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RESEARCH ARTICLE

Efforts of the Penajam Paser Utara Government in Developing a Smart City

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Abstract: This research is about the efforts of the Penajam Paser Utara Government through the Communication and Information Service in developing a smart city. Departing from the region's potential, advantages, and capabilities, Penajam Paser Utara is one of the regions that will build its region into a smart city with innovative governance, clever branding, a smart economy, smart living, an intelligent society, and a creative environment. This type of research is qualitative descriptive research. The data in this study were obtained from field studies and literature studies. The field study used an informal and unstructured interview process with an open interview technique. Interviews were conducted with staff of the Communication and Information Office of Penajam Paser Utara Regency and several levels of society. Not only that, the researcher also conducts observations in the field by being directly involved in observing and obtaining an overview of the problems to be researched. The data analysis technique tests the resulting data to get a conclusion. The results of this study show that the Penajam Paser Utara Government is one of the regions that is building a smart city by preparing a master plan and KLHS by referring to the 2024 Work Plan. Smart city in Penajam Paser Utara builds a city that can be integrated with a touch of technology to be ready to become a smart city supported by the capabilities and potential of the region.

Keywords:

Development, Smart City, Public Policy, Innovative government

About the Author

Miswar, who was born in Malaysia on May 5, 2001, is the author of this study. The researcher completed his S1 education in Government Science at the Faculty of Social and Political Sciences at Mulawarman University, Samarinda and graduated in 2024.

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1. Introduction

The concept of a smart city was initially introduced by the International Business Machines Corporation (IBM), a United States-based company. IBM envisioned transforming the Earth into an intelligent planet by harnessing existing potential through technology (Atmawidjaja, Sastra, & Akbar, 2015). IBM's bright city concept integrates technology into various aspects of community life. As achieving a smart city is essential, technology becomes crucial in supporting its development. The development of smart cities worldwide involves efforts to build and improve existing infrastructure, creating an appeal that enhances competitiveness in the future (Faidati & Khozin (2018). The concept of a smart city is not merely about integrating technology but also about creating a city open to and receptive to public input and aspirations. This approach enables the bright city concept to produce policies or specific services that effectively prevent, anticipate, and address societal challenges. However, the implementation of a smart city is not without obstacles. Cities that have pioneered innovative city initiatives, such as Bandung, have faced challenges related to communication, resources, and the disposition of bureaucratic structures within the government (Mursalim, 2017).

Townsend (as cited Sari, 2020:4) and (Deakin, 2013) Argue that digital information is the driving force behind the emergence of smart cities. Supported by information technology, it can facilitate the management of smart cities. E-Governance is one form of technology utilization that IBM envisioned. Similarly, Law & Lynch (2019) ICT can drive technological innovation, foster technological development that enhances the economy, create sustainable environments, and improve the quality of life for citizens. In this context, E-Government aims to simplify bureaucracy by providing digital services. It offers a new approach for citizens to access information, services, and essential needs directly connected to the government using technology. Moreover, it enables people to process or obtain permits online (Subekti & Gustomy, 2018).

In Indonesia, the smart city concept has already been implemented in several major cities, such as Bandung, Bogor, and Makassar, which serve as models for other regions. Through the Ministry of Communication and Informatics, the government plans to develop a smart city in East Kalimantan, specifically in Penajam Paser Regency. The selection of this regency is part of the government's support for the "Movement Towards 100 Smart Cities." The Ministry chose Penajam Paser Utara because it aligns with its vision: "Realizing Penajam Paser Utara as an Advanced, Modern, and Religious Regency" (Pipito, 2022). This initiative is further supported by its economic growth, which contributes approximately 50% to the development of the new capital city (or Ibu Kota Nusantara - IKN), 24% to the Kalimantan regional economy, and around 9%-11% to the national economy. Additionally, Penajam Paser Utara benefits from sectors such as agriculture, forestry, fisheries, transportation, warehousing, and information and communication, as outlined in its Long-Term Development Plan (or Rencana Pembangunan Jangka Panjang - RPJP).

Based on the background described above, the research problem in this study revolves around the efforts of the Penajam Paser Utara Government to develop a smart city through the concepts of innovative governance, clever branding, smart economy, smart living, intelligent society, and creative environment, as well as the forms of community support for the innovative city development in Penajam Paser Utara. The purpose of this study is to examine the efforts undertaken by the government and to evaluate the support from the community in Penajam Paser Utara towards the development of a smart city.

