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Analysis of The Readiness of The Regional Government of Malinau District North Kalimantan Province in Commemorate Digital Transformation

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Abstract

One of the efforts to realize the goals of bureaucratic reform is the modernization of the government bureaucracy which focuses on the orientation of public services to community satisfaction through optimizing the use of information technology. The purpose of this research is to analyse the readiness of the Regional Government of Malinau Regency in commemorate digital transformation and to identify supporting and inhibiting factors for the readiness of the Regional Government of Malinau Regency in commemorate digital transformation. This study uses a qualitative research design with descriptive methods, by adapting the An Integration Information Rich E-Readiness Assessment Tool readiness analysis model, proposed by Mutula & Brakel 2006. This research uses a triagulation analysis method on observation data, interviews and documentation in the field. The research results of the five dimensions of assessment show 1) Information Readiness with information access indicators categorized as ready and information mechanism indicators categorized as quite ready; 2) Institutional Readiness with Organizational Structure indicators categorized as ready, ICT Policy indicators categorized as quite ready and ICT Budget Readiness categorized as ready; 3) HR readiness with HR composition indicators categorized as quite ready, ICT HR qualification indicators categorized as unprepared, and ICT HR preparation indicators categorized as unprepared. 4) Infrastructure Availability with hardware and software infrastructure indicators categorized as ready and internet connection indicators categorized as quite ready; 5) External Environment Readiness with telecommunications service quality indicators categorized as quite ready.
Keywords: *Readiness; Local Government; E-Government; Digital Transformation*

Abstrak

Salah satu upaya mewujudkan tujuan reformasi birokrasi adalah modernisasi birokrasi pemerintahan yang menitikberatkan pada orientasi pelayanan publik kepada kepuasan masyarakat melalui optimalisasi pemanfaatan teknologi informasi. Tujuan penelitian ini adalah untuk menganalisis kesiapan Pemerintah Daerah Kabupaten Malinau Provinsi Kalimantan Utara dalam menyongsong transformasi digital dan mengidentifikasi faktor-faktor penghambat dan pendukung kesiapan

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Pemerintah Daerah Kabupaten Malinau Provinsi Kalimantan Utara dalam menyongsong transformasi digital. Penelitian ini menggunakan desain penelitian Kualitatif dan metode deskriptif, dengan mengadaptasi model analisis kesiapan *An Intergation Information Rich E-Readiness Assessment Tool*, yang dikemukakan oleh Mutula & Brakel 2006. Penelitian ini menggunakan metode analisis triagulasi terhadap data observasi, wawancara, dan Dokumentasi di lapangan. Hasil penelitian dari kelima dimensi penilaian menunjukkan 1) Kesiapan Informasi dengan indikator akses informasi dikategorikan siap dan indikator mekanisme informasi dikategorikan cukup siap; 2) Kesiapan Lembaga dengan indikator Struktur Organisasi dikategorikan siap, indikator Kebijakan TIK dikategorikan cukup siap dan Kesiapan Anggaran TIK dikategorikan siap; 3) Kesiapan SDM dengan indikator komposisi SDM dikategorikan cukup siap, indikator kualifikasi SDM TIK dikategorikan kurang siap, dan indikator penyiapan SDM TIK dikategorikan kurang siap. 4) Kesiaan Infrastruktur dengan indikator infrastruktur perangkat keras dan perangkat lunak dikategorikan siap dan indikator koneksi internet dikategorikan cukup siap; 5) Kesiapan Lingkungan Eksternal dengan indikator kualitas layanan telekomunikasi dikategorikan cukup siap.
Kata Kunci: Kesiapan; Pemerintah Daerah; SPBE; Transformasi Digital

INTRODUCTION

Digital transformation is defined as the impact derived from the use of a combination of digital innovations, which results in changes to the structure, values, processes, position, or ecosystem within an organization or a company(Kagermann, 2018). Another definition of digital transformation is the way a company uses digital technology to develop new digital business models that help create and adapt new value for the company(Verhoef et al., 2021). Therefore, digital transformation is an evolution process that relies on the capabilities and digital technology in creating or transforming business processes, operational processes, and customer experiences, resulting in new value(Morakanyane et al., 2017).

The economic, political, and organizational changes caused by the Fourth Industrial Revolution have made organizational transformation a necessity in terms of scale, scope, and complexity. Organizational transformation is a key phrase that must be continually monitored as a tool for government officials to respond to changes. These changes can be implemented into reform in government activities. On the one hand, the implementation of government organization reform must be supported by the involvement and planning in the field of information and communication technology. One effort to achieve the goal of bureaucratic reform is the modernization of government bureaucracy that emphasizes a public service orientation to satisfy the public through the optimization of information technology utilization.

In today's era of globalization, countries around the world are implementing E-Government entirely and becoming a necessity in all fields, not least in the government sector. As stated on https://www.kominfo.go.id/, the United Nations (UN) has released the results of the 2022 E-Government survey. The results are quite encouraging, with Indonesia's position rising significantly from 88th in 2020 to 77th in 2022(Ditjen Aptika, 2022). This indicates that efforts to develop and implement Electronic-Based Government System (SPBE) have been going well. The results of the hard work and good cooperation between all (SPBE) execution teams in ministries, institutions, and local governments.

