Digital Literacy in Building a Smart City at Banda Aceh

Muhammad Fazil*, Asrul Fahmi, Aflia Riski

Department of Communication Studies, Universitas Malikussaleh, Aceh, Indonesia
*Corresponding author E-mail: mfazil@unimal.ac.id

Abstract

The commitment to innovative city-based development must begin with the presence of digital communities that become users and take advantage of all the smarts presented in a smart city. Strengthening digitalization in society by utilizing all the technology the government offers is interesting to study. Banda Aceh is one of the first cities in Aceh Province to implement the bright city concept successfully; the choice in this study is where the digital literacy strategy in urban communities is the focus. This study aims to describe and analyze digital literacy strategies and their obstacles in building a smart city in Banda Aceh City. This study also uses a descriptive qualitative approach with data collection techniques using observation, interviews, and documentation studies. The data analysis technique used in this study is an interactive model through three main things: data reduction, data presentation, and conclusion. The results of the study found that digital literacy in building a smart city in the Banda Aceh City government by; First, Providing Smart City Technical Guidance, developing intelligent city policies and institutions, conducting readiness analysis and setting targets, introducing smart cities through social media, Cooperating with the community and actively descending to the village, as well as cooperating with other work units, and Infrastructure Development. The obstacles include the government, budget, community, and public organizations. Furthermore, some people are less responsive and use digital literacy for people with disabilities.

Keywords: Strategy, Digital Literacy, Development, Smart City.

1. Introduction

Rapid social changes to current technological developments will make it easier to carry out and create policies for improving government services. Technology acts as an enabler that makes everything easier to use and utilize. Furthermore, the innovation of the innovative city program is the efforts made by the city ecosystem to overcome various problems and improve the quality of life for humans and urban communities. In Indonesia, the Minister of Communication and Informatics Regulation No. 8/2019 has allowed regions to innovate in the welfare and prosperity of their people freely, especially with government regulations regarding electronic-based government systems and the Presidential Regulation on One Data Indonesia. Creativity and innovation movements are part of the development movement. One is the digital literacy movement to present a smart city [1] [2].

The development of cities or regions based on smart cities has become a trend throughout the world, as well as the development of cities or areas in Indonesia. The smart city approach has become a necessity, especially for the government, to provide better services and improve the living standards of its people. In the Movement Towards 100 innovative city program launched by the Ministry of Communication and Informatics, Banda Aceh City is encouraged to accelerate development using the bright city concept. A creative city-based story opens a vast innovation space to solve various problems facing the City by utilizing technology as an enabling factor. This also happens in cities in Indonesia, including the city of Banda Aceh, which is the capital of the province of Aceh in Indonesia [3] [4].

The city of Banda Aceh is known as the City of Veranda of Mecca, which is based on the consistency of applying Islamic law in a kaffah manner by strengthening the implementation of aqidah and morals in every order of people's lives to embody Islamic values in all aspects of the lives of the citizens of Banda Aceh City. So, the concept of innovative city development is adapted to local wisdom. All the development of innovative programs should be oriented to Islamic sharia. The Smart City is a way to shape Banda Aceh City into a livable city with the provision of adequate public facilities to be able to provide various facilities and improve the welfare and comfort of the Banda Aceh community. This is a unique and added value for Banda Aceh City with the local wisdom of the Aceh province [5] [6].

Banda Aceh City made various preparations for innovative reform to develop a smart city. Socializing technology in the community is essential in preparing comprehensively for implementing smart cities in Banda Aceh. The three central company readiness of the structure, infrastructure and superstructure. Structural components are carried out to determine the condition of the main elements that are the driving force in the development of Banda Aceh City. Infrastructure readiness in Banda Aceh City provides an overview and measure of the condition of physical facilities and infrastructure, which is the starting point for regional development Superstructure is a step in preparing Banda Aceh City policies or regulations, institutions, and management for implementing innovative city development [7].