2. Methods

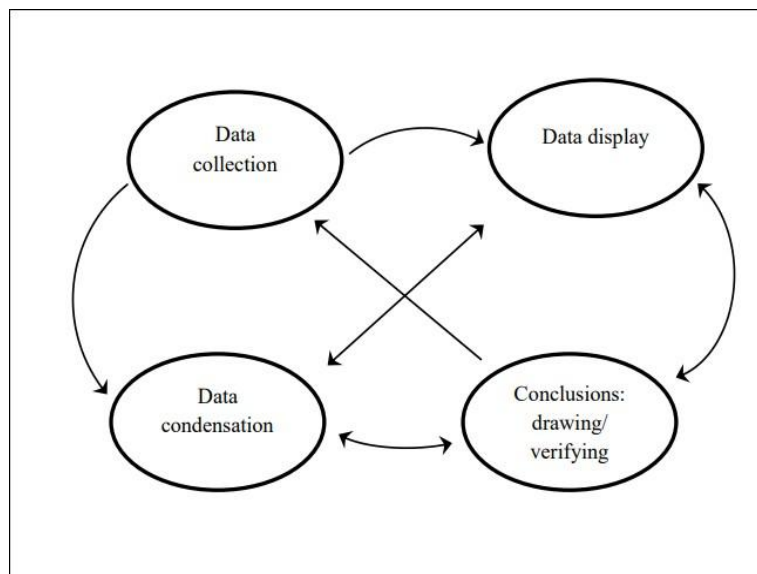
This research is qualitative descriptive research, namely to find out the research variables and research objects of the combination of several data collected with an emphasis on generalization. The focus of this research is the development of smart cities through the concepts of innovative governance, clever branding, smart economy, smart living, intelligent society, and creative environment. This research was carried out in the Nipah-Nipah District Area, Penajam Paser Utara Regency, East Kalimantan Province, precisely at the

Communication and Information Office of Penajam Paser Utara Regency to obtain the desired confirmation. In conducting the research, the researcher used 2 data, namely primary data in the form of direct data obtained by the researcher through the interview and observation process with related parties. In determining the research informant, the researcher uses the purposive sampling method, which is the determination of the sample with several careful considerations so that it is determined by the research conducted. The informants in the study in question are the Staff of the Informatics and Cryptography Application Division of Diskominfo and several communities in Penajam Paser Utara. Secondary data is obtained from laws, government documents, reports, and appropriate articles.

The researcher uses various data collection techniques, namely literature studies (literature studies), theoretically examining documents, journals, articles, and books in previous research. This is done by linking literature related to the research conducted. Then, field study is to collect data directly on the object to be researched to obtain an overview of the problems that will occur in the : (1) Interview is a question and answer process to parties who have authority or informants who have information or a direct description of the research conducted. The researcher used informal interviews and unstructured interviews. The interview technique used is an open interview technique, which does not limit the resource person in answering the questions being asked, and (2) Observation is a systematic and complex process of the research object being conducted. Researchers are directly involved in making observations to obtain facts. In the observation process, the researcher uses a participant/participation observation technique; namely, the researcher is engaged and directly involved in observing conditions in the field to obtain an overview of the problem being researched but is not involved in the existing activities.

The researcher used a data analysis technique, according to Miles and Huberman in Sugiyono (2018:295-304). Researchers use this data analysis technique to solve problems by providing answers to the research conducted. The result is to be able to produce a conclusion. The stages in the data analysis technique in question are: Data collection is the process of finding data regarding the research topic discussed; Data reduction is sorting and summarizing the main points of the research discussion so that it is by the subject of debate and data in the field, Data presentation is presenting information obtained to take action or draw conclusions, and Concluding is the verification process carried out by the researcher on the studies conducted. The conclusion is the truth that occurs through the researcher's thinking at the research site. In simple terms, this technique can be depicted as shown in Figure 1.1.