Regarding regulations, Indonesia's seriousness in implementing E-Government is reflected in Presidential

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Instruction Number 03 of 2003 concerning National Policy and Strategy for E-Government Development. The regulation instructs the central government including governors and regents/mayors to actively participate in the development of E-Government. Now, the urgency of E-Government is reaffirmed in Presidential Regulation No. 95 of 2018 concerning Electronic-Based Government System. In the regulation, Electronic-Based Government System (SPBE) is defined as a government service that utilizes information and communication technology to provide services to SPBE users.

Taking into account the mandate of Law Number 23 of 2014 concerning Regional Governments, which directs regional government to accelerate the realization of community welfare through improving services, empowerment, and participation of the people and increasing regional competitiveness by considering the principles of democracy, equality, justice, and the distinctive qualities of a region within the unitary state of Indonesia. Bridging the mandate from Presidential Instruction No. 03 of 2003 and with the spirit of regional autonomy, the regional government in Indonesia has made various innovations related to the application of E-Government. These various innovations include launching websites, publishing various government activities through social media, and providing various electronic services that make it easier for service recipients.

Aligned with the strategic issues, the fifth development agenda of Malinau Regency is "Strengthening infrastructure to support economic development and basic services." The fourth point of the fifth issue is Digital Transformation with a) Completion of ICT Infrastructure; b) Utilization of ICT Infrastructure; c) Supporting Facilities for Digital Transformation.

In connection with the development of information technology systems, the implementation of mandatory affairs in the field of communication and informatics becomes very strategic for the region. This can be seen from various changes in information technology-based government management and service provisions. Various affairs in government and public services have been conducted through information systems, with the aim of accelerating public service. Malinau Regency Government has an official website that can be accessed through the domain address http://www.malinau.go.id, and there are subdomains managed by each Regional Device Organization. In addition, to increase public awareness in the use of information systems, the Malinau Regency Government has empowered and developed accessible villages with information and communication systems. The performance achievement data in the field of communication and informatics in this region is presented in the following table 1:

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Table 1. Realization of Achievement of Malinau Regency Communication and Informatics Performance Indicators 2017-2020

Performance Indicator	Year					
	2017	2018	2019	2020	2021	2022
Percentage of Website Existence owned by the Regional Government of Malinau Regency	80	100	100	100	100	100
Percentage of Community Information Group (KIM) Development and Empowerment Coverage at the District Level	30	30	30	30	30	30
Percentage of villages reached by communication	70	95,41	95,41	97,01	97,01	97,01

Source: Data from the Malinau Regency Communication and Informatics Office, 2023 processed

Table 1 shows that the percentage of the existence of government websites owned by Malinau Regency in 2017 was 80 percent, and from 2018 to 2022 it is 100 percent. The percentage of coverage of the development and empowerment of Community Information Groups (KIM) at the district level shows the same data, which is only 30 percent from 2017 to 2022. Then, the percentage of villages covered by communication and information systems was 70 percent in 2017, 95.41 percent in 2018 and 2019, and in 2020, 2021, and 2022 it is 97.01 percent. From this data, it can be concluded that there are still villages that have not been reached by communication and information systems out of the 109 villages in Malinau Regency.

The accessibility of technology and information is also influenced by road infrastructure in Malinau Regency, which consists of national, provincial, and district roads. The total length of roads in Malinau Regency reaches 1,043.2 km², but the roads in this region are still not proportional when compared to the vastness of the area and the spread of residential areas, so connectivity between residential areas in this region is still very low. This data can be seen in Table 2 below:

Table 2. Road Conditions in Malinau Regency 2017-2020

No	Description	Year			
		2017	2018	2019	2020
1	2	3	4	5	6
1.	**Country Road (km)**	0	0	0	n.a
2.	**Provincial Roads (km)**	0	111,82	0	n.a
3.	**Regency Road (km)**	325,32	1.043,20	1.043,2	1.043,2
	a. Good	192,6	68,06	72,02	79,19
	b. Currently	88,54	451,74	446,26	439,50
	c. Damaged	27,74	113,84	116,5	108,33

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	d. Heavily Damaged	16,44	409,56	408,43	416,22
Total Path		**325,32**	**1.043,20**	**1.043,20**	**1.043,20**

Source: Department of Public Works, 2023. Malinau Regency in Figures 2021.

Apart from road infrastructure, electricity is a vital need that must be fulfilled in the region, in moving the wheels of the economy in the community. Electricity production, installed capacity, and electricity sold in Malinau Regency tend to increase from year to year. The data can be seen from the number of customers in 2017 amounting to 17,445, in 2018 amounted to 19,352, in 2019 amounted to 14,431, and in 2020 amounted to 16,386. However, its coverage is still not reaching all areas including the interior and border areas of Malinau Regency.

