021, p. 53) basically, digital government is a general term that includes all types of ICT used in the public sector, while e-government is a major part of digital governance. E-Government refers to the provision of government services through ICT, in the form of internet tools to provide and receive better public services.

Therefore according (Murenzi & Olivier, 2017, p. 144); (Meftah et al., 2015), (Pina et al., 2010) The introduction of E-Government was carried out in developed countries in the 1990s by utilizing technology and information to assist the government in providing more effective and efficient public services. Similarly disclosed (Utama, 2020, p. 192); (Huang & Bwoma, 2003, p. 164) identify e-Government as an internet application that helps the government to provide services to the public to build interaction between the State and citizens, businesses, and other government organizations while facilitating access to government documents and information.

(World Bank, 2015) describes the meaning of e-government as a term that refers to the use by government agencies of information technologies (such as wide area networks, the internet, and mobile computing) that can transform relations with citizens, businesses, and hand er arms of government. While (Samsor, 2021, p. 52); (Pangaribuan, 2019, p. 26) mentions that e-government has an important role in providing easy access to public services, making it possible for citizens, business operators, and society, in general, to communicate more quickly.

However n (Zulhakim, 2012, p. 5) Emphasizing the application of egovernment is not just a transfer of government work from manual to computerized work or online work but is essentially a form of dynamic bureaucratic work that can adapt to an increasingly advanced technological environment. Therefore (Backus, 2001) states, that the use of e-Government can improve the quality of interaction between government and citizens or Government to Citizen (G to C), government to private interaction Government to Business (G to B), as well as interactions that occur between the government and the government Government to Government (G to G) and other forms of interaction.

Therefore, e-government is a service process carried out by the government by utilizing communication and information technology to facilitate the accessibility of public services so that better, responsive, effective, and efficient services are built, and minimize the high cost of public services.

E-Government Development Challenges

The development of e-government also leads to a measure to see how egovernment implementation is performed. Identifying performance indicators for e-government development can be started by understanding the dimensions that include e-government itself. Some experts and practitioners say that at least in the development of egovernment must have indicators that can encourage the implementation of egovernment somewhere between, 1) humans who are understood as resources that can access or become customers in the e-government; 2) organizations as service providers that need to ensure the successful initiation of the creation and implementation of e-government implementation; and 3) the developed technology ensures easy access to information by the public.

(Indrajit, 2016) three important elements drive the successful implementation of e-Government support (support), Value (value), and Capacity (ability). Associated with the ability (capacity) which is interpreted as an element of government empowerment in implementing e-Government. There are at least three minimum things in encouraging capacity to become one unit in the context of implementing and developing e-Government, among others; 1) availability of sufficient resources to implement various e-Government initiatives related to financing (financial) resources; 2) the availability of adequate technology and information infrastructure because based on field conditions, technology infrastructure greatly determines the success of e-Government; 3) Availability of competent human resources who can run e-Government.

Meanwhile Sedangkan (Utama, 2020, p. 190) the lack of technical infrastructure, financial capital, and public administration capacity has limited e-Government efforts in developing countries. Meanwhile (Nabafu & Maiga, 2012), (Shannak, 2013) see the challenges of e-government, among others, 1) mobility of financial resources, 2) building technology and information infrastructure; 3) encouraging the improvement of the capacity of the apparatus in the field of ICT through training and 4) socio-political factors, namely the political ability to run e-government.

Meanwhile (Pangaribuan, 2019, pp. 27–28) sees the challenges of implementing e-government in developing countries including the lack of information and communication technology infrastructure, lack of security of public information data, inappropriate e-government planning, and public awareness about e-government. The government which is still low due to cultural, institutional, and political factors has not provided an appropriate response to the development of technology and information as well as factors of budgetary support. Similarly (Twizeyimana & Andersson, 2019, p. 167) mentions the challenges in implementing e-government related to the digital divide, inadequate electronic infrastructure, and lack of skills and competencies for the design, implementation, use, and management of e-government systems.

