

# Leadership Strategy for Smart health in Sustainable Smart Cities in a Developing Country

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## ABSTRACT

This article discusses the role of leadership in promoting public health through access to technology-based health information. With the increasing use of technology in healthcare, it is important to ensure that individuals have access to accurate and reliable health information. The article argues that effective leadership is necessary to facilitate the dissemination of health information through technology and to ensure that individuals have the skills and resources to access this information. The article also highlights the importance of addressing barriers to access, such as lack of internet connectivity and limited digital literacy. The article concludes that by prioritizing access to technology-based health information and fostering effective leadership in this area, public health promotion efforts can be strengthened and improved.

**Keywords:** developing country, system leadership, smart cities, smart-health, sustainable

## INTRODUCTION

The use of technology and information on improving public health is increasingly becoming an important concern in today's digital era. The concept of smart health or "smart health" is considered one of the solutions that can improve the health system in developing countries. However, the implementation of this smart health concept requires strong support from the government and leaders in each region.

The use of technology and information on smart health in sustainable smart cities in developing countries has various challenges and problems. Some of the problems faced, such as inadequate infrastructure in the development of smart cities and smart health services in developing countries.

Limited access to and use of technology and health information among the public. Limited human resources who understand and can manage smart health technology and information. There are no clear policies and regulations regarding the use of smart health technology and information in developing countries. Lack of public understanding and awareness of the benefits of using technology and information in smart health. There is a lack of adequate support and investment from the government and the private sector in the development of smart cities and smart health services in developing countries. In dealing with these problems, the right leadership strategy is very important in ensuring the use of technology and information on smart health can be implemented effectively and efficiently. This article will take a closer look at the leadership strategies needed to create sustainable and healthy smart cities in developing countries.

Sustainable smart cities are also an important focus in the development of cities in developing countries. One of the goals is to improve the quality of life of the community through the use of technology and information infrastructure and public services. Many studies and studies have been conducted to find solutions to overcome the challenges and problems faced in implementing smart health in sustainable smart cities in developing countries. Several solutions have been made by researchers such as the Development of infrastructure: In developing smart cities and smart health services, adequate infrastructure is needed and can support the implementation of technology and information. Some of the proposed solutions include strengthening the internet network, increasing data storage capacity, and increasing connectivity between smart health devices and the public. Other solutions such as Human resource development: The limited human resources who understand and can manage intelligent health technology and information is a significant problem. The proposed solutions include developing training and education programs for health workers and the community so that they can understand and make good use of smart health technologies. Development of policies and regulations: There is a need for clear policies and regulations to govern the use of smart health information and technology in developing countries. The proposed solution is to develop policies that ensure the privacy and security of patient data, ensure the use of affordable and accessible technologies, and regulate standards and certification for smart health devices. Counselling and campaigns: Lack of public understanding and awareness of the benefits of using technology and information on smart health is a problem that must be addressed. The proposed solution is to conduct outreach and campaigns to the public about the benefits of smart health and how to access them. Support and investment: The lack of adequate support and investment from the government and the private sector is one of the obstacles to developing smart cities and smart health services in developing countries. The proposed solutions include developing support and investment programs to accelerate the development of smart health technology and infrastructure in developing countries.