Furthermore, telecommunication is a basic infrastructure need of the community. The availability of telecommunication services in an area indicates that the area already has awareness of information. Moreover, in the Covid-19 pandemic that occurred at the end of 2019, the availability of telecommunication services became the main need of the community in sharing information and carrying out various activities at home due to social distancing. The coverage of telecommunication services at the district level is obtained by dividing the coverage area by the total area multiplied by 100 percent. Table 3 presents the data on the number of blank spots in Malinau Regency in 2017-2022, namely:

Table 3. Number of Blank Spots in Malinau Regency in 2017-2022

Amount	**Scope**	**Year**					
		2017	**2018**	**2019**	**2020**	**2021**	**2022**
Blank Spot	**Village**	10	10	10	10	10	5

Source: Office of Communication and Informatics 2017-2022.

From the data, there are still blank spots in 10 villages in Malinau Regency. According to information from the Newspaper North Kalimantan, there are still 5 blank spot villages in Malinau Regency in 2022. These villages are Laban Nyarit, Long Lake, Long Rat, Halanga, and Nahakramo Baru (Sollaimansyah, 2022).

Furthermore, Malinau Regency's third mission is to "Realize a Just and Sustainable Infrastructure" by building and developing economic infrastructure, transportation systems, education, health, housing, communication, and information technology, as well as creating a high-quality living environment. However, there is still a gap in the region, and the existing infrastructure is not yet optimal. As stated in the Malinau Regency RPJMD for 2021-2026, there are issues related to public services as shown in the table of development problems based on public service aspects in Malinau Regency. The aspect of communication and information technology has a problem with the lack of information technology facilities in all villages.

Malinau Regency, covering approximately 40,088.41 km² or 55.46% of the North Kalimantan Province's territory, is one of the regions in Indonesia

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that is currently developing the implementation of (SPBE). Based on the Malinau Regency Regional Development Plan Medium Term Development Plan (RPJMD) period 2021-2026 document, the vision to be achieved after 2026 is "The Realization of Independent, Peaceful, and Prosperous Malinau Regency Supported by Professional Government." The mission to realize this vision is the overall implementation of development programs and activities during the period 2021-2026.

The development of Malinau Regency in the next five years aims to realize the vision of Malinau Regency 2021-2026, which is "The Realization of Independent, Peaceful, and Prosperous Malinau Regency Supported by Professional Government." Based on this vision, there is a need to improve public services for the government, education, economy, social, and cultural sectors based on innovation and creativity. Currently, the development of modern civilization has an impact on various aspects of life. Disruptive technology penetration has accelerated change due to the "Internet for Everything" phenomenon (Internet of Things or Iot), where collections of data are so vast and complex that they are difficult to process only using database management or ordinary applications (Big Data), technology that makes the internet as the center of data and application management (Cloud Computing), and artificial intelligence(Pemerintah Daerah Kabupaten Malinau, 2022).

Readiness in Digital transformation is an ability for a country or organizational unit to be prepared, willing to adopt, use, and benefit from an innovation. Public service bureaucracy is expected to improve public services effectively, efficiently, and satisfactorily for all groups. The expectation for improved public services to the community tends to be in line with the shift in lifestyle and increasing community needs.

This is due to the lack of clear policies, guidelines, and standards regarding the implementation of Smart Government, so that the governance process is not effective. However, society demands transparent public services, fast and efficient bureaucracy, causing the Electronic Government System (SPBE) to become a demand that must be implemented seriously. This shows that the lack of coordination among government agencies in SPBE development makes operations inefficient and results in TIK budget wastage.

Information and Communication Technology in government (Smart Government) or better known as Electronic-Based Government System (SPBE) is currently used to support the functions and services of the government in the environment Malinau Regency Government. This governmental activity has been carried out for a long time with increasing intensity. Both the Communication and Information Service as the "leading sector" in TIK development and utilization, and other OPDs currently manage various application systems whose growth is constantly increasing. The inconsistency in the development process of SPBE applications used is a problem in the maintenance process.

The Evaluation Results of the Local Government (SPBE) in North Kalimantan in 2021 show no assessment results for Malinau Regency. The data available only shows the assessment for three regions in North Kalimantan. This is presented in the following table 4:

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Table 4. SPBE Evaluation Results of North Kalimantan Government

No	Institution Name	Indeks SPBE	Predikat
1	**North Kalimantan Provincial Government**	2,38	Enough
2	**Tarakan City Government**	2,20	Enough
3	**District government Bulungan**	2,10	Enough

Source: RI MENPAN-RB Decree Number 1503 of 2023.

Evaluation of the 2021 Government e-Government (SPBE) was conducted on 517 ministries, institutions, and local governments comprising of 92 ministries/institutions and 425 provinces, districts, and cities. Since the annual evaluation was implemented, nine government agencies have achieved an excellent rating. The North Kalimantan Provincial Government obtained a "Sufficient" rating with an index of 2.38. The index value of SPBE application is divided into four categories of ratings, namely: Satisfactory (4.2 - 5.0), Very Good (3.5 - <4.2), Good (2.6 - <3.5), Sufficient (1.8 - <2.6), and Poor (< 1.8).

