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The Role of Quality Human Resources in Realizing Smart Cities

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ABSTRACT

Humans spend most of their time producing goods and services, which can come from factories or offices. They also spend some of their time consuming goods and services provided by others, other factories, or other offices. With the remaining time, humans also worry about what they will produce and consume in the future. Several activities take place within a city, where the approach considers the city as a living unit with integrated economic activities within it. Quality human resources are the main foundation in realizing a smart city because they are users, developers, and drivers of technology. The purpose of this study is to explain the role of quality human resources in realizing smart cities. To answer this question, a qualitative analysis approach was used, utilizing secondary data such as theoretical concepts from books and other relevant sources. The results show that quality human resources are skilled and digitally literate individuals who play a role in realizing smart cities by providing innovation in urban solutions, increasing the efficiency of public services, actively participating in decision-making, and contributing to the city's sustainable development.

Keywords *Role, Quality Human Resources, Realizing, Smart Cities*

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INTRODUCTION

The booming development in major cities in Indonesia can spur economic growth. Consequently, these cities become magnets for people to flock to find work and settle. This is often referred to as urbanization. However, this urbanization creates various problems due to its lack of control. This is the problem currently faced by Indonesia: high population growth. Worse still, this growth has not been accompanied by a commensurate rate of industrialization (Tambunan et al., 2025). This problem ultimately gives rise to the phenomenon of over-urbanization (Mariani et al., 2023). Economic growth plays a crucial role in supporting conditions in a region. The primary determinant of a region's

economic growth is directly related to the demand for goods and services from outside the region, and per capita income can also be defined as the sum of the value of goods and services available to each resident in a given period (Pandiangan et al., 2025).

Humans spend most of their time producing goods and services, which can originate in factories or offices. They also spend some of their time consuming goods and services provided by others, other factories, or other offices (Gultom et al., 2024). In the remaining time, humans also worry about what they will produce and what they will consume. Several activities take place in a city, where the approach considers the city as a living unit with integrated economic activities within it.

Human resources play a crucial role in every activity within a company. Human resources are always the primary focus and the foundation for a company's survival and growth. Even with modern facilities and infrastructure, operations cannot be effectively completed without high-quality human resources (Hamzah et al., 2025).

The availability of qualified human resources supported by information technology is expected to assist the financial reporting process, resulting in relevant, reliable, and timely financial reports. However, besides human resources and information technology, there are other important things that must be considered, namely internal control which functions to regulate accounting techniques such as changes in the accounting system approach and recording procedures, documents and forms used, authorization functions for internal control purposes, reports and supervision (Abdullah, 2014). The quality of human resources is the ability to carry out the tasks and responsibilities given to them with sufficient education, training and experience (Eko, 2015).

Quality human resources are the main foundation in realizing a smart city because they are users, developers, and drivers of technology. Smart city users are all city residents who utilize technology and innovation to improve their quality of life, from individuals to the government and the private sector. Benefits for smart city users (Atmawidjaja et al., 2015):

1. Faster Access to Public Services
   Users can easily access services such as permits, reports, and information through digital applications and portals.
2. Increased Transportation Efficiency
   Users can take advantage of intelligent transportation systems, schedule information, and more efficient routes, which reduce congestion and save time.

3. Healthier Environment
   Users enjoy a better living environment, such as cleaner air and more efficient waste management.
4. Improved Security
   Improved security through technology-based monitoring systems helps create a sense of security and comfort for residents.
5. Active Participation
   Users can contribute to city management by reporting issues or providing suggestions through digital platforms, strengthening community engagement.

Smart city developers can include local governments, private parties such as information and communication technology solution providers and property developers, as well as research institutions and academics. Examples of this collaboration are as follows (Edward III, 1980):

1. Local governments in Indonesia often collaborate with private information and communication technology solution providers to build smart cities in their regions. For example, the development of Jakarta Smart City through collaboration with various parties.
2. The Nusantara Capital City Project (IKN) will also become a mecca for developing the smart city concept in Indonesia and will involve collaboration between the central government and the private sector.

The main driver of smart city technology is information and communication technology infrastructure, which includes the internet of things (IoT), big data, artificial intelligence, and digital connectivity. Examples of applications in the key drivers of smart city technology are (Susanto, 2019):

1. Transportation
   Traffic monitoring using AI and sensors to manage traffic flow, as well as data-driven transportation systems for efficiency.
2. Public Services
   Mobile applications such as JAKI in Jakarta or Denpasar Prama Sewaka for reporting citizen issues, accessing emergency services, and providing public information.
3. Waste Management
   Using sensors on trash bins to send notifications when they are almost full, allowing logistics companies to plan more efficient collection routes and save costs.
4. Security
5. High-resolution internet protocol-based surveillance cameras for more detailed city security monitoring.

The purpose of this study is to explain the role of quality human resources in realizing smart cities.