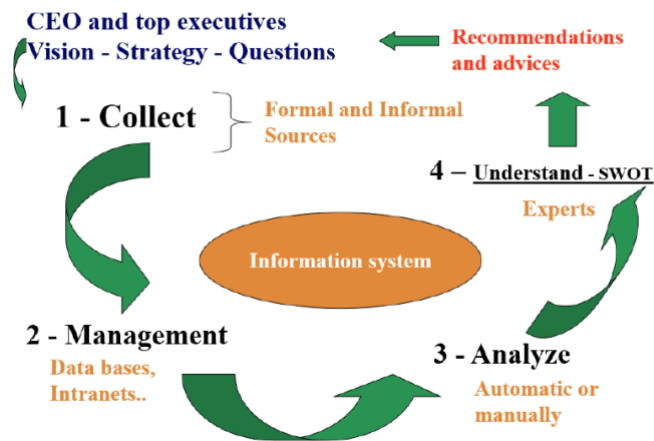
The novelty of this research is the approach taken in examining leadership strategies in implementing smart health in sustainable smart cities in developing countries. This article integrates the concept of leadership with smart health information and technology in the context of sustainable smart cities in developing countries, which has not been extensively researched thoroughly. In addition, this article also considers various interrelated aspects in the development of smart cities and smart health services in developing countries, such as infrastructure, human resources, policies and regulations, and support and investment. This can provide a more comprehensive view of developing leadership strategies for smart health in sustainable smart cities in developing countries. Therefore, this

article can make an important contribution to developing smart cities and smart health services in developing countries, as well as provide ideas and inspiration for researchers and practitioners in this field to continue to carry out further research and development.

In this context, this article examines leadership strategies for smart health in sustainable smart cities in developing countries. Leadership is considered very important in ensuring the use of technology and information on smart health can be implemented effectively and efficiently. This article will discuss some important aspects of strategic leadership that must be considered in creating sustainable and healthy smart cities in developing countries.

## METHODS

This study uses a competitive intelligence approach in conducting analysis and strategy formulation. This approach has been used by Tulungan (2021) in formulating a strategy. This method is a Competitive intelligence cycle. See figure 1.



**Figure 1.** Competitive intelligence cycle

The approach we use is a competitive intelligence approach which has four steps as follows:

a) Collect

In this step, we collect information through surveys, interviews, and assessment of documentation. We conducted a survey by distributing questionnaires to 48 city government agencies managing smart cities, 20 community communities, 50 industries, and 10 academics. We conducted interviews with those in charge or heads of agencies and operators managing smart cities. Meanwhile, we conducted documentation, a study by compiling reports on the evaluation results of smart city organizers which contain evaluation results and recommendations for smart cities that have been running.

We used a sample in the city of Tomohon, North Sulawesi province, Indonesia. This city has implemented a smart city since 2017 and is still running with limited conditions.

b) Management

The information that we have collected, we carry out data management, is filtered according to its purpose and we store it in a knowledge management model so that it can be extracted for analysis. We summarize the survey results and present them in the form of data and graphs to make it easier for us to carry out the analysis.

c) Analyze

In this third step, we conducted an analysis of the previously collected data. We carry out a comprehensive analysis to formulate strategy mapping and gap analysis.

d) Understand

In this step, we formulate a strategy implementation strategy based on the results of the previous analysis. We formulate a strategy using the McFarland Strategic Grid analysis model. We create an implementation strategy based on four categories, namely STRATEGIC, KEY OPERATIONAL, HIGH POTENTIAL, and SUPPORT.

## RESULTS AND DISCUSSION

### Smart-Health models in smart cities

The Smart-Health model in a smart city is an approach or strategy that integrates information and communication technology (ICT) in the provision of health services to create a smart and efficient health system. This model aims to improve the quality of health services, increase the accessibility and availability of health services, and accelerate the response to health emergencies. In the Smart-Health model in smart cities, ICT is used to monitor and analyze health data in real-time, so that it can provide accurate and fast information about the health conditions of individuals or populations. In addition, ICT is also used to facilitate communication between patients and doctors, as well as to facilitate online medical check-up schedules.

Some examples of applications of the Smart-Health model in smart cities include remote health monitoring systems, setting online health check schedules, remote medicine, and using technology to support public health policies. By implementing this model, it is hoped that it can create a health system that is more efficient, accurate, and quickly responds to the needs of smart city communities.

### Strategic Alignment Smart Health

We did a mapping to choose the right strategy for smart city implementation in cities in developing countries. The mapping we do is by aligning the mission of regional leaders/city leaders with the goals, objectives, and components of smart cities. Missions, goals, and objectives are mapped according to the six dimensions of the smart city that have been discussed previously. The results can be seen in table 1.

