

# Implementation of the Smart City Concept in the Dimensions of Smart People, Smart Mobility, and Smart Governance for the Realization of Jakarta Smart City

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**Abstract.** This research aims to see how the implementation of the Smart City concept at DKI Jakarta especially on the smart people, smart mobility, and smart governance dimensions to realize Jakarta Smart City. Jakarta's seriousness in developing the Smart City concept to provide services and public welfare that are more efficient, effective, and sustainable can be seen from the IMD Smart City Report 2023, where Jakarta is ranked 102 out of 141 cities in the world, outperforming two other Indonesian cities, Medan and Makassar. This research uses qualitative descriptive methods based on secondary data from digital news media. The data is processed using NVivo 14 as a research tool. Based on the results of research, it was found that the implementation of the Smart City concept at Jakarta showed that (1) Smart People, with the development of the digital society; (2) Smart Mobility, has been available integrated public transportation; (3) Smart Governance, which is marked by the policies that have been established in connection with the application of the smart city concept. This also showed that the implementation of Smart City concepts in Jakarta has gone well and continues to develop until now. Keywords: Smart City, Smart People, Smart Mobility, and Smart Governance, DKI Jakarta

## 1 Introduction

DKI Jakarta Province is one of the metropolitan cities that is still the center of government and the economy of Indonesia. This certainly causes a large flow of urbanization every year. Urbanization itself is the movement of people from villages to cities and the result of high population growth rates, which can be a serious problem because it causes various if not balanced with good urban management (1). Rapid development is a challenge for DKI Jakarta to overcome various problems that arise by encouraging urban governance that can provide convenience and welfare for its people and have a sustainable impact.

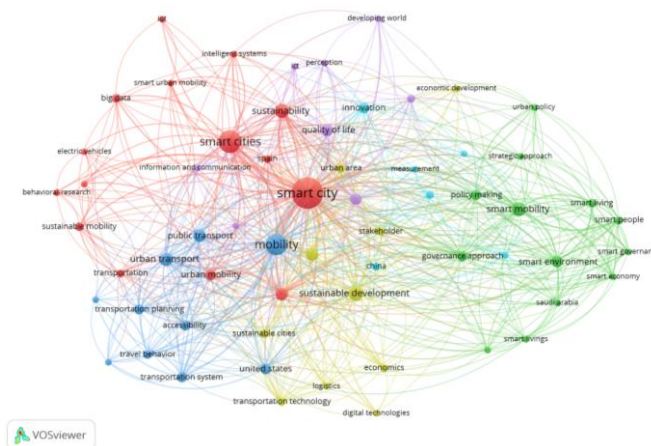
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DKI Jakarta Province is one of the cities in Indonesia that adopts the Smart City concept in its urban governance. This smart city concept is a smart urban governance that utilises the development of information, communication, and technology (ICT) to handle problems in urban areas (2). With the utilisation of ICT, the smart city concept becomes a breakthrough that is very massive, innovative and creative. It has a big impact on society and the rapid development of technology and information. So then, the smart city concept is used by the DKI Jakarta Provincial Government as a new urban order to provide solutions to problem-solving, providing optimal public services, and bringing DKI Jakarta into a city that can manage the potential of existing resources more innovatively, creatively, efficiently and effectively, and sustainably.

The seriousness of the determination of the DKI Jakarta Provincial Government to build DKI Jakarta into a smart city is shown by the presence of Jakarta Smart City, which has been formed since 2014 to carry out the function of managing a smart urban ecosystem in realizing DKI Jakarta as a Smart City. The ecosystem management refers to the six main pillars in Cohen's theory of the Smart City concept, namely smart government, smart people, smart environment, smart mobility, smart economy, and smart living. The six pillars are indicators that are pursued as optimally as possible by Jakarta Smart City in building a smart city management network.

In the IMD Smart City Report 2023, Jakarta is one of three cities in Indonesia, namely Medan and Makassar, which are included in the Smart City Index (SCI) 2023 list. Of the 141 cities in the world included in the list, Jakarta occupies position 102 by outperforming Medan and Makassar. The report assesses that Jakarta can meet the needs of its citizens through the application of the smart city concept, as seen from the structure and digital technology available in the city (3). Regarding structure, Jakarta has provided satisfactory public transportation facilities with a score of 60.9, easy and open access to local government information with a score of 70.4, and access to good education accessed by most children with a score of 67.0. In terms of technology utilization, Jakarta is considered to have facilitated and provided convenience to the community, especially in the aspect of using public transportation, which is easier to see schedules and purchase tickets online with a score of 81.6, digitizing public services that are more efficient with a score of 78.3, and the existence of IT skills education that has been well taught in schools which has a score of 69.5.