From these steps, the strength of implementing a smart city is, of course, in the condition of the city community in accepting technology in their daily lives, both personal and social life. The power of technology acceptance in society is undoubtedly a force in accelerating the implementation of smart cities in Banda Aceh. The emphasis on digital literacy is focused on how government and community, as well as stakeholders in using online information and communicating online, can have a critical attitude, have competence and understanding of digital literacy by being able to search, access, and filter information correctly to improve quality and creativity in the digital era [8].

Therefore, the study of digital literacy strategies is essential to carry out, considering that this is an integral part of the implementation of smart cities, especially in the steps taken in the process of socializing the presence of a smart city in the city of Banda Aceh. This research is essential in getting a digital literacy strategy for building a smart city and the obstacles in the socialization of technology in a society undergoing a revolution / bright city arrangement planned by the government [9] [10].

2. Literature Review

2.1. Digital Literacy Strategy

A strategy is several decisions and actions to adjust organizational resources to the opportunities and challenges faced in the industrial environment [11]. The term strategy generally outlines the direction in achieving predetermined targets [12]. Strategy is also defined as a plan, method, or series of activities designed to achieve a particular educational goal, which means that the preparation of a strategy has only reached the process of preparing a work plan that has not yet reached action [13]. Based on some of the definitions above, it can be concluded that strategy is a tactic, action plan, or series of activities to be carried out to achieve a predetermined goal.

Literacy is a bridge for adaptation, bringing understood information into various situations [14]. Literacy is reading, writing, and numeric literacy, which are the three skills for life skills [15]. From some of these understandings, in simple terms, literacy is the ability and learning skills to adapt to the environment. Humans have to understand information as a basis for learning throughout life. At the same time, the word digital comes from digitus in Greek, which means fingers. If a person's fingers are counted, they will total ten [16]. The value of ten consists of 2 radices, namely 1 and 0. Therefore, digital is a description of a number condition consisting of 0 and 1 or off and on (binary number system), which can also be referred to as bits (binary digits). The strategy intended in this study is related to digital literacy strategies in the community.

Understanding digital literacy is individuals' interest, attitude, and ability to use digital technology and communication tools to access, manage, integrate, analyze and evaluate information, build new knowledge and create and communicate with others to participate effectively in society [17]. Digital literacy is also one of the most fundamental strengths of operating computers and internet devices [16]. Digital literacy is the ability to understand and use information from various formats from a broader range of information sources and can be displayed through computer devices [18] [19]. At the same time, digital literacy competencies are communication and information technology skills that are the core competencies in digital literacy [20]. From some of the definitions above, it can be concluded that digital literacy is the ability to understand and use digital devices or online information sources to build new knowledge and access and communicate with others in various aspects of daily life.

2.2. Smart city

According to Cohen (2014), a smart city is a city that uses ICT intelligently and efficiently in using various resources, resulting in cost and energy savings, improving services and quality of life, and reducing environmental footprint, all of which contribute to innovation and an environmentally friendly economy.[21] A smart city is a city area that has integrated information and communication technology in daily governance to realize efficiency, improve public services, and increase the comfort and welfare of its citizens.

A smart city is a sound performance of a town, supported by an intelligent combination of all activities, studies, discoveries, and awareness of the city's people. Smart cities are expected to positively impact government, social life, transportation, quality of life, and healthy competition in all fields, by utilizing information and communication technology. A smart city is a city that can use human resources, social capital, and modern telecommunications infrastructure to realize sustainable economic growth and high quality of life, with wise resource management through public participation-based governance. According to [22], Several characteristics characterize intelligent cities, namely: (1) Interconnection between urban parts; (2) Integration of urban information systems; (3) Urban management and service cooperation; (4) Latest ICT (Information and Communication Technology) applications.

3. Methods

The method used in this study is a descriptive qualitative approach implemented in Banda Aceh City as a smart city in Aceh. The researcher will describe the final results of the survey, then conclude. This study also uses data collection techniques through observation, interviews, and documentation studies. The data analysis technique used in this study is an interactive model through three main things: data reduction, data presentation, and conclusion.