**Table 1.** Mapping Goals, Targets, and Smart City Components

Mission	Purpose	Target	Smart City Components
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Protect and preserve the city as a religious city	The realization of a religious community that respects each other and has a national character	Increased tolerance between religious communities and the maintenance of security and order in social life as well as the implementation of democratic life	Smart Society, Smart Governance
Improving people's welfare in various sectors.	The realization of quality, fair and equitable community welfare	Increasing the city's economy	Smart Economy
		Increased access and quality of education for urban communities	Smart Society
		Decrease in the number of poor people	Smart Economy
		Increased job opportunities	Smart Economy
		Improving the quality and achievements of the younger generation	Smart Society
		Increased empowerment of women and protection of children	Smart Living
	The realization of a beautiful and sustainable city development	Increasing integrated and quality city infrastructure	Smart Living
		Increasing the development of comfortable, beautiful and sustainable urban spaces	Smart Living
Make the city a world tourism city	The realization of the city as a world tourist destination through productive and professional tourism management	Increasing number of tourist visits	Smart Branding
		Improving the protection, development and utilization of local culture	Smart Governance, Smart Branding
Advancing the Agricultural System in order to realize food sovereignty	The realization of increased production of agricultural commodities to realize food sovereignty	Increased production of agricultural commodities	Smart Economy
		Increased food security	Smart Environment
Realizing government services that are clean,	Implementation of effective and efficient bureaucratic reforms	Increased capacity and accountability of bureaucratic performance	Smart Governance

effective and with  
integrity

Improving good governance

Smart  
Governance

Achieve the goals of the model. Good leadership can facilitate the implementation of technological innovations in health services, improve coordination between units or organizations in the provision of health services, and manage risks associated with the implementation of new technologies. One of the important aspects of leadership at Smart-Health is the ability to lead change. In this context, leaders must be able to manage the changes needed to implement new technologies in healthcare. This includes developing strategic plans, managing resources, and establishing effective work teams to implement these changes.

In addition, leadership in Smart-Health must also be able to adapt to rapid and evolving technological changes. Leaders must have extensive technical knowledge, and ensure that the technology used is in accordance with the needs of the community and health workers. Finally, leadership in Smart-Health must be able to build close cooperative relationships between the public, private, and community sectors in the provision of health services. This includes integrating health care systems, optimizing the use of resources, and promoting public participation in smart city health programs.

With strong leadership in Smart-Health in smart cities, it is expected to create a smart and effective health service system, so that city people can enjoy the benefits of technology applied in health services.

### Strategic Leadership on Smart Health

The leadership strategy of Smart Health aims to lead and manage change in the delivery of health services by making optimal use of information and communication technology (ICT). Leadership in Smart Health in developing countries presents its challenges. Due to limited resources, infrastructure, and regulations that are not always supportive, leaders in developing countries must be more creative and innovative in implementing information and communication technology (ICT) in health services.

By implementing the right leadership strategy, Smart Health in developing countries can provide great benefits to society, including increasing access to and quality of health services, increasing the efficiency of the use of resources, and increasing productivity and people's welfare. SWOT analysis for smart health can be seen in table 2.

Table 2. Leadership Strategy in Smart Health

<i>SWOT SMART LIVING</i>			
Strength	Weakness	Opportunities	Threats
- There is adequate health insurance - Availability of adequate and standard	- The parking system has not been organized neatly and manually	- There is an opportunity to create a fast and efficient public transportation	- Post Pandemic covid 19

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health facilities and infrastructure	service and	- The hospital administration system still requires paper documents (not all of them are facilitated online and integrated).	system and to open people's minds about technology	- Communities are increasingly critical in obtaining health services
- There are modes of transportation from third parties using online and offline		- The pattern of healthy living in people's daily lives is still very low, as is the high number of family members who consume cigarettes	- Promotion of more intensive health services	
- Remote medical appointments		- The unavailability of an integrated and cashless transportation application		
		- The unavailability of pedestrian crossings equipped with easily accessible signals		
		- There is no information system related to spatial planning that can be accessed online by the general public.		