**Figure. 1** VOSviewer Analysis

The results of analyzing 97 data by VOSviewer, it shows that research on smart cities tends to intersect with its basic element, namely smart mobility, which also has links to

other elements such as smart people, smart governance, etc. However, studies on implementing smart cities that emphasize the relationship between governance and human resources of smart cities are still minimal, especially in Jakarta. So, this provides the potential to examine further how the implementation of the smart city concept in the city of Jakarta focuses on the dimensions of smart people, smart mobility, and smart governance. Thus, this research was conducted to see how efforts to implement the Smart City concept in Jakarta by focusing on the dimensions of smart people, smart mobility, and smart governance to realize Jakarta Smart City.

## 2 Literature Review

The concept of smart city can be interpreted in terms of the implementation of Information, Communication, and Technology (ICT) to manage a job; integration of technological infrastructure; providing the best service to the community; unification of systems and infrastructure that support economic, social, cultural, and environmental progress; and oriented towards a future perspective with a better goal (4). The application of ICT is a characteristic element that provides opportunities for developing smart cities (5). Cohen's theory (2017) states that there are six elements in building a smart city, namely smart government, smart people, smart environment, smart mobility, smart economy, and smart living (6). The smart city concept combines aspects of technology, smart governance, and a smart society driven by a sustainable and integrated strategic plan (7).

"Smart city for smart people" is a strong statement that expects each social community in a smart city to have good technical skills to create a good interaction between the social community and the smart facilities available in the city (8). Including the participation of each citizen to start steps from a simple scope, such as the desire to learn technology, understand the use of smart city applications and software, be proactive in the running of governance, develop digital communities, and engage continuously in innovative processes can help empower people to participate in smart city development (9). Thus, to achieve an empowered smart society, local governments must educate, discipline, and inform their citizens about the upcoming transformation plan (10).

Smart mobility according to Rudolf Giffinger, et al. (2007) in (11) is oriented towards transportation and ICT which includes components such as local and international accessibility, availability of adequate ICT infrastructure, and safe, innovative, and sustainable transportation systems. The solutions offered by smart and sustainable mobility can impact traffic improvements such as congestion, minimizing travel time, and relate to the impact of protecting the environment (12). Safety and convenience in transportation systems are also important in minimizing the wasteful use of roads due to the increasing number of vehicles, which allows people to mobilize more efficiently (13).

Viale Pereira, et al. (2017) in (14) define smart governance as the government's ability to improve public policy by combining ICT-based tools with collaborative governance. ICT developments is used to support the implementation of bureaucracy with service innovation in improving the quality of a better governance system (15). The implementation of smart governance includes the transparency of public information, the use of ICT, collaborative government and society, open data, and the implementation of good e-government, where the role of digitalization is a top priority in every government activity in providing services (16).

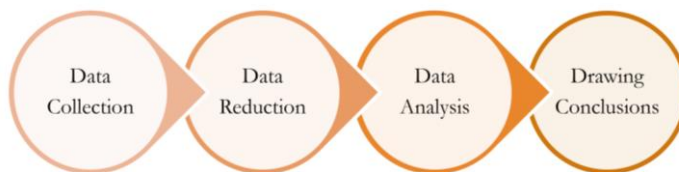
### 3 Methods

This research uses a qualitative descriptive method. This method intends to understand the phenomena that occur by presenting the actual data and to describe these phenomena through descriptions of data relevant to the problems studied (17). The data collection technique used in this research is a qualitative approach that relies on secondary data sources. The data sources are documented from digital news media in the range of 2019-2024, accompanied by related previous research.

**Tabel. 1 Data Source by Official Digital News Media**

Digital News Media	Quantity
Antara News	12 News
CNBC	10 News
CNN	13 News
Detik.com	6 News
Kompas	10 News

In qualitative methods, the research process is carried out through four stages: data collection, data reduction, data analysis, and conclusion.



