

# UNDERSTANDING SMART CITY STRATEGY IN DEVELOPING COUNTRIES' CITIES

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## Abstract

The smart city is a necessity in many modern cities when information technology becomes the choice of communication and interaction. Implementing smart cities in developing countries is not easy due to the lack of information technology infrastructure and the quality of smart city users. It is necessary to have the right strategy in implementing a smart city. This study aims to formulate a proposed strategy for implementing smart cities in cities in developing countries. We use a competitive intelligence approach to build a smart city strategy. The results of this study we formulate a smart city strategy in developing countries based on 6 dimensions of smart cities: smart governance, smart branding, smart economy, smart living, smart society, and smart environment. We formulate Strategic Alignment by making a mapping based on the mission and goals of city leaders towards the 6 dimensions of a smart city. The result obtained is the establishment of a measurable, smart city development strategy by formulating a priority strategy that can be implemented so that it becomes more efficient. This is because the strategy is built based on a comprehensive analysis of internal and external conditions. We conducted a gap analysis using SWOT analysis and developed a smart city implementation strategy with 4 categories, namely strategic, key operational, high potential, and support. We conclude that the implementation of smart cities in cities in developing countries must be based on the conditions and potential resources available in the city uniquely and operationally so that it is easy to implement.

**Keywords:** competitive intelligence; cities; developing countries; smart city; strategy implementation.

## 1. INTRODUCTION

Smart cities have become the choice in cities in developing countries. These cities use smart cities as an effort to improve public services and to regulate development. The smart city is developed into an information technology-based city (Lom and Pribyl, 2021). Ways of communicating with urban communities ranging from friendship, work, interaction in the community, transactions, government services, schools, and various other activities are carried out based on intelligent technology. Interaction with friends or this community can be done through social media widely (Nakano and Washizu, 2021) (Kowalik, 2021). The interactions that occur involve a lot of information and need to be filtered and behave

appropriately in an increasingly intelligent city community using smart city services (Zhou et al., 2021). The need for the participation of the community and various social groups in participating smart cities is an important component in determining the right smart city management strategy (Patel and Doshi, 2019).

The problem that occurs in cities in developing countries is the lack of information technology infrastructure so that the process of adopting technology such as the Internet of Things (IoT), big data, artificial intelligence that characterizes industry 4.0 becomes difficult to fulfill (Kong and Woods, 2021). The desire to build a society 5.0 becomes difficult to realize in cities in developing countries. This is also caused by the lack of adequate human resources and limitations in accessing potential resources to be developed optimally by utilizing information technology. To be able to provide broad and massive smart city services to the community requires high speed and accuracy and is supported by adequate management resources as officers who run the system. This is where many problems occur so that it is difficult to implement a smart city optimally. Another obstacle is policies that have not been formulated properly because there are regulatory gaps with information technology-based interaction patterns that are not accommodated in formally applicable laws and regulations (Soyata *et al.*, 2019).

Several solutions have been built to try to overcome these problems, starting with defining concepts in smart city management (Qayyum et al., 2021), building a framework for alignment with infrastructure assets that have been built (Heaton and Parlikad, 2019), defining the smart city concept carefully. (Kummitha and Crutzen, 2017), providing software that is widely used in various smart city services with a pattern of provision through application vendors (Saborido and Alba, 2020), provision of IT infrastructure based on cloud computing (Heller, Liu, and Gianniou, 2017), and the implementation of smart city governance in a quality and optimal manner (De Guimarães et al., 2020) (Ruhlandt, 2018). However, the implementation of smart cities in cities in developing countries still faces obstacles. Organizers are still having difficulty formulating the best way to start with limited budget support, policies that have not been well-formulated, and lack of human resources for managers such as low competence and lack of technical knowledge of smart city management itself. Therefore, a design is urgently needed to harmonize the various components of a smart city and the available budget in establishing a smart city concept that can be implemented easily by the potential and resources available in the city. This is what drives the importance of developing a smart city implementation strategy that is appropriate and can be operated easily according to available resources.

The novelty of this research is a model for developing a comprehensive smart city development strategy by modelling internal and external conditions, then proceeding with building a development strategy model by giving priority to each strategy that is built. This model is different from various previous studies that have been carried out by previous researchers. Therefore, this study is very important to formulate a

smart city implementation strategy. The purpose of this study is to formulate a strategy that is measurable and easy to operate in implementing smart cities in cities in developing countries so that it is easy to implement.