This study also conducts a priority analysis of the strategy for implementing Smart Health in smart cities in developing countries. Analysis was carried out using priority analysis with the McFarland Strategic Grid analysis method. We create an implementation strategy based on four categories, namely STRATEGIC, KEY OPERATIONAL, HIGH POTENTIAL, and SUPPORT. See table 3.

**Table 3.** SMART LIVING dimension priority analysis

No	Initiation	Priority
1	Implementing a child-friendly environment in hospitals, health centers, schools	S
2	Creating an integrated health care system	S
3	Implementation of an ICT-based parking system	K
4	ICT-based and friendly health transportation services for special needs groups	S
5	Implementation of an integrated transportation system based on ICT and cashless	K

6	Implementation of real-time updates on the integrated health service system	<b>S</b>
7	Provide pedestrian crossings equipped with easily accessible signals	<b>H</b>
8	Building an information system related to spatial planning that can be accessed online by the general public.	<b>K</b>

In the smart living dimension, various strategies have been formulated as shown in table 3. Strategies that are top priority and are strategic in nature, such as developing an electronic-based school information system to support data integration, integrated teacher database, and development of learning applications. Strategies that are key operational in nature, such as making MoUs with universities related to research and community service which can have a direct impact on society, increasing apparatus in the field of data security, and strengthening community digital literacy. While strategies that are high potential, such as the implementation of training and scholarships for youth who excel in academics, religion, and sports, and the integration of CCTV. Supportive strategies such as socialization of the ITE Law, and involvement of security-based communities in dealing with threats related to data security.

This strategy includes several things, including:

1. Building a Clear Vision and Mission: Leadership at Smart Health must be able to formulate a clear and measurable vision and mission. This vision and mission must be able to provide specific direction and goals in implementing Smart Health in health services.
2. Forming Effective Work Teams: Leaders in Smart Health must be able to form work teams consisting of health workers, ICT experts, and administrative staff who have the capabilities and skills needed to implement innovations in health services.
3. Managing Risk: The implementation of technology in healthcare has risks that need to be managed properly. Therefore, the leadership strategy at Smart Health must be able to identify risks that may occur, measure their impact and severity, and determine appropriate steps to reduce or manage these risks.
4. Drive Innovation: Leaders in Smart Health must be able to drive innovation in healthcare delivery. This can be done by adopting the latest technology and developing innovative solutions in the provision of health services.
5. Improving Service Quality: The leadership strategy in Smart Health should be able to improve the quality of health services provided. Leaders must ensure that the services provided are patient-oriented, efficient, accurate, and easily accessible to the public.
6. Build Partnerships and Networks: Leaders in Smart Health must be able to build close partnerships and networks with the public, private, and community sectors in the provision of health services. This includes optimizing the use of resources, strengthening healthcare systems, and promoting citizen participation in smart city health programs.

By implementing a leadership strategy in Smart Health, it is expected to create a health service system that is smart, effective, and in accordance with the needs of smart city communities.



## CONCLUSION

This research concludes that the development of an appropriate and integrated leadership strategy is essential in implementing smart health in sustainable smart cities in developing countries. This can be done by considering several important aspects such as infrastructure, human resources, policies, and regulations, as well as support and investment. In addition, the active role of the government, private sector, health workers, and the community is needed in developing smart cities and smart health services in developing countries. This can be achieved through the development of training and education programs, outreach and campaigns to the public, as well as support and investment from the government and the private sector. Strengthening leadership strategies in implementing smart health in sustainable smart cities in developing countries, is expected to improve the quality of health services and increase the welfare of society as a whole. In addition, this article can provide inspiration for researchers and practitioners in this field to continue to carry out further research and development, so as to make a significant contribution to developing smart cities and smart health services in developing countries.

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