The purpose of SPBE evaluation is to measure the progress that has been achieved and also to improve the quality of SPBE implementation in central and local government agencies (IPPD), which ultimately results in improving the quality of public services(Ditjen Aptika, 2022). This should be balanced with the expansion of access to support digital transformation and improved service quality, so human resources readiness is needed to face digital challenges, both through empowerment through planned, targeted, and sustainable technical training and education. Considering that Malinau Regency is the largest area in North Kalimantan Province covering an area of 40,088.41 km² with a population of 82,519 people(Pemerintah Daerah Kabupaten Malinau, 2022). The previous research was based on research results by:

1. Mutula & Brakel 2006, berjudul E-Readiness of SMEs in the ICT Sector in Bostwana with respect to information access. (Mutula&Brakel, 2006)
2. Muhammad Adib Z. 2010, Role of Core Elements of Organizations in Conducting Digital Transformation in Fashion SMEs (Case Study of Yogyakarta and Klaten Fashion SMEs).(Adib et al., 2021)
3. Raihana Rahmah, 2015, Readiness of ICT Infrastructure and Human Resources in Implementing the E-Government Blueprint, Case Study: Balikpapan City Government. Postgraduate Program Thesis, Faculty of Engineering, Gajah Mada University. (Rahmah, 2015)
4. Anita Solehati 2008, Gajah Mada University Readiness to Implement Law of the Republic of Indonesia Number 14 of 2008 concerning Openness of Public Information Gajah Mada University Information Technology PPs Thesis. (Solehati, 2010)
5. Anas Rahmat Hidayat 2017, Readiness Analysis (Readiness Assessment) Implementation of Electronic Medical Records at the PKU Muhammadiyah Pakem Inpatient Clinic. National Journal Publications.(Hidayat, 2017)

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This research has similarities with several studies above, namely that they both measure information technology readiness. However, in measuring it, each study uses different tools. There is still little research on Readiness related to Information Technology in welcoming Digital Transformation in the Government sector. For this reason, in this research, researchers will analyze the Readiness of the Malinau Regency Regional Government in commemorate Digital Transformation. Different from previous research which used quantitative methods, this research will use qualitative analysis and is located at the Communication and Informatics Service, Malinau Regency North Kalimantan Province, where there has never been similar research at the research locus.

Furthermore, the issue is the gap between the actual practices and the expected ones. The issue that arises can have an impact on the interests of the organization / institution concerned (Regester, 2003). The basic issue is the readiness of the Malinau Regency Government to embrace digital transformation in governance, in order to improve and accelerate public services at the Central Government and Regional levels. Therefore, Malinau Regency utilizes Information and Communications Technology through the existence of SPBE to ensure better public services. Therefore, the cause of the issue in this study is the readiness of the Malinau Regency Government to embrace digital transformation as part of current governance, especially in the Communication and Information Agency as a technical Regional Apparatus Organization (OPD). Based on the background description above, the researcher is interested in further investigating "Analysis of the Readiness of the Malinau Regency Government in Embracing Digital Transformation."

LITERATURE REVIEW

The Concept of Readiness

Readiness is defined as a benchmark or degree of a society that is declared ready to obtain benefits from information technology. According to IBM, Readiness is a measure of the quality of information and communication technology (ICT) infrastructure of a country and the ability of consumers, businesses, and governments to use ICT (Waryanto, 2012) . Then (Dada, 2006) defined readiness as a benchmark or degree of a society that is declared ready to obtain benefits from information technology. Meanwhile, (Vaati, 2009) defined E-Readiness as the ability of an institution to use a computer network and the internet as a useful machine for accessing and sharing electronic materials.

In this study, the researcher uses a model developed by Mutula and Brakel in 2006. This assessment model is called An Integration Information Rich E-Readiness Assessment Tool and is a development result of several E-Readiness research model concepts such as CSPP (Computer System Policy Project), CID Harvard (Centre of International Development), EIU (Economist Intelligence Unit), and IBM Program. Then Mutula and Brakel added some indicator components of information access in the model they designed (Mutula&Brakel, 2006).

The E-Readiness assessment model developed by Mutula and Brakel was chosen because this model was developed to assess the readiness of an institution in terms of information access, and among many assessment models, this model is the most suitable for use in the E-Readiness assessment in government

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agencies such as in the research locus, namely the Communication and Information Agency of Malinau Regency. There are 5 readiness segments, which are further divided into 112 components. These 5 components are: Information readiness, Business readiness, Human resources readiness, Infrastructure readiness, and External Environmental readiness. The descriptions are in Figure 1 below:

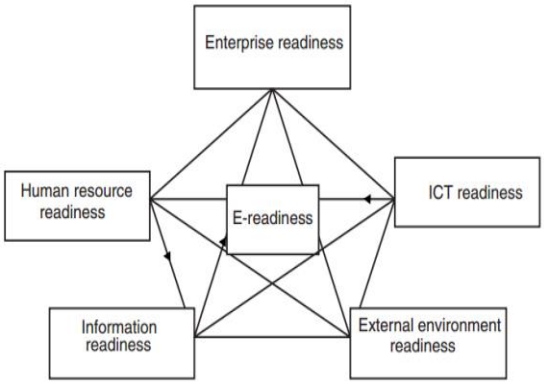

Figure 1. E-Readiness Assessment Model by Mutula & Brakel, 2006.