From the various opinions above, it can be said that the challenges of implementing e-government in developing countries including Indonesia are related to the availability of information and communication technology infrastructure, the government's readiness to encourage the acceleration of e-government implementation through the provision of resources in the field of ICT and budget provision, as well as community adaptation to the use of ICT. Which is not evenly distributed.

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Research Methods

This research is qualitative research with a descriptive approach to reveal the phenomenon of the implementation of e-government in the islands of South Halmahera Regency; data collection is carried out by interview, observation, and documentation methods with the researchers themselves as instruments to conduct in-depth research. Determination of informants who are determined through key people, namely informants who are considered to understand the data and information about the object under study, such as the Regent, Regent's expert staff, heads of agencies, and authorities of services. Who knows the problems being studied, in addition to sub-district heads and village heads in island areas, community leaders and academics who understand the implementation of egovernment in the archipelago.

Researchers use the NVIVO 12 Plus application, which is software for managing qualitative data from interviews, focus group discussions, documents, articles, websites, and social media content, and can produce qualitative text in numerical or numerical form, with interesting data visualizations (Nurmandi, 2019).

Based on the NVIVO 12 Plus application, there are at least six stages in the NVIVO 12 Plus data analysis, including: Stage one, Data collection, namely conducting data organization either through data collection either interview data, observations, documents, photos; The second stage of data collection is data collection and made in the form of files to organize data, for example making photo files, pdf files, interview files, observation files so as to facilitate the coding process; The third stage of data coding is coding, namely giving code to words, phrases, sentences or paragraphs that represent code in the form of concepts or terms with the function of analyzing data, so that it is easy to understand coding data; The fourth stage of exploration is by fiddling with the coded data to understand the data more deeply by using the Text Search, word frequency, word cloud, Matrix coding and Crosstab features; The fifth stage is data visualization, namely in the researcher stage using the Mind Map, Project Map and Concept Map features with the aim of better understanding the decoded data; The sixth stage is data presentation, namely at the stage where the researcher has understood and has interpreted it so that it will be presented in the form of a research report or in the form of a publication manuscript.

Results and Discussion

The results and discussion in this article refer to the research objectives, including the implementation of e-government, challenges to implementing e-government, and strategic policies of the South Halmahera Regency Government in supporting the implementation of e-government in the archipelago.

Implementation of E-Government

This study analyzes the implementation of e-government in the South Halmahera Regency as an autonomous region with regional characteristics as an archipelago. Based on the analysis of the implementation of e-government in South Halmahera Regency since 2018, it was announced as a form of local government commitment to implementing bureaucratic reform to encourage better public services.

In general, the implementation of e-government in the South Halmahera Regency is still related to the programs and policies of the central government. The government must follow up at the local level as locally as a program synergy between the central nts. Therefore, although the local government has limited information and communication infrastructure, it must be implemented. The program includes one-stop services through the online single submissions (oss) system, electron OSS identity card services, goods and services procurement system, and budget planning system through the Local Government Information System.

In addition, the South Halmahera district government has also designed a personnel service innovation program through web-based employee attendance. However, it is recognized that it is not optimal because it is still in the experimental stage. The program is only limited to employees who work at the Office and Agency levels. In contrast, regional apparatus organizations at the district level have not been integrated because telecommunications infrastructure is still limited. As explained by the informant, Mr. R is the head of Bappeda.

"Since 2020 we have started Web-based attendance, which has been tried in Bappeda, but data collection is monitored at BKD. However, the level of testing is still in the SKPD environment in Regency cities, while for sub-districts, it is not yet integrated, constrained by a communication technology infrastructure that is not yet optimal".

In addition, there is a service program for making child identity cards, death certificates usand ing social media (WhatsApp). However, the program is still only being implemented in 11 sub-districts that have good telecommunication networks. In contrast, other sub-districts have not been implemented. They are still being carried out manually through the Registry Office Civil and Population of South Halmahera Regency. As explained by Mr MS, the Secretary of the Civil Registry and Population Service, as follows.