**Figure 2. Data Analysis Process**

The author carried out the data collection stage in this research by collecting data related to the implementation of the smart city concept in Jakarta, especially related to smart people, smart mobility, and smart governance, through official digital news media, which includes Antara News, CNBC, CNN, Detik.com, and Kompas. In the data reduction stage, the author sorted the data that had been collected based on the indicators, namely smart people, smart mobility, and smart governance. The data was also sorted based on the range of years taken from 2019 to 2024. At the data analysis stage, the author conducts a more in-depth data analysis to determine how the smart city concept in Jakarta is implemented by the predetermined indicators. Theories and opinions of experts and literature reviews also support this analysis. At the final stage, the author concludes the results of the data analysis.

This research has several scope limitations on the implementation of the Smart City concept in realizing Jakarta Smart City, which focuses on the dimensions of (1) Smart People by paying attention to the realization of technological awareness and the digital society of DKI Jakarta; (2) Smart Mobility by observing how the implementation of the integration of public transportation systems in DKI Jakarta and the use of ICT in its infrastructure; (3) Smart Governance by examining the policies of the DKI Jakarta Provincial Government in realizing Jakarta Smart City and the integration of public service systems pursued by the Government. By using research tools in the form of NVivo 14 software, secondary data resulting from documentation of digital mass media news related

to the implementation of smart cities in Jakarta is processed and analyzed to support the analysis of the focus and objectives of this research.

## 4 Results and Discussion

The concept of a smart city is a reliable concept by optimizing the use of ICT in building a smart, effective and efficient city order. The main goal of this concept is to improve the quality of life of a better society and achieve sustainable prosperity. As stated by (7), smart cities combine aspects of technology, smart governance, and smart communities with a sustainable and integrated strategic plan. Jakarta is one of the cities in Indonesia that has implemented the smart city concept to overcome its urban problems.

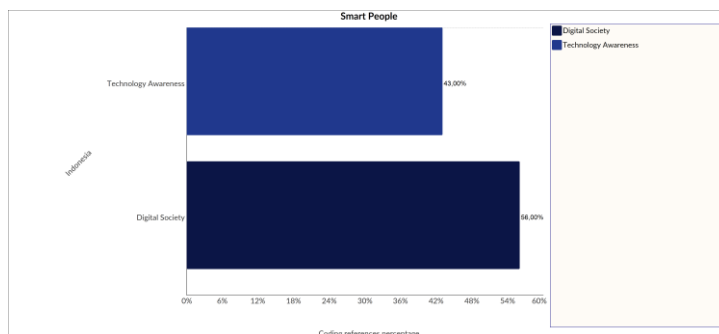


**Figure 3.** Word Cloud analysis using NVivo 14

In processing official digital news media data using the NVivo 14 world cloud feature, the frequency of words that often appear related to smart cities in DKI Jakarta Province shows several keywords, namely “Jakarta”, “City”, “Society”, “Application”, “Transportation”, “Smart”, “City”, “Data”, “Digital”, and “Government”. The frequency of words that often appear, it shows that DKI Jakarta Province has implemented the smart city concept as one of its urban governance strategies. The application of the concept in question is the prominent role of the community, government, and public transportation supported by ICT innovation and data utilization, which also supports digitalization in its urban management system. It also categorizes the implementation of smart cities in Jakarta in the dimensions of smart people, smart mobility, and smart governance.

### 4.1 Smart People

Referring to opinion (8) which states "Smart City for Smart People", where each smart city community has technical capabilities that support the creation of good interactions with smart facilities available in the city. This illustrates that smart people are the main component in smart city development to create a smart ecosystem. The involvement of smart people plays a role in giving birth to creative and innovative ideas that align with the development of technology and communication. That way, the mindset of smart people will also be empowered by technological developments in every component of smart city management.