Furthermore, the researchers adapted the model to the appropriate concept in the research locus at the local government organization of the Communication and Information Office of Malinau Regency as the leading sector, into 5 dimensions, namely 1) Information Readiness; 2) Institutional Readiness; 3) Human Resources Readiness; 4) Infrastructure Readiness; and 5) External Environment Readiness. The first dimension, Information Readiness, has two indicators, namely a. Electronic Information Access and b. Information Mechanism. The second dimension, Institutional Readiness, has three indicators, namely a. Organizational Structure; b. ICT Policies; and c. ICT Budget. The third dimension, Human Resources Readiness, has three indicators, namely a. Human Resources Composition, b. ICT Human Resources Quality, and c. ICT Human Resources Preparation. The fourth dimension, Infrastructure Readiness, has three indicators, namely a. Hardware and software, and b. Internet Connection. The fifth dimension, External Environment Readiness, has an indicator, namely a. Telecommunication Service Quality.

The Concept of Digital Transformation

The government is conducting Digital Transformation as an effort to improve the quality of services to the public. The demands of digital transformation and the readiness of the community to embrace digital services from various sectors(Ditjen Aptika, 2022) including the bureaucracy in Malinau Regency with the implementation of the Electronic Based Government System (SPBE). Digital Transformation, according to (Mazzone, 2014), is an intentional and sustainable digital evolution of an organization, business model, ideation process, or methodology both strategically and tactically. Furthermore, according to (Hat, 2015), digital

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transformation is integrating digital technology into all business areas, fundamentally changing the way organizations operate and provide services to customers. Hat defines digital transformation as a profound transformation of business activities and organizational processes, competencies, and models to fully leverage the changes and opportunities of digital technologies and its faster impact on society in a strategic and prioritized way, thinking about changes now and in the future. Therefore, Digital Transformation is about integrating digital technology into all functional areas of an organization. This requires a fundamental change in the way the organization provides services and creates an impression on the recipients of the services. Furthermore, Digital Transformation also has an impact on how staff accept responsibilities as it will bring about significant changes in the service patterns from the conventional to the more superior services to the public.

In this regard, the Ministry of Administrative and Bureaucratic Reform through the Communication and Information Office in each region has implemented Digital Transformation in the Public Sector by implementing Presidential Regulation Number 95 of 2018 regarding Electronic-Based Government Systems (SPBE) throughout Indonesia. Therefore, each region, district/city is demanded to be ready to implement digital transformation.

RESEARCH METHOD

This study aims to analyze the readiness of the Malinau Regency Local Government in commemorate digital transformation and identify the factors that hinder and support the readiness of the local government in commemorate digital transformation. therefore, we used a qualitative research design with descriptive methods using data collection techniques through direct research, namely observation, interviews and documentation. Research data sources are primary and secondary data in the form of person, place, paper. Data validation technique using triagulation of observation data, interviews and documentation. The research time in the field was carried out for 1 (one) month at the Communication and Informatics Service, Malinau Regency North Kalimantan Province as the leading sector. As for the research informants, there were 13 (thirteen) people, namely the Head of Department, secretary, 3 (three) Heads of Divisions, and 2 (two) Functional Positions who were determined using purposive sampling techniques and 6 (six) community informants were determined using accidental sampling technique. In the field, researchers carry out data analysis techniques by processing and preparing data, categorizing data, coding data, setting data, describing data and then interpreting data.

RESULTS AND DISCUSSION

A. Analysis of the Readiness of the Malinau Regency Local Government in Anticipatin Digital Transformation

The utilization of Information Systems in the Local Government will clearly provide many benefits, including supporting decision-making as evaluation material and advice for regional development as well as a means of accountability for local government agencies for the implementation of its government, thus creating a transparent, accountable, and independent government and will reduce the digital

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divide and encourage the improvement of the community's economy.

The results of this study investigated the readiness of the Malinau Regency Local Government in anticipating digital transformation into 5 (five) readiness dimensions, namely: 1) Information Readiness, 2) Institutional Readiness, 3) Human Resources Readiness, 4) Infrastructure Readiness, 5) External Environment Readiness. The results of the study are described as follows:

1. Information Readiness

Figure 2. Application Development Initiatives**,** 2022 SPBE Regency Malinau Master Plan and Architecture Document.