"So currently, three documents can be served online, namely family cards, birth certificates and Child Identity Cards (KIA) which can be done online by sending required documents such as KK, KIA and birth certificates from the Puskesmas to the provided WhatsApp group. The Civil Registry and Population Service Office and the necessary documents are immediately processed so that within a day, they can be received through the puskesmas office or sub-district office to be printed and handed over to the owner.

The South Halmahera Regency Government also has several websites that are a means of information and communication. There are public service menus, regional applications, regional potential, villages, investment opportunities, the face of the capital, SKPD, and statistical data. Even now, a new website is being created to encourage the Labuha Smart City program.



Figure 1. South Halmahera Regency Government Website

Even based on field findings, in the use of telecommunications networks to support the implementation of e-government, the South Halmahera Regency Government still relies on the facilitation provided by the Information and Communications Section of the South Halmahera Regency Regional Secretariat through fiber-optic networks and Telkom facilities via a spinet and IndiHome. As stated by the informant, Mrs. AR, the head of the Information and Communications Service.

"For communication infrastructure facilities within the South Halmahera Government, two devices are still used, namely through fiber optic cables facilitated by the Information and Communications Service and the use of several regional device organizations, as well as indihome or spinet facilities provided by Telkom so that in principle there are still infrastructure limitations".

The South Halmahera Regency Government admits that the implementation of e-government has not been maximized due to several factors of equitable distribution of technology and information infrastructure, budget availability, and limited human resources in the field of technology and information. As stated by informant Mr IA, Secretary of the Information and Communication Office of South Halmahera Regency, as follows. *"The problem of implementing e-government in South Halmahera Regency is currently adding to network infrastructure, which is still slow and human resources and budget support are still minimal, affecting performance optimization".*

The research results (Hasan & Arief, 2018) using the Cobit 5 framework method show that the implementation of e-government analyzed using COBIT 5

shows that the implementation of e-government in South Halmahera Regency is at two or maturity level. This finding is in line with the opinion (Yunita & Aprianto, 2018), which states that the slow implementation of e-government by local governments is based on several contextual reasons related to infrastructure, costs, the role of Government, and stakeholder involvement. While (Shackleton & Dawson, 2007) revealed the difficulty of implementing e-government at the local level because local governments are not yet independent in decision-making and budgets depend on the central Government in implementing new programs in the e-government sector.

Challenges of e-Government Implementation

South Halmahera Regency is an area that geographically has difficulties inaccessibility between islands, distribution of technology infrastructure, information, and communication is also still limited. Therefore, the Government of South Halmahera Regency feels the challenge in implementing e-government.

In general, the challenges felt by the South Hal the South Halmahera Regency Government feels ernment are the same as in other areas. The challenges are the same as those in the results of research conducted (Nabafu & Maiga, 2012); (Shannak, 2013)looking at the challenges of e-government between others, 1) mobility of financial resources, 2) building Information and Technology infrastructure; 3) encourage the improvement of the capacity of the apparatus in the field of ICT through training and 4) socio-political factors, namely the political ability to run e-government.

This study indicates that the geographical conditions of South Halamhaera Regency as an archipelagic area significantly affect the slow implementation of egovernment, especially in the provision and distribution of telecommunications technology network infrastructure to remote areas.

Even though the distribution of telecommunications and communication infrastructure through the Universal Service Obligation (USO) Base Transceiver Station (BTS) program for remote areas has been carried out since 2017. As stated by one of the informants, Mr MYN, who is also an expert team of the Regent of South Halmahera district, stated the following.

"Access to communication and information networks in South Halmahera Regency is estimated to have reached 75 percent. However, the BTS used is still low, especially in island areas, so it often experiences problems due to excess usage capacity".

Based on data, it was recorded that 22 of 30 sub-districts in South Halmahera Regency received this assistance with a total of 102 BTS points that were built(xlaxiata.co.id, 2020). Even in 2021, we will get 30 4G BTS Towers again, but this is not enough to meet the community's needs(Asbar, 2021).