Figure 1.1: Data Analysis Techniques



Source : Miles, Huberman and Saldana (2014)

3. Results and Discussion

The discussion in this study focuses on the efforts of the Penajam Paser Utara Government to develop a smart city, from creating a master plan to the initial stages of its implementation. The efforts in question refer to the goals that the Penajam Paser Utara Government aims to achieve. In governance, efforts are closely linked to the infrastructure and facilities needed to achieve those goals. The innovative city initiative in Penajam Paser Utara, under the responsibility of the Department of Communication and Informatics, currently lacks regional regulations, a bright regional city council, and a Regional Smart City Implementation Team. These elements are crucial as references for formulating an action plan. However, the sustainability of the brilliant city initiative in Penajam Paser Utara refers to the Regional Master Plan, which aligns with the Regional Long-Term Development Plan (RPJPD) for 2025–2045, ratified in August 2024, and Regent Regulation No. 11 of 2023 concerning the Regional Development Plan for 2024– 2026. In discussing the efforts to develop a smart city in Penajam Paser Utara, the Department of Communication and Informatics has adopted six imaginative city concepts: innovative governance, clever branding, smart economy, smart living, intelligent society, and creative environment

Smart Governance

According to research conducted by Beama et al. (2022), Innovative governance can be understood as the enhancement of governance through the improved use of technology or, more simply, as a concept for managing government effectively and efficiently. Through this concept, the Penajam Paser Utara Government aims to provide integrated governmental services supported by IT systems. Therefore, improving data systems that can be integrated with these IT solutions is essential. The initial steps taken by Penajam Paser Utara include implementing the Electronic-Based Government System (Sistem Pemerintahan Berbasis Elektronik, SPBE) and introducing the use of electronic signatures within government operations. The goals and objectives of the brilliant city initiative in Penajam Paser Utara under the wise governance concept are presented in Table 1.1 below:

Table 1.1 Smart Governance Targets in Penajam Paser Utara

Dimension	Current Condition	Target	Gap
Smart Governance	Not all public Services are IT-based, and system improvements are needed to enhance Transparency and accountability.	Acceleration of the quality of SPBE and communicative, efficient, transparent, and solution-oriented IT-based public services.	Developing an integrated information and service system across various sectors in Penajam Paser Utara.
	Improved capacity for unified and integrated cross-sector databases.	Integrated database for Penajam Paser Utara.	Building foundational knowledge in database management.

Availability of legal frameworks as a basis for implementing innovative city initiatives.	Realization of the brilliant city concept in Penajam Paser Utara.	Integration among stakeholders to realize and implement various dimensions of the smart city.
Systems supporting transparent and accountable bureaucracy are already in place.	Government bureaucracy operations are based on transparency, accountability, and efficiency.	Government operations that prioritize systematic approaches to achieve transparency, accountability, and efficiency.

Source: Master Plan for Smart City in Penajam Paser Utara, 2022

The initial step taken by the Penajam Paser Utara Government in realizing innovative governance in 2024, as directed by Acting Regent (PJ) Mr. Makmur Marbun, is to accelerate the implementation of the Electronic-Based Government System (or Sistem Pemerintahan Berbasis Elektronik - SPBE) and the use of electronic signatures within the government framework of Penajam Paser Utara. SPBE has been a long-standing aspiration aligned with the vision of the Penajam Paser Utara Government to create an advanced and modern city. Supported by this system, the government aims to provide convenience for the public in accessing government services without the need for direct interaction at government offices. The commitment of the Penajam Paser Utara Government is evident from the score of 2.69 awarded by the Ministry of Administrative and Bureaucratic Reform (PAN-RB) in 2022 for its implementation of the Electronic-Based Government System (SPBE) (Marliana, 2023). This score is considered good, indicating that the government continues to progress toward achieving improved, innovative governance.