As a step to develop and integrate applications, there are 4 (four) main initiatives as follows:

a) Strengthening existing applications to increase application reliability and data accountability.
b) Development of a service-based integration platform (services) to ensure that each work unit has a reference for system and data interoperability.
c) Collaborate with application development initiatives in work units so that they can be utilized at the national level.
d) Development of mobile applications to provide transparent and accountable justice services to the public. (Pemerintah Daerah Kabupaten Malinau, 2022)

The development of sustainability on an information system application platform requires an Information System Architecture (Pemerintah Daerah Kabupaten Malinau, 2022)which is described as follows:

1. Operational Application Layer, namely in this section there will be applications that will support regional apparatus in the main operational processes in their work units. Each Regional Apparatus will have an application with a process flow (business process) that varies according to the tasks and functions of the Regional Apparatus. To make it easier to manage application growth in the future, at the operational layer, applications are categorized according to SPBE clusters and Smart City dimensions.
2. Integration Layer, this section is intended for applications, platforms, modules, services that function as mediation between the operational layer and the access layer. The process of setting data access is also

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managed by services at this layer. In this layer there will be a data warehouse which will have primary data content from each application running on the operational layer. Also on this layer there will be web services that will manage data access between applications.

3. Access Layer, namely the access layer section is intended for applications that will consume, make comprehensive use of data from each application in the operational layer. Some of the applications that can be developed here are, for example, websites and mobile apps, which can be used to build community engagement with the Regional Government, messaging centers, which are used to provide direct messages (broadcast) to the public and employees, and dashboard apps, which can be used to carry out the process of monitoring the performance of Regional Apparatuses as well as a tool for decision making by the Regional Head.
4. Architecture Layer In this section there is a database belonging to each application as well as network devices and servers which will be explained in more detail in the next section.

Figure 3. Information System Architecture Design, 2022 (SPBE) Regency Malinau Master Plan and Architecture Document.

2. Institutional Readiness

The results of research on the dimensions of institutional readiness include three indicators, namely a) organizational structure, b) ICT policy and c) ICT budget. Discussing organizational structure indicators, it is understood that according to the success of digital transformation for organizations must be seen beyond the

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utilization of the latest technology and that 'soft' leadership abilities, having the right mindset, and talent development must also be considered when assessing successful digital transformation (Frankiewicz&Chamorro-Premuzic, 2020). Then the results of research on the dimension of institutional readiness include three things: First, the Organizational Structure is categorized as very ready because there is already an organizational structure and for the implementation of the Electronic-Based Government System, the Malinau Regency SPBE Architecture and Master Plan Document has been issued. Second, the ICT Policy is categorized as quite ready with the Malinau District Head's regulation number 9 of 2021 concerning the Malinau District Government's Electronic-Based Government System. however, the existing policies are not yet optimal, resulting in a lack of references for SPBE implementation, particularly regarding the fulfillment of policies that need to exist in the implementation of SPBE, which is explained by the mandatory SPBE policy in Malinau Regency as follows: 1) The policy for the SPBE coordination team already exists but needs to be adjusted to the latest regulations. 2) One data forum policy, doesn't exist yet. 3) The SPBE architecture policy already exists. 4) There is no SPBE plan map policy yet. 5) There is no data management policy yet. 6) There is no SPBE application development policy. 7) There is no intra-local government network service policy. 8) There is no internal policy for using the Regional Government service liaison system. 9) There is no internal information security management policy. 10) Information and communication technology audit internal policy, does not yet exist. Third, ICT Budget Readiness is categorized as very ready. This can be seen from the budget allocated for the implementation of SPBE in Malinau Regency. The 2023 SPBE budget for the DPA (Budget Implementation Document) DISKOMINFO for Malinau Regency, the amount is for programs supporting regional government affairs worth Rp. 25,565,788,925, Public Information and Communication Program Rp. 2,572,223,400, and Informatics Application Program worth Rp. 18,721,928,600.

3. Readiness of human resources

The results of the research on the dimensions of Readiness Human Resources include three things: First, the composition of Human Resources is categorized as quite ready. This can be seen from the number of 37 Regional Organizations (OPD) who have basic ICT competencies (application operators and office applications), there are 1,840 employees, while which has advanced Information Technology (IT) of 81 employees. Second, ICT Human Resources qualifications are categorized as unprepared because advanced ICT qualifications include 4 people who have system development qualifications, 10 people have network & server qualifications, 5 people have maintenance qualifications (technical support), and 3 people have multimedia qualifications (graphic design, video and audio) with a total of 45 applications that are still actively managed in 42 regional apparatus organizations. HR locations with advanced qualifications are spread

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across the Service, Regional Secretariat, Agency and Inspectorate clusters. Third, the preparation of ICT human resources is categorized as unprepared because it has not been maximized in increasing the capacity and placement of IT staff and has not considered the qualifications and needs of IT in the relevant regional apparatus(Pemerintah Daerah Kabupaten Malinau, 2022).

4. Infrastructure Readiness

The government has established strategic activities in the field of information and communication technology by continuing to encourage digital transformation through investments in digital infrastructure. The Ministry of Communication and Informatics has set the main focus on building digital infrastructure and expanding internet coverage throughout Indonesia. The government has allocated a budget to continue various information and communication technology infrastructure development programs, ensure the provision of equitable access to encourage digital transformation in the economic and government sectors, build a national data center and implement an electronic-based government system(Ditjen Aptika, 2022).