RESEARCH METHODE

To answer this question, a qualitative analysis approach was used. A qualitative analysis approach is a systematic process for interpreting non-numerical (descriptive) data such as interview transcripts, observations, and documents to gain a deeper understanding of social phenomena (Kurdhi et al., 2023). The goal of a qualitative analysis approach is to gain a deep and comprehensive understanding of social phenomena by exploring the meanings, experiences, and perspectives of participants. This approach emphasizes the quality, depth, and detail of descriptive data such as interviews, observations, or documents, rather than the quantity of numerical data, focusing on the "why" and "how" something happens.

This qualitative analysis approach utilizes secondary data. Secondary data is data that has been collected, processed, and published by others, not by the researcher themselves (Sugiyono, 2019). This data can be accessed through various sources, such as theoretical concepts from books and other relevant sources. Using secondary data is faster and more cost-effective than primary data, but researchers need to ensure its validity and relevance to the research being conducted.

RESULT AND DISCUSSION

Smart City

Smart city users are all city residents who utilize technology and innovation to improve their quality of life, from individuals to governments and the private sector. They are city residents who use various digital platforms to access public services, participate in decision-making, and enjoy the efficiencies offered by the smart city concept.

Smart city developers can include local governments, private parties such as information and communication technology solution providers, and property developers, as well as research institutions and academics. Local governments play a role in designing and initiating programs, while the private sector provides technology and solutions to support their implementation, often through collaboration.

The key driver of smart city technology is information and communication technology infrastructure, which includes the internet of things (IoT), big data, artificial intelligence, and digital connectivity. These technologies are used to collect, analyze, and efficiently utilize data to improve various aspects of urban

life, such as intelligent transportation, digital public services, resource management, and security (Pandiangan et al., 2024).

Figure 1. Smart City

The Role of Quality Human Resources in Realizing Smart Cities

Quality human resources are the primary foundation for realizing smart cities because they are the users, developers, and drivers of technology. Smart city users are all urban residents who utilize technology and innovation to improve their quality of life, from individuals to governments and the private sector. Smart city developers can include local governments, private parties such as information and communication technology solution providers and property developers, as well as research institutions and academics. The primary driver of smart city technology is information and communication technology infrastructure, which includes the internet of things (IoT), big data, artificial intelligence, and digital connectivity.

Quality human resources are skilled and digitally literate individuals who play a role in realizing smart cities by:

1. Providing Innovation in Urban Solutions

   Innovation in urban solutions is crucial to addressing the challenges of urbanization and improving the quality of life for citizens. Innovation encompasses not only technology but also new approaches to governance, public services, and resource management. These innovations are driven by creativity and strategic responses to the dynamic needs of society, aiming to realize a more livable, resilient, and sustainable future for cities. Governance is the process of implementing development management that involves interactions between government, civil society, and the private sector to achieve public goals, based on principles such as

transparency, accountability, participation, and efficiency. The goal is to realize clean and responsible governance, manage development effectively, and improve the welfare and justice of the people. Public services are activities or a series of activities carried out by the government or public institutions to meet the community's basic needs for goods, services, and/or administrative services. These services aim to satisfy citizens and residents in accordance with laws and regulations, with principles such as legal certainty, openness, professionalism, and effectiveness. Examples include population administration services, health services, and the provision of transportation facilities. Resource management is the process of planning, implementing, and overseeing the efficient and sustainable use of resources, both natural and human, to achieve specific goals. The goal is to balance current needs with sustainability for future generations, with a focus on responsible use.

2. Increasing the Efficiency of Public Services
   To improve the efficiency of public services, the government can focus on digitalization and technological innovations such as e-government and artificial intelligence, simplifying procedures and bureaucratic reform, and improving the competence and professionalism of civil servants. These steps aim to shorten service times, lower costs, increase transparency, and ultimately provide greater public satisfaction. Digital innovation through information and communication technology can facilitate access and speed up processes, while improving human resources ensures quality services. Simplifying procedures and encouraging public participation helps create a more responsive and transparent system.
3. Actively Participating in Decision-Making
   Actively participating in decision-making means being directly involved in the decision-making process, not simply following orders. This involves conveying opinions, suggestions, and thoughts to help determine the direction of a program or policy, whether through meetings, discussions, public consultations, or other methods. Active participation is crucial for creating better policies that meet community needs.
4. Contributing to the City's Sustainable Development
   Contributing to sustainable urban development can be done through everyday actions such as reducing energy and water consumption, recycling waste, and supporting sustainable local businesses. Residents can also participate in community initiatives, such as tree planting and cleanup programs, and choose a healthier and more active lifestyle. Furthermore, supporting policies and programs that promote

sustainability and efficient public transportation is also an important way to contribute.

CONCLUSION

The results show that quality human resources are skilled and digitally literate individuals who play a role in realizing smart cities by providing innovation in urban solutions, increasing the efficiency of public services, actively participating in decision-making, and contributing to the city's sustainable development.

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