The SPBE (Electronic-Based Government System) implementation is realized through government administrative services provided via the website penajamkab.go.id. On this website, citizens can access services such as population registration, civil registration, and other online services tailored to meet their needs. Additionally, the government offers services to enhance bureaucracy and simplify access to public policies or products. These include ensuring transparency in governmental activities, the Legal Documentation and Information Network (Jaringan Dokumentasi dan Informasi Hukum, JIDH), the Public Aspirations and Complaints Online Service (Layanan Aspirasi dan Pengaduan Online Rakyat, LAPOR), and various other services. The specific forms of SPBE implementation are presented in Table 1.2 below:

Table 1.2 SPBE Implementation in Penajam Paser Utara

Website	Layanan
https://disdukcapil.penajamkab.go.id/	1. Population Registration (e-KTP, Child Identity Card [KIA], Family Card, and Migration Services)
	2. Civil Registration (Birth Certificate, Death Certificate, Divorce Certificate, and Marriage Certificate)
	3. Registration for Non-Permanent Residents
https://diskominfo.penajamkab.go.id/	1. Internet Network Maintenance
	2. Public Information Services

Source: Penajamkab.go.id 2024

In addition to the SPBE implementation mentioned above, the government will also introduce electronic signatures. Electronic signatures are intended to facilitate the work of relevant regional officials who may not be on-site but must sign documents immediately. However, such implementation also requires approval from the appropriate parties. To address potential challenges for community members who may not fully understand the technology being used, the Penajam Paser Utara Government plans to mitigate this through literacy initiatives. These efforts aim to educate the public about government systems integrated with technology. This step is expected to gradually help the community understand the SPBE system utilized by the Penajam Paser Utara Government. Based on the explanation above, it can be understood that implementing SPBE and using electronic signatures within the Penajam Paser Utara Government are expected to simplify administrative and service processes for the public, minimizing wait times. Furthermore, in 2024, efforts to accelerate the implementation of these initiatives will extend to village-level administration.

Smart Branding

According to research conducted by (Inriana et al., 2023), Clever branding is defined as a strategy to shape public perception of a city's identity or the process of marketing a city. Clever branding can also be understood as promoting regional potential, particularly the natural and cultural tourism attractions in Penajam Paser Utara. To achieve this, the government conducts digital promotions of tourism and culture to introduce them to a broader audience. The targets and objectives of the brilliant city initiative in Penajam Paser Utara under the bright branding concept are presented in Table 1.3 below:

Table 1.3 Smart Branding Targets in Penajam Paser Utara

Dimension	Current Condition	Target	Gap
Smart Branding	Potential in natural, manufactured, and cultural tourism	Development of tourist attractions and empowerment of human resources and managers	Development of digital media infrastructure for tourism promotion
	Positioned as part of IKN with the zero-kilometer point	Integrated urban areas with digital tourism development	Optimization of branding as part of the IKN area
	Forty-nine hectares of slum areas remain, and some residential areas lack adequate facilities to support innovative city initiatives.	Availability of decent, healthy, safe, and clean residential areas	Improvement of environmental and housing quality

Source: Master Plan for Smart City in Penajam Paser Utara, 2022

Branding in Penajam Paser Utara is supported by its position as part of the Nusantara Capital (IKN) area. This presents an opportunity for Penajam Paser Utara to develop its region with a digitalization concept. Under the leadership of Acting Regent Mr. Makmur, branding efforts have gradually been implemented, with cultural branding standing out as the most prominent. This is evident from the art performances held at the Penajam Paser Utara town square, featuring traditional dances and the kuda lumping performance, which is particularly popular among the community. The presence of various tourist attractions in Penajam Paser

Utara successfully brought in 134,964 visitors in 2022. This increase in tourism is further attributed to the designation of Penajam Paser Utara as part of the Nusantara Capital (IKN) area, which has drawn more visitors to the region.

The Penajam Paser Utara Government has also focused on branding its natural attractions. One of the newest destinations promoted by the Department of Communication and Information of Penajam Paser Utara is Goa Tapak Raja, located in Sepaku District. This emerging tourist destination has become increasingly popular among visitors due to its facilities, which include playgrounds, a 90-meter zipline, and support from local Micro, Small, and Medium Enterprises (MSMEs). In addition to its inland attractions, Penajam Paser Utara also boasts stunning coastal tourism spots, thanks to its location along the coastline. Some notable beaches include Pantai Amal, Pantai Nipah-Nipah, and Pantai Tanjung Jumlai. Pantai Amal is located in the Penajam District and is the closest beach to the Penajam Paser Utara Government Center. This beach offers a scenic sea view directly connected to the Balikpapan Strait. Pantai Amal is equipped with accommodations, restaurants, gazebos, and children's play areas, providing amenities to cater to visitors' needs. These facilities make Pantai Amal a popular destination for Penajam District tourists.