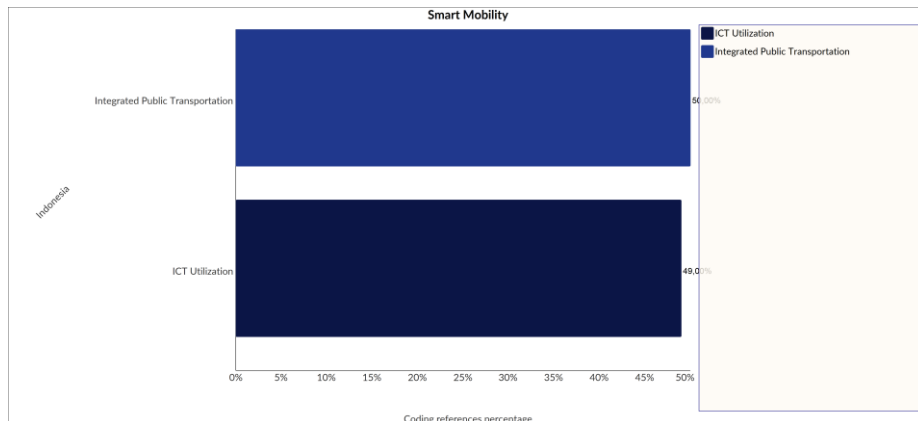
**Figure 4.** Smart People analysis using NVivo 14

By processing of NVivo 14 data as shown in Figure 3, it shows that the implementation of smart people in Jakarta is more inclined to the presence of a digital society. The digital society itself can be interpreted as a networked society with interaction patterns strongly influenced by the development of ICT through various media platforms and the use of digital technology and information related to the internet (18). In line with what was said by (9) that the development of the Jakarta community as a digital society is one aspect that shows that the community has a digital mindset that can use applications or software to access information from various available digital media platforms. This also shows that there is community participation in wanting to learn and understand the use of software and applications in their daily activities. This can be a means to bring their involvement and play an active role in the innovative processes of smart city development, whether in the planning, implementation, or proactive participation in evaluating the smart city development that has been running.

In achieving the concept of smart people, it is necessary to have a role from the local government to empower the community regarding how the community can be empowered and have a digital outlook through understanding and awareness of technology that is educated, informed, and applied to disciplines to the community. In line with opinion (10), the Jakarta Government and the vision of Human Resource development related to digital transformation are then pursued with several activities that encourage the birth of digitally talented human resources. One of them is the existence of JSCLab Sharing: Classes with Experts initiated by Jakarta Smart City. JSCLab Sharing facilitates the community to learn directly with experts to gain knowledge about the fields of technology, smart city, public policy, and digital literacy to increase expertise in these fields (19). The learning process provided is also complemented by the Data Science Trainee program, which is a training facility related to data processing in solving city problems. These things are pursued to create a digital society with awareness and technological insight to play a proactive role in the smart city development process, especially in realizing the ideals of Jakarta Smart City.

## 4.2 Smart Mobility

Smart mobility is an effort to manage mobility that is oriented towards effectiveness and efficiency, service quality, and sustainability. The use of ICT is a major aspect of achieving smart mobility for the welfare of society. It is closely related to integrating public transportation, allowing people to mobilize more efficiently and effectively. With the concept of smart mobility, an integrated public transportation system is one of the efforts to produce public transportation that the community can rely on to reduce the high volume of vehicles on the road, which results in congestion.



**Figure 5.** Smart Mobility using NVivo 14

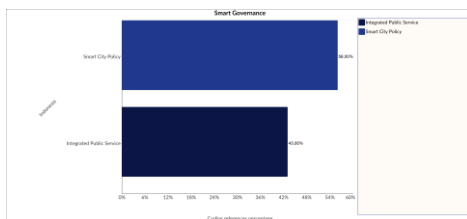
The data processing results using NVivo 14 in Figure 4 show that the integrated public transportation system has been optimally implemented in Jakarta. Even so, the implementation of transportation using ICT also has similar results. This can be seen from the many integrated public transportation by utilizing ICT developments available in Jakarta, such as the Jakarta MRT, Jakarta and Jabodetabek LRT, Transjakarta, KRL Commuter Line, and Microtrans. The government is optimizing the development of public transportation infrastructure to integrate these various public transportation options into an integrated transit system to make it easier for people to move from one mode of public transportation to another, including Transjakarta, KRL Commuter Line, MRT Jakarta, LRT, and Microtrans (20). The integration was then also realized by the DKI Jakarta government in a service system known as JakLingko. This system is a transformation of the transportation system from OK-Otrip which connects various modes of public transportation available by implementing a one-time payment system at the beginning of the use of public transportation modes, namely with a maximum tariff of Rp 10,000, - (21). Integrated public transportation also provides comfort to the public to mobilize with a short time and provides convenience for the people of DKI Jakarta to mobilize across the city.