The results of the research on the dimensions of infrastructure readiness include two indicators, namely the first indicator of hardware (hardware) and software (software) and an indicator of internet connection. First, hardware and software infrastructure (hardware and software) is categorized as quite ready. This can be seen from the equipment that has been provided to support SPBE such as computers, applications, networks and other supporting devices such as: a) Wide Area Network (WAN) in the District Malinau is available. Overall the work unit (100%) has an internet connection. The availability of internet network in each work unit is quite good. b) Local Area Network (LAN and Wide Area Network (WAN)) networks between OPDs in Malinau Regency which are connected via fiber optic networks. It is known that 100% (37 OPDs) have local or LAN network availability. When viewed from the perspective of LAN performance in each OPD, has smooth LAN performance c) Wireless Fidelity (Wi-Fi) is another alternative to meet the need for an internet network. There are 33 OPDs (89.2%) providing private connections for their internal OPDs, and 4 OPDs (10.8%) providing connections for the public (public connections). d) Computers (PCs and Laptops), the availability of devices connected to the internet is a necessity, especially in the application of SPBE. The access device data in each OPD in the Malinau District Government consisted of PCs (personal computers) and laptops totaling 2214 with categories based on the OS (operating system) used, the majority of which were 1816 using OS above Windows 7, while 388 peripherals used windows 7 series and below. There are 5 devices using Linux and 5 devices based on OS X. The data provides an overview of the number of devices that need to be replaced or upgraded immediately to reduce obstacles during application implementation. The reason for this limitation is using Windows 7 because this OS no longer provides update services so that the OS becomes vulnerable to malware interference which can result in the

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possibility of data loss. e) Supporting Devices, the existing 42 OPDs already have supporting devices in the form of printers and scanners. Apart from that, other supporting devices owned by the Government of Malinau Regency are IP Base CCTV (169 units), followed by fingerprint attendance (52 units), and public smart TV displays (28 units). Second, the Internet connection for the Malinau Regency area is categorized as quite ready because even though the capital city of Malinau Regency and its surroundings have been reached by an internet connection with optimal performance, there are still villages that have not been reached by access to the Internet network or telecommunication system (Blank spots), especially in border areas.

5. External Environment Readiness

According to Mergel et. al. The occurrence of digital transformation is influenced by the internal environment (within the organizational environment) and the external environment (the environment outside the organization). The external environment that is the reason for this digital transformation includes society, business, politics and technological change. While the internal environment includes physical files and organizational management. From the research results of Scupola et. al. Regarding the influence of the external environment, it was concluded that most of the people interviewed indicated that the reason for the change came from the external environment, namely at 83%, not from internal pressure to change the digital processes of an organization itself and the services they provide(Scupola & Mergel, 2022). Technological changes in the public administration environment are seen as one of the main reasons for digital transformation with a rate of 34 percent the highest compared to indicators of external pressure from the environment with a figure of 12.7 percent, society at 14.9 percent, business at 17 percent, and politics at 4.3 percent. So that internal reasons were rarely mentioned by the experts interviewed for the study with a rate of 17 percent.

Then the results of this study show that the readiness of the external environment is categorized as quite ready, seen from the indicators of the quality of telecommunication services in Malinau Regency, namely that improvements in the quality of telecommunication services have been carried out. through the non-3T program, namely the program for equal distribution of telecommunication networks throughout the country outside the 3T areas (frontier, outermost and lagging behind). In June 2022, out of 51 cellular towers for non-3T areas, only 18 are on air or operating in Malinau Regency with an improved network, while 33 other towers are under construction. Although there are still villages that have not been reached by telecommunication systems and internet access. There are five villages with blank spots, namely Laban Nyarit Village, Long Lake Village, Long Rat Village, Halanga Village and Nahakramo Baru Village.

B. Supporting and Inhibiting Factors of the Readiness of the Local Government of Malinau Regency in Welcoming Digital Transformation

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The results of the research can describe the factors that are supporting and inhibiting the readiness of the Malinau District Government in welcoming digital transformation, namely as follows:

Obstacle factor

The results of the study show that the factors inhibiting the readiness of the Regional Government of Malinau Regency in welcoming digital transformation are: a) There is no data integration so that the information pattern is still running individually. The Information Mechanism is categorized as quite ready because it has been managed by each Regional Apparatus Organization (OPD) in the Regional Government of Malinau Regency. The purpose of this mechanism is the realization of correct, consistent and responsible information management through a predetermined mechanism, so that the existing information system can distribute correct information. b) Existing policies are not yet optimal, resulting in a lack of references for the implementation of SPBE, especially regarding the fulfillment of policies that need to exist in the implementation of SPBE, which is explained by the mandatory SPBE policy in Malinau Regency as follows: 1) The policy for the SPBE coordination team already exists but needs to be adjusted to the latest regulations. 2) One data forum policy, doesn't exist yet. 3) The SPBE architecture policy already exists. 4) There is no SPBE plan map policy yet. 5) There is no data management policy yet. 6) There is no SPBE application development policy. 7) There is no intra-local government network service policy. 8) There is no internal policy for using the Regional Government service liaison system. 9) There is no internal information security manag(Pemerintah Daerah Kabupaten Malinau, 2022)ement policy. 10) Information and communication technology audit internal policy, does not yet exist. c) Lack of human resources for ICT experts and not yet optimal human resource management according to ICT qualifications in supporting work and services related to SPBE. d) There has not been an increase in the capacity and competency of IT human resources, both basic and advanced IT qualifications, because there has not been education, training, technical guidance, or special certification for ICT HR. e) There are devices that are not being upgraded (a total of 388 units are still using Windows 7 OS, 5 devices are using Linux and 5 devices are based on OS X) The OS is vulnerable to malware interference which can result in the possibility of data loss. f) There are still villages that have not been reached by telecommunication systems and internet access. There are five villages with blank spots, namely Laban Nyarit Village, Long Lake Village, Long Rat Village, Halanga Village and Nahakramo Baru Village.