In addition to the beaches mentioned above, there is also a rice field tourism destination located in Babulu District, managed by the Village-Owned Enterprise (BUM-Desa) of Gunung Mulia. This attraction highlights the beauty of the rice fields in Gunung Mulia and Gunung Intan Villages, supported by several attractive photo spots, swimming pools, recreational facilities, and local Micro, Small, and Medium Enterprises (MSMEs). Although it primarily features rice fields, this destination has become quite popular among visitors, as it is the only rice field tourism site in Penajam Paser Utara.

Smart Economy

Research conducted by Mavri (as cited by Supriadi & Mutiasari, 2021) defines an innovative economy as economic activities characterized by innovation, entrepreneurial capabilities, a flexible workforce and market, and extensive connectivity. In the context of Penajam Paser Utara, the innovative economy concept is an effort to create stable economic conditions supported by prosperous Micro, Small, and Medium Enterprises (MSMEs). Currently, Penajam Paser Utara has a competitive advantage in its MSME sector. This sector will be continuously developed to enhance its capacity and competitiveness. Furthermore, the Penajam Paser Utara Government plans to implement cashless payment systems for MSME operators to foster a digital transaction culture within the community. The targets or objectives of the brilliant city initiative in Penajam Paser Utara under the bright economy concept are presented in Table 1.4 below:

Table 1.4 Smart Economy Targets in Penajam Paser Utara

Dimension	Current Condition	Target	Gap
Smart Economy	Potential in mining and excavation, agriculture, and manufacturing industries.	Integration and collaboration across various economic sectors to support increased regional income for Penajam Paser Utara.	Enhancement of industrial capacity, competitiveness, and investment climate.

Limited support and facilities for MSMEs due to local government constraints.	Creation of a sustainable economic ecosystem for the community.	Establishing partnerships with relevant parties to support MSME development.
The per capita income is 5.5 million IDR, and the poverty rate is 7.61%.	Reduction in poverty and increase in household income.	Optimizing regional potential through MSMEs and Village-Owned Enterprises (BUM-Desa) to boost income.
Predominantly cash-based transactions.	Development of a culture of non-cash transactions.	Utilization of digital transaction platforms.
Increasing contributions from tourism and cultural sectors to regional income.	Growth in regional income through contributions from tourism and cultural sectors.	Optimization of tourism and cultural sector development.

Source: Master Plan for Smart City in Penajam Paser Utara, 2022

Continuing from the previous discussion on clever branding, tourism promotion in Penajam Paser Utara contributes to increasing regional income. Revenue from the tourism sector is directly derived from its contributions, creating economic stability in Penajam Paser Utara. This financial stability is further supported by Acting Regent Mr. Makmur's policy, which provides facilities for local MSME (Micro, Small, and Medium Enterprises) operators in Penajam Paser Utara by designating strategic locations for trading activities. One key location selected by the government is the town square of Penajam Paser Utara Regency, right in front of the Regent's office. The government provides MSME operators with medium-sized spaces and stalls at no cost to support those in need. Additionally, the government encourages community participation on specific weekends to boost the local MSMEs by organizing casual walks and art performances. Another effort the Penajam Paser Utara Government undertook to support implementing an innovative economy is fostering agricultural activities. It is known that one of the agricultural production areas in Penajam Paser Utara is the Babulu District, particularly in Gunung Intan Village. Farmers in this village remain active in cultivating secondary crops (palawija) following recommendations from the local government. This initiative aims to anticipate price surges in the market and ensure food security for the local community.

Smart Living

According to research conducted by Ardhana (2024), Smart living is defined as a way of life with measurable quality or, more simply, as a life that provides a safe and comfortable environment for the community. To create such conditions, smart living must be supported by adequate infrastructure and facilities that meet the community's needs. Additionally, smart living fosters a sense of safety for residents in their living areas. This sense of safety includes the absence and presence of criminal activities.

Of a community security system. The targets and objectives of the brilliant city initiative in Penajam Paser Utara under the bright living concept are presented in Table 1.5 below:

Table 1.5 Smart Living Targets in Penajam Paser Utara

Dimension	Current Condition	Target	Gap
Smart Living	Limited basic infrastructure supporting the brilliant city initiative.	Availability of digital-based infrastructure to support smart city implementation.	Fulfillment of quality and quantity standards for basic infrastructure.
	The availability of basic facilities and infrastructure is not yet fully adequate.	Full provision of basic facilities and infrastructure.	Improvement in the fulfillment and development of facilities and infrastructure.

