

BUILDING TANA TORAJA TOWARDS A SMART CITY

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ABSTRACT

Tana Toraja is one of the districts located in the northern part of South Sulawesi. Currently, the Tana Toraja District plans to build at least 31 4G cellular network towers in 10 sub-districts to equalize the development of telecommunication infrastructure in the area. Therefore, this research is conducted to provide recommendations to the Tana Toraja District Government regarding the optimization of village development policies using information and communication technology approaches and to encourage the implementation of digital empowerment in public services. The results of this study indicate that the approach that can be used by the Tana Toraja District Government in building towards a smart city includes: developing infrastructure that can support smooth internet connectivity throughout the area and developing public services towards digitalization, such as e-Administration, e-Transportation, e-Health, e-Money, and e-Report. However, the increasing offering of technology-based public services to be developed in the Tana Toraja District will pose significant challenges, particularly in terms of human resources, financing, and data security.

KEYWORDS Smart City, Internet, Tana Toraja



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INTRODUCTION

The Government of Indonesia has been promoting the development of traditional villages throughout the country since the enactment of Village Law No. 6 of 2014. Achieving the welfare of rural communities is the main objective of this legislation, where all residents are expected to utilize various facilities and infrastructure in their social environment, thus encouraging sustainable economic development.

Village development holds a high level of urgency for several interrelated reasons. Out of the 514 districts/municipalities in 38 provinces in Indonesia, the Indonesian economy is still centralized in 10 regions, namely DKI Jakarta,

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Surabaya, Bekasi, Bandung, Bogor, Karawang, Sidoarjo, Bengkalis, and Semarang (Jefriando, 2017). The high economic disparity between regions has also increased massive urbanization from villages to urban areas (Rijal & Tahir, 2022).

The decline in the quality of human resources in rural areas in the agriculture sector, due to the lack of interest among youth in this field, has occurred because farming is considered a labor-intensive occupation with very low income (Susilowati, 2016). Additionally, the decrease in potential human resources in rural areas due to the highly lucrative urban economic attractions is also considered a cause of the low quality of regional public services (Rohayatin et al., 2017).

The year 2023 marked a turning point in Indonesia's economic recovery since the Revocation of Community Activity Restrictions (PPKM) was officially lifted at the end of 2022. This was a consequence of the Covid-19 pandemic, which resulted in the cessation of village development plans and affected nearly all regions of Indonesia.

However, the Covid-19 pandemic also had a positive impact on the development of digital platforms across all sectors. From online learning in schools, teleconference meetings in offices, online health facilities (eHealth), online surveys by survey agencies, to eGovernment to enhance public services based on smartphone applications (Azizah & Nuswantoro, 2021; Munawar et al., 2021; Nuryadi et al., 2022; Sari & Wirman, 2021).

Entering the era of digitalization in all fields, many countries around the world are revolutionizing their city development through automation approaches, known as "Smart City." This concept is a strategic combination that links six main dimensions: economy, environment, governance, living, mobility, and society. In practice, local governments apply various types of information and communication technologies (ICT) to improve the quality of life of their residents (Camero & Alba, 2019).

Various public services such as population information systems, development, water management, and transportation network regulation are implemented using touchless approaches. Ten major cities in the world that have implemented smart cities include Copenhagen in Denmark, Singapore, Stockholm in Sweden, Zurich and Geneva in Switzerland, Boston and San Francisco in America, Tokyo in Japan, Amsterdam in the Netherlands, and Melbourne in Australia (Vrabie & Tirziu, 2018).

The architecture of a smart city generally focuses on developing a digital ecosystem in every city infrastructure, aimed at developing new products or services and increasing opportunities for local government revenue (Alshuwaikhat et al., 2022). External support is also needed to strengthen partnership networks between local governments and businesses, non-profit organizations, social communities, educational institutions, and regional hospitals, so that local governments can improve the overall quality of public services (Quan & Solheim, 2023).