Supporting factors

The results of the research on the factors supporting the readiness of the Regional Government of Malinau Regency in welcoming digital transformation are as follows: First, Access to Information which is categorized as very ready, this can be seen from access to electronic information which can be widely accessed through the Malinau Regency website www.malinau.go .id. Second, the Readiness of the Organizational

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Structure is categorized as very ready because there is already an organizational structure and for the implementation of the Electronic-Based Government System, the Malinau Regency SPBE Architecture and Master Plan Document has been issued. Third, the Readiness of the ICT Budget which is categorized as very ready, that is, all costs related to this SPBE are charged to the Regional Revenue and Expenditure Budget (APBD) of the Malinau Regency for the Fiscal Year concerned through the DPA of the Malinau Regency Communication and Informatics Office. The details of the 2023 budget are as follows 1) programs to support Regional Government affairs worth Rp. 25,565,788,925. 2) Public Information and Communication Program Rp. 2,572,223,400. 3) Informatics Application Program Rp. 18,721,928,600(Pemerintah Daerah Kabupaten Malinau, 2022). Fifth, the fifth development agenda for Malinau Regency is "Strengthening infrastructure to support economic development and basic services." As for the fourth point of the fifth issue, namely Digital Transformation by a) Completion of ICT Infrastructure; b) Utilization of ICT Infrastructure; c) Digital Transformation Support Facilities. This is stated in the Malinau District Medium Term Development Plan (RPJMD) document for 2021-2026. Sixth, without neglecting aspects in the quite ready category which are also supporting factors for the implementation of SPBE in Malinau district, namely indicators of information mechanisms, ICT policies, Composition of Human Resources, ICT Infrastructure, and Quality of Telecommunications Services.

CONCLUSION

The conclusion of the research results from the five dimensions shows that: First, the information readiness dimension which includes two indicators showing access to information is categorized as very ready and the information mechanism indicator is categorized as quite ready. Second, the institutional readiness dimension includes three indicators, namely organizational structure indicators which are categorized as very ready, ICT policy indicators which are categorized as quite ready, and ICT budget indicators which are categorized as very ready. Third, the HR readiness dimension includes three indicators, namely the composition indicator of human resources is categorized as quite ready, the ICT HR qualification indicator is categorized as less prepared, and the ICT HR preparation indicator is categorized as less prepared. Fourth, the infrastructure readiness dimension, includes two indicators, namely hardware and software infrastructure indicators (hardware and software) which are categorized as quite ready and internet connection indicators for the Malinau Regency area which are categorized as quite ready. Fifth, the dimensions of external environmental readiness with indicators of the quality of telecommunications services are categorized as quite ready.

Factors inhibiting the Malinau Regency Regional Government's readiness to commemorate digital transformation are that there is no data integration, existing policies are not yet optimal, there is a shortage of ICT expert human resources and not yet optimal human resource management according to ICT qualifications, there is no increase in IT HR capacity and competency, there

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are no tools which has not been upgraded so that the OS is vulnerable to malware interference. There are still villages that have not been reached by telecommunications systems and internet access. Meanwhile, the supporting factors for the readiness of the Regional Government of Malinau Regency to commemorate digital transformation are that information access is provided very well, the organizational structure is very well prepared, the preparedness of the ICT budget ordered is very ready, the fifth development agenda for Malinau Regency is "Strengthening infrastructure to support economic development and basic services" Regarding the fourth point of the fifth issue, namely Digital Transformation.

Implementation of an Electronic-Based Government System can be implemented by identifying the factors inhibiting the readiness of the Regional Government of Malinau Regency North Kalimantan Province in commemorate digital transformation, then making improvements and improving service quality by maximizing existing supporting factors. Furthermore, the existing inhibiting factors can be immediately addressed so that the final results will be visible in the results of monitoring and evaluation of SPBE at Central Agencies and Regional Governments by the Ministry of PAN-RB which is carried out every year. In this way, it is hoped that it will be possible to realize an increase in service quality through SPBE as a form of readiness of the Regional Government of Malinau Regency, North Kalimantan Province to commemorate digital transformation.

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