Source: Master Plan for Smart City in Penajam Paser Utara, 2022

The Penajam Paser Utara Government aims to realize smart living by intensifying the duties and functions of the Community Security and Order Sector (Kemanan dan Ketertiban Masyarakat - Kamtibmas). The presence of Kamtibmas within the community is expected to provide residents with a sense of safety and comfort. However, the active participation of the community is also essential as a primary supporter in fostering and maintaining this sense of security. Another effort undertaken by the government is creating a sense of comfort within the community by improving road access along the Provincial Road and roads leading to Sepaku District. These road improvements aim to provide ease and comfort for the community regarding mobility.

The healthcare services provided at Aji Putri Botung Regional General Hospital (RSUD) enhance comfort. This is facilitated by services for BPJS users, allowing residents to easily access information about facilities, schedules, and other healthcare needs through a government-provided website: <https://mobile.rapb.web.id/>. The community can view doctor schedules and the health services offered through this website. Furthermore, the PENCET RAPB website simplifies the process by providing an online registration system, so residents no longer need to visit the hospital solely to register.

The Penajam Paser Utara Government also provides comfort to its community through improved maritime transportation facilities. This is evident from the presence of a port that connects Penajam Paser Utara Regency with Balikpapan City, which is currently operating with only one jetty. However, according to the Strategic Environmental Assessment (KLS) for the Long-Term Regional Development Plan (RPJPD) of Penajam Paser Utara (PPU) for 2024, the government targets the construction of eight jetties by 2030. The sole existing jetty is located in Nipah-Nipah District, with 16 ferries operating 24 hours a day, 40 speedboats, and 31 traditional klotok boats serving daily routes. In 2022, the port recorded 206,000 passenger departures and 316,205 arrivals.

Smart Society

According to Ifadhila et al. (2023), Innovative society refers to planning to develop human resources (HR) in a better direction or, in other words, a concept for creating superior human resources. In Penajam Paser Utara, excellence is focused on fostering innovation and creativity among the community in utilizing and leveraging technology. To achieve this, training and mentoring programs are provided to introduce technology to the community. The targets and objectives of the brilliant city initiative in Penajam Paser Utara under the bright society concept are presented in Table 1.6.

An innovative society is necessary because Penajam Paser Utara is part of the Nusantara Capital (IKN). This requires the community to develop in line with the progress in IKN. To achieve this, the Penajam Paser Utara Government plans to produce superior human resources through

Educational funding assistance. This assistance, called the "Serambi Nusantara Scholarship," is specifically designated for students with ID cards (KTP) from Penajam Paser Utara Regency. In 2023, the Penajam Paser Utara Government allocated 2.3 billion IDR for scholarships, benefiting 477 recipients. These scholarships were categorized for tahfidz, hafidz, "Seribu Sarjana" (One Thousand Scholars program), as well as academic achievements in Bachelor's (S1) and Diploma (D3) programs. In addition, non-formal education assistance and support for places of worship were also provided. Non-formal educators and Quran teachers received 5.4 billion IDR in aid distributed to 215 individuals. Furthermore, 2.5 billion IDR was allocated for religious proposal grants, benefiting 43 proposals submitted by the community.

Table 1.6 Smart Society Targets in Penajam Paser Utara

Dimension	Current Condition	Target	Gap
Smart Society	Improve human resources (HR) quality with technological knowledge through Community Information Groups (Kelompok Informasi Masyarakat, KIM).	Innovative and creative HR in utilizing technology in Penajam Paser Utara.	Enhancement of HR quality through various training and mentoring programs in ICT utilization.
	Oil and gas potential arising from the impact of IKN development.	Population growth integrated with regional advancement and development in Penajam Paser Utara.	Achieving equitable population distribution.
	Lack of dedicated public spaces for creative communities.	Availability of public spaces to serve as platforms for creative community activities.	Optimization of public spaces to facilitate the formation of various community groups.