The involvement of competent private sectors to provide complementary expertise, share risks, and provide innovative solutions in the development of the public sector is also essential. Moreover, a sustainable and consistent infrastructure development process is crucial in enhancing the effectiveness of smart city development (Uyarra et al., 2020).

Furthermore, the objective of this research is to provide recommendations to the Tana Toraja District Government regarding the optimization of village development policies using information and communication technology approaches and to promote the implementation of digital empowerment in public services.

RESEARCH METHOD

The literature review approach was chosen to explain the smart city phenomenon based on the results of previous research, where researchers reviewed, critiqued, and synthesized literature that represented smart city development from various countries in the world. In addition, the literature review approach can also provide a strategic picture to define conditions, identify progress and gaps that arise among related literature, so that the results of this research can be used by decision makers in the context of public services (Cooper & Schindler, 2017).

RESULT AND DISCUSSION

Infrastructure Development Towards Smart City

Tana Toraja is one of the districts located in the northern part of South Sulawesi. This area covers 19 sub-districts and is inhabited by approximately 229 thousand people according to the 2017 census. Compared to other districts/cities in South Sulawesi, Tana Toraja ranks 2nd in the health index, 6th in the education index, and 24th in the welfare index of the population. The main development priorities of Tana Toraja District are directed towards the Department of Agriculture and Food Security program, as well as the Regional Environmental and Forestry Agency (Tana Toraja District Government, 2017).

Regarding regional work plans and funding, the Tana Toraja District Development Planning Agency (Bappeda) (2019) focuses on development through 13 main programs, namely: office administration services, capacity building for apparatus, apparatus facilities and infrastructure, apparatus discipline, development of performance and financial achievement reporting systems, data and information development, planning for the development of large and medium-sized cities, institutional capacity building for regional development planning, economic development, strategic area development, and spatial planning.

In the smart city modeling, having good internet connectivity is not just an option, but it becomes an essential and vital basic need to benefit from standardized digital systems. Although the uneven strength of internet connectivity and the lack of service provider support in many remote areas remain major obstacles in transforming rural areas into smart cities (Dobrilović, 2018). This then drives urban management to create policies that support infrastructure development in creating a modern connectivity ecosystem that connects city infrastructure, internet service providers, and community technology equipment (Jo et al., 2019).

Until now, the Tana Toraja District plans to build at least 31 4G cellular network towers, spread across the Sub-Districts of Simbuang, Rano, Mappak, Malimbing Baleppe, Gandangbatu Salinan, Bonggakarandeng, Bittuang, and Masanda. The

construction of Base Transceiver Station (BTS) towers in the Tana Toraja District area is the result of cooperation between the local government and the Ministry of Communication and Information in order to equalize the development of telecommunication infrastructure in the region (Tana Toraja District Government, 2022).

The increasing construction of cellular network towers forms the main foundation for the development of Tana Toraja District towards a smart city. In this regard, a strong internet network will support the renewal of information captured by public digital equipment to the data center, related transmission lines, including expanding connections to end users (the community) in real-time ((Streimikis et al., 2021).

Digitalization of Public Services

Many studies have shown that digital services have achieved great success in many business sectors since the pandemic era, such as online shopping behavior, the use of online transportation, and the use of digital money, where people no longer need physical contact to do various things. This phenomenon also encourages local governments to follow existing trends so they can provide digital services to meet public needs.

There are many types of technology that can be used to create public service systems, with the majority of existing technologies utilizing sensor applications. In line with the city development plans from the Tana Toraja District Government and the Tana Toraja District Development Planning Agency (Bappeda), the digitalization of public services can be developed through the following applications:

e-Administration

The electronic administration application aims to simplify and improve the administration services offered by local governments to various parties, such as:

Citizens

Electronic administration services to citizens can include the processing of identity cards, birth certificates, death certificates, vehicle ownership books, driver's licenses, vehicle registration certificates, building permits, passports, land ownership certificates, and so on.

Business Owners

Electronic administration services to business owners can include regulations, policies, and operational business announcements, business tax registration, trade permits, updating business information according to the legal entity owned, tender registration, or business assistance registration.