Several factors arising from these geographical conditions hinder the accessibility of telecommunication networks and the lack of public understanding about the use of e-government. As explained by the informant, Mr R is the head of

Bappeda.

The Implementation of e-government in South Halmahera Regency has been running. Still, infrastructure and resource constraints in the field of Information and Technology so that its distribution is focused on the district capital. Besides that, the distribution of the electricity network is also evenly distributed, and the low level of public understanding of the use of technology is still low, which is a challenge. In the Implementation of e-government in South Halmahera Regency

Availability of Telecommunications Infrastructure	As an area with characteristics of islands that are still isolated, it impacts the availability of telecommunications network infrastructure. Only 75 areas of South Halmahera have a telecommunications network.
Telecommunications Infrastructure Affordability	The reach of community infrastructure in South Halmahera only hopes for BTS, which was built through government assistance.
Communication Infrastructure Distribution	The distribution of telecommunication infrastructure must be adjusted to the number of islands and the number with small BTS capacity that adapts island areas as remote areas.
IT Expert Distribution	Uneven distribution of skilled workers due to limited personnel in technology and information even at the sub-district government level, do not have qualified technology and information personnel.
Minimal IT Knowledge	Most people live in isolated island areas, so their understanding of technology and information is still limited.
Electric grid distribution	As an area characterized by islands, it has problems with the supply of electricity networks. The telecommunication network often experiences problems, even some BTS use solar power, but it is not as effective as BTS, which uses the electricity network.
No collaboration yet	The collaboration and synergy between stakeholders, especially between local governments and the private sector, are not maximized in building information and telecommunications infrastructure in the archipelago.

Table 1. Constraint Factors in the Archipelago Region

Source: adaptation of research results, 2021.

According to (Madubun et al., 2017); (Rahmatunnisa et al., 2018), regional problems with archipelagic characteristics have challenges in providing public services due to limited infrastructure that connects islands and telecommunications networks. Therefore, in an area that required special skills characteristics archipelago as revealed (Indrajit, 2016, p. 12) in the implementation of e-government needed the ability (capacity) which is interpreted as an element of government empowerment in implementing the e-Government. There are at least

three minimum Capacity things that become an integral part in the implementation of e-government; 1) financing resources (financial); 2) the availability of adequate technology and information infrastructure because based on field conditions, technology infrastructure dramatically determines the success of e-Government; 3) Availability of competent human resources which can run e-Government.

Benefits of E-Government Implementation

Although the implementation of e-Government in South Halmahera Regency has not been maximized, it is felt to have benefits in implementing e-Government in areas with archipelagic characteristics. One of the benefits of the business license service in South Halmahera Regency has all been done online, which is a benefit in service accountability and even reduces the number of fraud (corruption) that often occurs when using the manual system. As for the interview results with the informant, Mr MR, the Head of the Investment and One Stop Integrated Services Agency (DPMPTSP) of South Hamhera Regency, is as follows.

"On the principle that online services are very beneficial, especially avoiding fraud, for example, if there are community members or business actors who apply for a business license through online facilities but have not paid the Land and Building Tax, which is a requirement in applying for a business license, the service system will automatically reject it before fulfilling it. The conditions are set so that there is no fraud committed by the officer because there is no involvement from the officer".

Furthermore, Mr MR's informant explained that:

"By anticipating fraud, all service fees such as business license retribution and other permit fees all go to the regional treasury; it is proven that the target of local revenue (PAD) given to the Investment Agency and One-Stop Integrated Service (DPMPTSP) in the first semester has exceeded half the target given so that it is predicted that at the end of the year the revenue will exceed the given target".

E-Government also provides benefits in budget management because through the Regional Financial Information System. It can be monitored directly by the Regent and his staff even though the Supreme Audit Agency of the Republic of Indonesia is accessing financial reports. As explained by the informant, Mr. R is the head of Bappeda.

"So that the e-government facilitates access to monitor regional financial reports. Meanwhile, in terms of accountability, the public can submit complaints through complaint channels or online complaint services".