Source: Master Plan for Smart City in Penajam Paser Utara, 2022

An innovative society is necessary because Penajam Paser Utara is part of the Nusantara Capital (IKN). This requires the community to develop in line with the progress in IKN. The Penajam Paser Utara Government plans to produce superior human resources through educational funding assistance to achieve this. This "Serambi Nusantara Scholarship" is specifically designated for students with an ID card (KTP) from Penajam Paser Utara Regency. In 2023, the Penajam Paser Utara Government allocated 2.3 billion IDR for scholarships, benefiting 477 recipients. These scholarships were categorized for tahfidz, hafidz, "Seribu Sarjana" (One Thousand Scholars program), as well as academic achievements in Bachelor's (S1) and Diploma (D3) programs. In addition, non-formal education assistance and support for places of worship were also provided. Non-formal educators and Quran teachers received 5.4 billion IDR in aid distributed to 215 individuals. Furthermore, 2.5 billion IDR was allocated for religious proposal grants, benefiting 43 proposals submitted by the community.

The improvement in human resource quality in Penajam Paser Utara is also being pursued by meeting educational standards. Data from the Central Bureau of Statistics (BPS) of Penajam Paser Utara in 2022 indicates that the Human Development Index (Indeks Pembangunan Manusia - IPM) in the region reached 72.55, showing an increase from previous years: 72.01 in 2021, 71.41 in 2020, and 71.64 in 2019. Compared to the provincial and national targets of 77.55 and 72.91, respectively, Penajam Paser Utara is relatively close to the national target of 72.91. The indicators contributing to this achievement include the HDI calculation, the expected years of schooling per year, the average years of education per year, and per capita expenditure. Penajam Paser Utara is also supported by educational facilities distributed across its four districts, providing access for the community to receive education up to the senior high school level. Data from 2022 shows the number of schools in each Penajam Paser Utara Regency district, as presented in Table 1.7.

Table 1.7: Number of Schools per District in Penajam Paser Utara

No	District	Elementary Schools (SD)	Junior High Schools (SMP)	Senior High Schools/Vocational Schools (SMA/SMK)
1	Penajam	45	22	12
2	Waru	11	4	2
3	Babulu	27	10	5
4	Speaker	28	9	6
Total		91	45	25

Source: Regional Development Plan 2024–2026

Smart Environment

According to research conducted by Vab Basten (as cited in Sari, 2020), an innovative environment refers to an environment that provides comfort, beauty, and resources for the community at large. The Master Plan for the Smart City of Penajam Paser Utara is the responsible and sustainable management of urban environments. In this regard, the Penajam Paser Utara Government manages waste and hazardous and toxic waste (B3) by providing a village-based waste management system. In addition to establishing waste management facilities, the government conducts outreach programs to educate the community about waste management and reduction in Penajam Paser Utara. The long-term impact of this initiative is creating a high-quality environment free from problems caused by ineffective waste management. The innovative environment concept also aims to mitigate potential disasters that may arise in the future. This mitigation is achieved through government-led education programs for the community, helping them understand and recognize the impacts or risks of potential disasters. As a result, this education is expected to minimize the economic and social effects that might occur. The targets and objectives of the brilliant city initiative in Penajam Paser Utara under the bright environment concept are presented in Table 1.8.

The Penajam Paser Utara Government has managed waste by reducing the amount of waste generated and focusing on village-level waste management. This includes establishing Waste Banks to control the increase in waste. Additionally, the presence of Waste Banks in communities encourages habits of sorting waste by type, helping to prevent environmental pollution. These Waste Banks also serve as facilities for recycling plastic waste into eco-bricks, which can be used as raw materials for crafting items made from recycled plastic waste.

Waste management through eco-bricks has already been implemented in several areas of Penajam Paser Utara, such as in the Waru District. At the Waste Banks, the community does more than dispose of their waste; these facilities also serve as processing centers to reduce the amount of waste sent to the final.

The disposal site is located in Bulumindung. Despite having a waste management system through Waste Banks, the Penajam Paser Utara Government still faces challenges in implementing this aspect of innovative governance. One of these challenges is that waste processing services are not yet accessible to all 54 villages/urban areas in Penajam Paser Utara. Additionally, there is low public interest in utilizing the existing Waste Banks. The Penajam Paser Utara Government, in its efforts to achieve a smart city, must consider the response and support of various community layers. The support referred to in this context involves active participation and the dissemination of information by the community regarding innovative city development. This approach serves as valuable input for the government in formulating an action plan that benefits all levels of society in Penajam Paser Utara.