4. Results and Discussion

4.1. Digital Literacy in Banda Aceh City

A smart city is an ICT-based city development where the availability of integrated information and infrastructure between local governments and business components, communities, and the potential of the city area (Directorate General of Spatial Planning, Ministry of Public Works: 2015). The concept of implementing the Smart city of Banda Aceh City started in 2016, supported by the ITMP (IT Master Plan) document for the City of Banda Aceh 2010 – 2014. Currently, the City of Banda Aceh is also finalizing the ITMP document for the City of Banda Aceh 2019 – 2023. The concept of a smart city in Banda Aceh has pillars that continue to develop to this day.

In 2019 Banda Aceh joined the Movement Towards 100 innovative city program launched by the Ministry of Communication and Information. The city of Banda Aceh seizes the opportunity of an offer from the center to build a Smart city. The Ministry of Communication and Informatics offers regional leaders who are willing to go to an intelligent wise go through an assessment.

Fig 1. Opening of Movement Towards Smart City Banda Aceh City 2019

The smart city of Banda Aceh City consists of 6 (six) dimensions: Smart Governance, Smart Branding, Smart Economy, Smart Living, Smart Society, and Smart Environment. These dimensions are an approach to governance that targets strategic issues in the government and society of Banda Aceh City so that the vision of Banda Aceh City's smart city is realized "Becoming an Innovative and Competitive Islamic Smart City." A smart city is a way to shape Banda Aceh City into a livable city with the provision of adequate public facilities to be able to provide various facilities and improve the welfare and comfort of the Banda Aceh community. With an identity as an Islamic city that makes it unique and adds value to the city of Banda Aceh.

The planning and development of the intelligent city of Banda Aceh City through a 6 (six) dimensional approach is included in the preparation of the Master Plan in a systematic, effective, efficient, logical, conditional, participatory and realistic manner to the needs of the City of Banda Aceh in the short, medium and long term so that it can realizing a sustainable city, improving the quality of life of the people and the government of Banda Aceh City which is clean, effective, transparent, and accountable as well as quality and reliable public services.

Fig 2. Smart city dimensions
Source: Banda Aceh City Smart City Master Plan 2019-2029

Several Mayor Regulations are expected to be a reference for drafting regulations for implementing the bright city concept in Banda Aceh City so that policies issued by regional leaders remain sustainable and accommodated in one container. Mayoral rules that can be used as a reference for smart cities have been made since 2016 in line with the implementation of the Information and Communication Technology (ICT) Master Plan. This Banda Aceh Mayor's Regulation has included 6 Smart City Dimensional mechanisms.

Table 1. Development of Smart City in Banda Aceh City 2016-2019

2016	2018	2019
Smart Government	Smart Governance	Smart Governance
Smart Economy	Smart People	Smart Branding
Smart Education	Smart Transportation	Smart Economy
Smart Health	Sustainable Infrastructure	Smart Living
Smart Information	Inclusive Community	Smart Society
	Resilient City	Smart Environment

Source: Book I Master Plan Smart city-Banda Aceh City

The implementation of smart cities in Banda Aceh City continues to be carried out on an ongoing basis. So when discussing the 6 (six) dimensions of the current smart city, it cannot be separated from the previous activities. Program data and information about the City of Banda Aceh are available at the City Government data center as official data and information for the City Government. All Regional Apparatuses within the City Government submit data to the City Government data center in an up-to-date, periodic and sustainable manner to support data and information.

The proposed development and development of Information and Communication Technology by Regional Apparatus in the City Government environment is guided by the Banda Aceh City Smart City Master Plan. Several programs have been implemented to improve the digital literacy of the Acehnese people. There is an annual activity with the theme Wisely Using Social Media for students. In addition to digital literacy activities, there are also coding activities for information security.