Public transportation systems in Jakarta such as MRT, LRT, Transjakarta, and others not only utilize ICT sophistication in the mode of transportation, but also in the payment system which is also provided in the form of e-money. Transportation users will feel more comfortable using this payment method because it is more concise and shortens time (22). Smart mobility not only prioritises ICT capability but must also prioritize clean and comfortable facilities that operate properly as their function. As one of the public transportation, the Jakarta MRT has optimally provided clean and comfortable facilities. This is considered a form of MRT's efforts to create mass mobility that the community can rely on to mobilize. This will help reduce the amount of congestion and vehicle pollution on the highway.

### 4.3 Smart Governance

The presence of smart governance is an early milestone in influencing the existence of smart cities. In line with the opinion (23), which says that smart cities are impossible to realize without the existence of smart governance. So Annisah (2017) in (24) says that city management planning and policies taken must be based on the concept of smart city in order to realize sustainable urban governance. In addition, an integrated public service

system is also the main thing that must be realized by the government so that people get quality services and are no longer troublesome. The utilization of ICT is the main capital in implementing integrated, innovative, efficient, and effective public services.



**Figure 6. Smart Governance analysis using NVivo 14**

Based on the results of data analysis as shown in Figure 5, the policy aspects related to smart cities are the main highlights that influence the implementation of the smart city concept in Jakarta. The implementation of the smart city concept in the DKI Jakarta area was initiated by the DKI Jakarta Provincial Government policy by building Jakarta Smart City, which is a Regional Public Service Agency directly supervised by the DKI Jakarta Provincial Communication, Information and Statistics Office. This policy was then followed by Governor Regulation Number 306 of 2016 concerning the Establishment, Organization and Work Procedures of the Jakarta Smart City Management Unit. This management unit was formed to carry out the duties and functions of smart city policies in managing the Jakarta Smart City system or application. This policy certainly affects how the policies that are then issued by the DKI Jakarta Provincial Government to overcome existing problems will have implications for the use of integrated ICT.

As said by (15) that smart governance utilizes ICT developments in supporting the implementation of bureaucratic innovation and quality public services to improve a better governance system. The DKI Jakarta Government through Jakarta Smart City, has implemented smart governance by applying ICT to bureaucratic innovation and integrated public services. This can also be seen from the results of NVivo 14 data processing, which shows that the DKI Jakarta Provincial Government has implemented integrated public services to overcome problems and meet community needs. One of these integrated public services is realized through the existence of a digital-based public service application, namely Jakarta Kini (JAKI). JAKI is a super app that integrates various services the community needs to facilitate public affairs to be more efficient and effective by utilizing smartphone-friendly ICT. Only with the smartphone, the JAKI application can be accessed wherever the community is without visiting the relevant government service office. The community can take care of various public service needs needed to make reports on perceived problems such as damage to public facilities and others. The presence of a digital public service platform and related policies that regulate it is a form of smart governance implementation by the DKI Jakarta Government. This is in line with what was said by (16), which shows the transparency of public information, the use of ICT, open data, and the collaboration of digitization between the government and the community in public service activities. Moreover, the role of Jakarta Smart City unit is also inseparable in having a major influence on changes in government bureaucratic management and the performance of public services in DKI Jakarta Province, which are more effective and efficient.

## 5 Conclusion

The implementation of the smart city concept in DKI Jakarta Province, especially in the dimensions of smart people, smart mobility, and smart governance, has been implemented



and is still running quite well. As has been described through the indicators used, it shows (1) Smart People, the development of digital society in DKI Jakarta is quite significant which is driven by understanding and awareness of technology which the DKI Jakarta Provincial Government continues to strive to educate its people; (2) Smart Mobility, with the availability of various choices of integrated public transportation modes that have been optimal in facilitating the people of DKI Jakarta in mobilizing efficiently and effectively, as well as the use of ICT that has been used and continues to be developed in supporting the realization of reliable, comfortable and safe public transportation infrastructure; (3) Smart Governance, which has been demonstrated by the local government of DKI Jakarta Province in various policies established related to the implementation of the smart city concept and providing public services that are integrated optimally. Even so, this research still has limitations because it only utilizes secondary data from digital news media and qualitative descriptive methods. So in the future, it is hoped that more in-depth research will be carried out using primary data that combines qualitative and quantitative methods regarding strategies that are relevant to the implementation of the smart city concept in DKI Jakarta, especially in the dimensions of smart people, smart mobility, and smart governance.

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