Table 1.8 Smart Environment Targets in Penajam Paser Utara

Dimension	Current Condition	Target	Gap
	Presence of applications for waste and hazardous waste (B3) management.	Enhanced innovation to maintain the ecosystem in Penajam Paser Utara.	Optimization of application usage to support environmental conditions in Penajam Paser Utara.
	Waste management services do not yet cover 54 villages/urban areas.	Waste and hazardous waste management can be available starting from small residential units.	Provision of various waste management systems accompanied by community outreach.
Smart Environment	No facilities for environmentally friendly energy.	Availability of sustainable and environmentally friendly energy facilities.	Adopt environmentally friendly energy and limit excessive energy usage.
	The Environmental Quality Index (Indeks Kualitas Lingkungan Hidup - IKLH) is below 70.	Adequate environmental quality.	Improvement of environmental quality by minimizing various ecological issues.

Dimension	Current Condition	Target	Gap
	There is no comprehensive disaster education or mitigation system in each hamlet/village.	Establishment of a mitigation system.	Development of a digital-based disaster mitigation system with community participation.

Source: Master Plan for Smart City in Penajam Paser Utara, 2022

Active participation, in the context of development, is defined as the direct and voluntary involvement of the community in government initiatives carried out with full awareness (Irawan & Sunandar, 2020:198). Community participation in Penajam Paser Utara is reflected in environmental security efforts undertaken by the Pemuda Pancasila organization, which actively works to maintain safety within the community, whether explicitly needed or not. Another example of participation is the infrastructure development carried out by the Rintik Village Government to support the innovative city development program in Penajam Paser Utara. This includes constructing agricultural access roads to facilitate farmers' activities and ensuring smoother operations in the farming sector. Information Dissemination, in the context of development information dissemination, also referred to as the communication process, is the act of influencing or shaping others' behavior by delivering messages or words (Pohan & Fitria 2021:32). Religious leaders provide information about innovative city development in Penajam Paser Utara, integrating it into sermons or religious talks addressed to the community. Through these messages, they encourage the public to support government development programs that benefit the community and to work together to build a better region.

4. Conclusion

Some essential points from the description above can be summarized as follows: The Penajam Paser Utara Government has sought innovative city development through 6 concepts. Smart governance can be seen from the implementation of the electronic-based government system (SPBE) through the use of electronic signatures by the government. Clever branding can be seen through tourism and cultural promotions carried out by the government in the innovative economy. This can be seen in the level of welfare of UMKM with government assistance and the implementation of non-cash payments. Smart living can be seen through the improvement of road access and online services of the hospital Aji Putri Botung. In the intelligent society, it can be seen in the "Serambi Nusantara" Scholarship and religious assistance to the community, and the innovative environment is seen in environmental management through the "Bank Sampah" program. The study on the development of a smart city in Penajam Paser Utara provides an understanding of the efforts that the Penajam Paser Utara Government has made to build a smart city. This research can give recommendations to the local government in preparing the Development Plan, including the concepts of innovative city development. Not only that, this research can provide an overview for the government to try to achieve the targets in smart cities to create a brilliant city and a prosperous society. This is because Penajam Paser Utara Regency must be able to follow the development in Ibu Kota Nusantara. In addition, this research is also expected to contribute to providing input and innovation to companies or the private sector in carrying out cooperation with the government in supporting and building a smart city in Penajam Paser Utara.

Development, especially the development of smart cities, is quite interesting research that can be studied from various perspectives. Therefore, a survey of the development of a smart city can be developed using different concepts from this research according to the location's characteristics and the study's object. Future researchers can hopefully see innovative city development.

From different perspectives, such as leaders in preparing innovative city development, the implementation of smart growth in the regions, the funding process in developing smart cities, and how to analyze strengths, weaknesses, opportunities, and threats. So, it can be known that this smart city is utilizing resources to save energy and costs, improve services and quality of life, minimize environmental impacts, and support environmentally friendly innovations. Realizing a smart city requires support from the economy, mobility, community, quality of life, environment, and innovative government sectors.

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