Other Government Entities

Electronic administration services to other government entities include data exchange between governments, both from other local governments and the central government, inter-regional collaboration, reporting on local government performance, and so on.

Civil Servants (ASN)

Electronic administration services to local civil servants can include daily attendance reports, periodical work reports, updates on public service information, payroll, travel expense claims, leave, and balance checks.

e-Transportation

This application is designed to help people plan city travel quickly and efficiently. The application may include tourist safety guidelines, e-Ticketing solutions, and details about the timing and vehicles available for travel. Some of these applications also provide language selection services to help tourists visit various tourist locations in Tana Toraja, including providing information to tourists about what is allowed and not allowed at tourist locations, or travel advice for children and the elderly. This application can also be used by people with disabilities to request additional facilities before using the service.

e-Health

This application can be used by the public to access health care more quickly and efficiently, receive medical treatment, or schedule vaccinations for infants in each sub-district. For example, to receive services at RSUD Lakipadada or community health centers in each sub-district in the Tana Toraja District.

e-Money

Issuing e-money requires strong cooperation with banking institutions, such as the South Sulawesi Regional Development Bank. In fact, some e-money services like Gopay or Dana are currently widely used by the general public. Besides being easy to use and supporting the development of cashless culture, the existence of e-money services can also increase the revenue of the Tana Toraja District.

e-Report

This application is a kind of suggestion box and complaint platform for the performance of civil servants (ASN) in the Tana Toraja District. e-Report will be very effective in assessing the performance of civil servants because public voices are used as the basis for assessment. The existence of applications like this will make it easier for the Tana Toraja District Government to handle misconduct or misuse of ASN positions in the Tana Toraja District.

Thus, the development of public services towards digitalization is expected to improve public services, save long-term regional budget costs, and improve the overall quality of life for the people of the Tana Toraja District.

Challenges and Obstacles

Equitably distributing development in the field of technology is not inherently easy, but it is also not impossible to achieve. Therefore, the increasing provision of

technology-based public services to be developed in the Tana Toraja District will pose significant challenges in several aspects, including:

Human resources

Developing online public service systems will require human resources with high ICT skills. Support from experts from local universities, representatives from internet service providers, the Ministry of Communication and Information Technology, as well as developers in the field of technology development, is also essential to provide advice on various aspects related to the implementation of Tana Toraja District towards a Smart City.

Financing

Building various internet technology infrastructure will be a significant upfront investment in the early stages of development, which may require more funding allocation compared to physical infrastructure development. However, the revenue of the local government will increase rapidly from the use of public service applications by the community.

Data security

a. Data leakage or loss

Digital data can be at risk if unauthorized individuals gain access to the application server and then delete or modify the data. This risk will increase if the management does not have backups of the data.

b. Handling of malicious users

Users of the application with malicious intentions can pose as attackers under the guise of being legitimate users, gaining access to sensitive information stored in the cloud.

c. False authentication

This type of attack allows legitimate user data to be used to access personal information without the knowledge of the legitimate user, potentially causing harm not only to the user but also to the local government.

CONCLUSION

The results of this study show several approaches that can be used by the Tana Toraja Regency Government in carrying out development towards *a smart city*, namely: developing infrastructure that can support smooth internet connections throughout the region, and developing public services towards digitalization, such as *e-Administration*, *e-Transportation*, *e-Health*, *e-Money* and *e-Report*. However, the increasing offering of technology-based public services to be developed in Tana Toraja Regency will pose major challenges, especially in terms of human resources, financing, and data security. Therefore, suggestions that can be given to the Regional Government of North Tana Toraja Regency based on the results of this study are as follows: 1) Collaborate with the private sector, *experts*

from local universities, representatives from internet service provider companies, the Ministry of Communication and Information, and developers in the field of technology development to achieve strong planning for development towards *smart cities*. 2) Testing the application to determine weaknesses in terms of ease of use or data security. 3) Recruiting human resources who have high potential in the ICT field from various sub-districts to improve economic equity of the local community.

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