Fig 3. Data Center Room

Fig 4. Digitization of Registration Disdukcapil Diskominfo Banda Aceh

To coremainelevant to the times, the government and the people of Banda Aceh City continue to upgrade themselves and master science and technological developments. Community interaction is expected to be intensively established to form a positive, productive order with good digital literacy. Improving They are improvingteracy in the field of ICT and developing programs that lead to Smart city development. From the observations that researchers found, Banda Aceh City made various preparations for smart city reform in the process of developing an innovative city The readiness of the smart intelligence of Banda Aceh in terms of the city's capacity and capability to implement smart city development programs. The three main components to be studied are structural readiness. This program must be strengthened with good management to commit to presenting technology or digitalization in the entire government system, from service delivery to human resource management. Second, the readiness of infrastructure in Banda Aceh City provides an overview and measure of the condition of physical facilities and infrastructure, which is the starting point for regional smart city development. Third, the superstructure is the preparation of Banda Aceh City policies or regulations, institutions, and management of the implementation of smart city development.

Implementing digital literacy in building a smart city is indeed not easy to implement in an area. The harmonization of Banda Aceh City's smart city policies and strategies is carried out through synchronization, harmonization, and synergy of City policies. Strategy is a systematic procedure for implementing a comprehensive and long-term plan to achieve goals. Strategy can also be defined as an action plan outlining how to set goals. Of the several strategies carried out in building digital literacy towards the smart city of Banda Aceh, namely; First, providing smart city technical guidance (Bimtek) carried out by the Central Kominfo by gathering smart city development stakeholders, which include the community, government, academics, providers. Then collect input related to the direction of smart city development and put it in the form of a smart city master plan.

Second, the Mayor's regulation was made to strengthen the movement program toward a smart city. The development of smart city policies and institutions is one aspect that is needed for local governments to ensure the sustainability of a development program. Currently, the Mayor of Banda Aceh has issued Banda Aceh Mayor Regulation 18 of 2020 concerning the smart city of Banda Aceh City. He has established the Banda Aceh smart city Council as stated in the Mayor of Banda Aceh Decree Number 392 of 2019.

Third, carry out a readiness analysis and set targets, where the target is each Regional Work Unit (SKPD) implementing smart city programs or innovations. The city of Banda Aceh defines six dimensions of a smart city. Then several SKPDs are analyzed and selected to be responsible and focus on one area based on their suitability and proximity to their fields of the smart city dimension. Fourth, the introduction of smart cities to regional leaders; The leading actor who must know, understand and be aware of smart cities is the leader because it is the most crucial factor as a driving force so that agencies and their members can implement digital literacy programs. Fifth, Socialization activities are carried out in various ways, namely: Social Media; Collaborating with the community and Actively descending to the village; Sixth, Establish Cooperation with Other Work Units; Relying on consolidation and coordination capabilities to the center, and cooperating with Kominfo from outside Aceh and higher education institutions in Banda Aceh.

Next, Seventh, Infrastructure Development; There are smart city supporters, namely the telecommunications infrastructure network in Banda Aceh City that is already available throughout Banda Aceh City, based on Fiber Optic (FO) cables or using wireless radio. And finally, the eighth evaluation was carried out based on the Banda Aceh smart city Master Plan book, reviewing which programs were running and not running and the causes carried out by the Central Kominfo.

With the application of the smart city concept in Banda Aceh City, it can improve public services to be better, more transparent, and accountable and can increase efficiency and effectiveness in various activities and services. It is hoped that all elements and stakeholders of Banda Aceh City can tread the road in the same direction to become a Smart City.

4.2. Barriers to Digital Literacy in Banda Aceh City

Smart city implementation in Banda Aceh is not without obstacles and weaknesses. Some obstacles must be faced to implement a smart city in Banda Aceh City through collaboration between public organizations and private companies. Barriers can cause the implementation to be disrupted and not carried out correctly. Each of the six dimensions of the smart city launched in Banda Aceh City has challenges that must be resolved. Based on researchers' observations, the implementation of smart cities in Banda Aceh City has obstacles from the government, the community, and funding. Commitment from all levels of the government, especially at the leadership level, is a factor that is needed; government leaders must be ready to become the driving force of development in the field of information technology.