According to (Choi et al., 2016), the use of e-government increases the quantity and quality of transactions, reducing and minimizing the potential for irregularities and violations. Therefore (Backus, 2001) sees the purpose of implementing egovernment which internally can facilitate a fast, transparent, accountable, efficient and effective process to carry out government administration activities. Significant cost savings in government operations. At the same time, external strategic objectives can meet public needs so that there is a fast, transparent, accountable, efficient, and effective interaction with the public, citizens, businesses, and other institutions. For example, the research results(Atmojo & Nurwulan, 2020) also see the benefits of e-government in building effectiveness and efficiency in reducing corruption, increasing citizen involvement, and increasing economic growth.

Policies Encouraging E-government

Before, e-government was not just a process of transferring traditional bureaucratic work to bureaucratic modernization through computers. However, nowadays, the e-government program is a necessity for the Government in running Government. Even according to (Septiani, 2020) e-government is used as a strategy to maximize services. The public during the covid 19 pandemic. Because during the covid 19 pandemic, which limits human activity and impacts government and community activities, e-government is very much needed.

One example is when during the pandemic, the Government's activities in South Halmahera Regency held meetings were conducted virtually by utilizing the zoom meeting application facilities, Google rooms, and school activities carried out online (Nan, 2020). Meanwhile (Atmojo & Nurwulan, 2020), in their analysis, believes that the e-government program offered can change the significant activities carried out between the government and citizens that have been carried out traditionally and these changes lead to more effective and efficient government administration.

Realizing this, the South Halmahera Regency Government continues to develop e-government when the telecommunications and communication infrastructure is limited. One of the pieces of evidence is the inclusion of the theegovernment program in the South Halmahera District Medium-Term Development Plan (RPJM) 2021-2025.

In 2021 the South Halmahera Regency Government will launch the Labuha smart city policy as one of the programs that are expected to have implications for improving telecommunications and information infrastructure to accelerate the implementation of e-government in the archipelago. To support the distribution and reach of Telecommunications infrastructure, the South Halmahera Regency Government cooperates with stakeholders in increasing the BTS Universal Service Obligation (USO) Assistance program reduce the enjoyment to of telecommunications infrastructure in the archipelago.

The South Halmahera Government's move shows that there is political will that encourages the equitable distribution of e-government in the archipelago, which is marked by the declaration of Labuha Smart City as the flagship program of the Regent and Deputy Regent in the next five years as stated by the informant, Mr. US, who is also the Regent of South Halmahera as follows.

"In the period of the South Halmahera government in 2021-2025, we commit to promote e-government in South Halmahera Regency, which is marked by the establishment of Labuha Smart City in 100 working days, in addition to encouraging South Halmahera as one of the districts included in the national program for the preparation of smart city master plan and will start in 2022".

According to (Zulhakim, 2012, p. 7), the political will includes the support of political leadership, the availability of budget allocations, the desire to coordinate, the intention to strengthen the program through regulation, preparation of human resources, efforts to initiate the concept of e-government in a sustainable manner.

Meanwhile, according to(Atmojo & Nurwulan, 2020), if the Government has the right policies, it can encourage the implementation of e-government properly and benefit the Government and citizens. In fact (Choi et al., 2016) provide a roadmap in improving the implementation of e-government programs, including the following: first, building an outreach Information and Communication Technology infrastructure; second, Strengthening the appropriate e-government implementation environment and regulating more powerful cyber; third, aspire to efficient technology and information governance; fourth, Manage changes according to standards.

Conclusion

Based on data analysis, it can be said that the implementation of e-government in South Halmahera Regency has been carried out but is still at a moderate level. One of the problems is the lack of telecommunication and information service infrastructure that is not evenly distributed due to the problematic and problematic geographical condition of the South Halmahera Regency. The South Halmahera Regency Government realizes that e-government services provide benefits and even provide services to the community. To encourage implementation, the Government issued the Labuha Smart City policy as one program that encourages local governments to equalize the Government.

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