Based on the results of interviews with various stakeholders in Banda Aceh, it was found that there are several supporting factors as well as inhibiting factors in the implementation of the smart city concept in Banda Aceh, namely as follows: First, infrastructure; There is still limited infrastructure that can support the performance of a smart city in Banda Aceh City. Second, Data Integration; The development of information systems in the Banda Aceh City Government is still separate and not integrated. Several methods are built with closed-source technology, and few are produced without using a standardized database schema, making it very difficult to integrate with other systems.

The third, Security; In the use of smart cities, there are concerns regarding data security and privacy. On an ongoing basis, threats that affect data confidentiality, integrity, and accessibility may be vulnerable to cyber exposure. Fourth, Stakeholder Commitment; It Difficulty gathering SKPD to sit together to discuss smart city issues because all the discussions must be across SKPD and have their respective activities. Smart city problems are only charged to the Smart city section of Diskominfo as if talking about smart cities is the full responsibility of the smart city section of Diskominfo Banda Aceh. Fifth, Leadership; Leaders are sometimes reluctant to sit down for deliberations because it is considered complicated to talk about technology. In addition, when there is a change of leadership, it will determine the sustainability of the ongoing smart city program because it is closely related to leaders who are aware of smart city problems and their interest in assessing the quality of the smart city being implemented. When changing regional leaders, sometimes starting from scratch, the programs are rerun.

Next sixth, Budget; From the budget side, the application of the smart city concept cannot only rely on the APBK. Therefore, it is essential to find investors and involve the private sector. The government is the leading sector and catalyst that plays a vital role in informing the needs of the City of Banda Aceh to achieve the goal of implementing the smart city concept. There are no special funds allocated for smart cities. When there are no funds, we must find other ways to maintain a smart city that is already running, so it doesn't stop. Seventh, Eliminate Blank Spots; One of the critical factors in a smart city is eliminating Blank Spots or areas that cannot access the internet. It takes hard work from all parties to develop technology evenly in every village in Banda Aceh City so that no more regions cannot access the internet and the smart city can be run by all regional elements.

Furthermore the eighth is the ability of human resources; From the government side, there are still many bureaucratic officials who have limitations in terms of knowledge and implementation of information and communication technology, so it is necessary to improve the quality of government human resources as the leading sector in implementing the smart city concept to the community. Nine, Community Commitment; In general, the level of technology literacy of Banda Aceh City residents is quite good, and internet literacy is also excellent. However, the habit of using technology for public services still needs to be improved. Sometimes, much up-to-date information is challenging to reach the public, so many people don't know it.

The challenges in building a smart city are complex and dynamic. All stakeholders must view it as a long-term infrastructure project while addressing the urgent need for short-term solutions to simplify our increasingly digital, connected, and complex world. Maximizing the potential of a smart city will only come through the trust of citizens combined with business and government that prioritizes safety, efficiency, and sustainability.

5. Conclusion

The strategy used for digital literacy in building a smart city in the Banda Aceh City government begins with developing policies and institutions for program implementation, then building an infrastructure network that supports smart cities in government and the community environment, developing smart city applications and software that is implemented in the community. Banda Aceh City. Several programs have been implemented to improve the digital literacy of the Acehnese people. There is an annual activity with the theme Wisely Using Social Media for students. Socialization of reference materials on law and ethics in using digital media, Use of digital applications or devices in the official government website application to search for data related to smart cities through mobile phones, and Disseminate information and knowledge through social media.

Obstacles to building digital literacy come from the government, budget, community, and public organizations. Lack of commitment, attention, and ability, as well as ICT implementation from stakeholders related to smart cities. Education about digital literacy has been carried out, but there are still less responsive people. In addition, there is also a limited budget for building digital literacy. There is still the development of information systems in the Banda Aceh City Government, which are separate and not integrated. Using digital literacy for people with disabilities is also an obstacle to implementing smart cities in Banda Aceh City.

Acknowledgment

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