## 2. METHOD

This study uses a competitive intelligence approach in analysing and formulating strategy. This approach has been used by Tulungan (Franky et al., 2021) in formulating strategy. This method is a competitive intelligence cycle. See Figure 1.

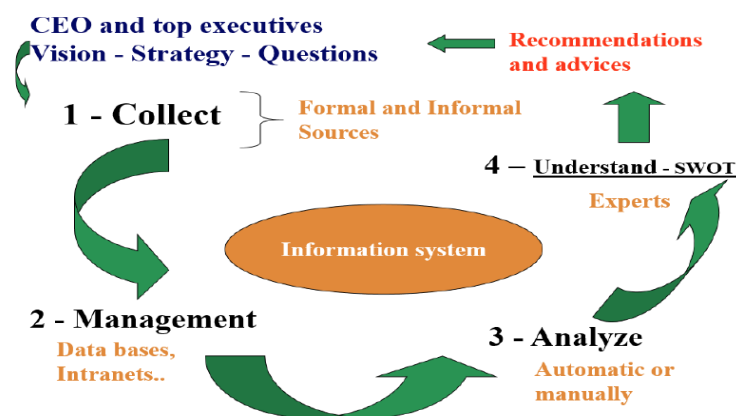


FIGURE 1 - COMPETITIVE INTELLIGENCE CYCLE (SOURCE: (FRANKY ET AL., 2021))

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 documentation assessments. Our survey was conducted by distributing questionnaires to 48 city government agencies managing smart cities, 20 communities, 50 industries, and 10 academics. We conducted interviews with the person in charge of the head of the agency and operator managing the smart city. Meanwhile, our documentation, the study was carried out by collecting reports on the evaluation results of smart city organizers containing 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 do data management, is filtered according to its purpose. We store it in a knowledge management model to be extracted for analysis. Our survey results are

data recapitulation and presented in the form of data and graphs to make it easier for us to do the analysis.

**c) Analyze**

In this third step, we analyze the data that has been collected previously. We conduct a comprehensive analysis to formulate strategy mapping and gap analysis.

**d) Understand**

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

**3. RESULTS AND DISCUSSIONS**

**3.1. Smart City Model**

There are many smart city models and their dimensions as suggested by several previous researchers such as Prince (Antwi-Afari et al., 2021), Lom (Lom and Pribyl, 2021), Secinaro (Secinaro et al., 2021), and Westraadt ( Westraadt and Calitz, 2020). We use the smart city model, which is widely used in developing countries, especially Indonesia. The smart city model used in the country is to use a six-dimensional smart city. See Figure 2.

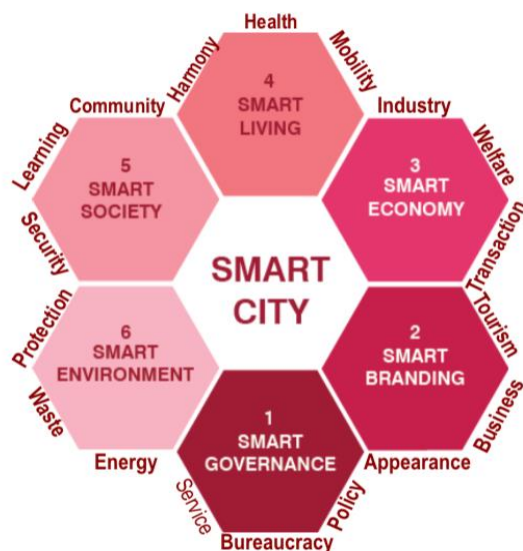


FIGURE 2 - SIX-DIMENSIONAL SMART CITY MODEL (SOURCE: (ANITYASARI, 2019) (INDONESIA, 2018))

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This smart city model has become a model set by the Indonesian government as a model that must be followed according to government policies (Anityasari, 2019). This model has 6 dimensions consisting of:

1. Smart Governance(Barns, 2018), This dimension is a dimension that regulates smart city governance, which is the practice of how to manage the management and governance of government and public services more quickly, efficiently, effectively, responsively, communicatively, and continue to improve bureaucratic performance through innovation and technology adoption. Integrated (Herdiyanti, Hapsari, and Susanto, 2019). Smart governance consists of service, bureaucracy, and policy.
2. Smart branding, This dimension is the smartest city dimension that regulates the innovative and creative practices of local governments utilizing the latest technology to build regional positioning and brand value both at national and international levels, to increase regional competitiveness in attracting public participation and business/investor investment. From within and outside the region to encourage economic activity and the development of local social and cultural life which leads to an increase in community welfare (Anityasari, 2019). Smart branding consists of components of appearance, business, and tourism.
3. Smart economy(Bjørner, 2021), This dimension is the ability to create a regional economic ecosystem that supports regional leading economic sectors and meets the demands of the information age, namely adaptive to rapid changes (agile), global scope, collaboration/sharing economy, integration, innovation, and personal customization (Anand et al., 2017; Abu-Rayash and Dincer, 2021). The smart economy consists of a transaction, welfare, and industry components.
4. Smart living(Ji *et al.*, 2021), This dimension is the ability to create a decent, comfortable, and efficient living environment (Yeh, 2017; Macke et al., 2018). Smart living consists of mobility, health, and harmony components.
5. Smart Society, This dimension is the ability of local governments to create a socio-technical (social-virtual) ecosystem for a humanist, productive, dynamic, communicative, and interactive community with high digital literacy (Abu-Rayash and Dincer, 2021) (Aguaded-Ramírez, 2017). Smart society has community, learning, and security components.
6. Smart environment(Shamsuzzoha *et al.*, 2021), This dimension is the ability of local governments to realize good, responsible, and sustainable environmental governance (Khan, Pervez, and Abbasi, 2017; Liu and Zhang, 2021). Smart Environment consists of protection, waste, and energy.

### 3.2. Strategic Alignment

We did the mapping to choose the right strategy for smart city implementation in cities in developing countries. Our mapping is done by aligning the mission of regional leaders/city leaders with the goals, objectives, and components of a smart city. The mission, 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 SMART CITY GOALS, GOALS AND COMPONENTS

Mission	Purpose	Target	Smart City Components
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, effective and with integrity	Implementation of effective and efficient bureaucratic reforms	Increased capacity and accountability of bureaucratic performance	Smart Governance
		Improving good governance	Smart Governance

### 3.3. Gap Analysis

We have carried out an analysis to find a gap as a basis for formulating a strategy that can be implemented. We conduct an analysis by looking at the internal and external conditions of the city. On

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internal conditions, we analyze strengths and weaknesses, while externally we analyze conditions on Opportunities and Threats.

We performed a SWOT (Strength, Weakness, Opportunities, Threats) analysis. We find various strengths that can be maximized to achieve goals and realize the city's mission. See Table 2. Some of the strengths that can be optimized, such as the commitment of city leaders who can motivate all local apparatus and apparatus they lead so that they can work optimally. In addition, there is a city smart city council, which is a leadership panel in charge of formulating and initiating various smart city ideas that can be implemented in cities. The smart city council consists of various stakeholders such as experts and academics, communities, community leaders, and industry. They can collaborate in formulating various smart city ideas and programs.

Apart from this, we also analyze internal conditions on the weak side. This is useful for reducing weaknesses with various programs and reducing the adverse effects that will occur. Some of the weaknesses that must be anticipated are the lack of IT staff who has good competence in managing various technology infrastructures and various software/applications that are run in the smart cities. In addition, services that have not been integrated are a weakness that must be found solutions to integrate various applications that are run by maximizing the technology APIs installed in these applications. Thus, users and service users are facilitated by using a single sign-on with one username in various applications. Data integration is also a weakness that must be overcome so that the speed and accuracy of the service can be guaranteed.

We also conduct an analysis on external conditions, namely Opportunities, this is useful to see and take an inventory of various opportunities that can be exploited to get great benefits. Some of the opportunities that were successfully noted, were the existence of various collaborations with various stakeholders. This condition provides a great opportunity for the city government to maximize cooperation with industry and business actors in the production of goods and services, universities in strengthening research and innovation, communities in interacting and utilizing services, media as part of communication between various components of the city, both from government, society, and industry, as well as the government as regulator and policymaker.

The last part that is analyzed is Threats. This section is important to anticipate in the future. This condition must be formulated with the right strategy to reduce the level of risk that arises and anticipate it so that it does not cause large losses and negative impacts. Threats such as the COVID-19 pandemic, which has a huge impact on various sectors such as health, economy, and tourism need to be handled carefully and appropriately so as to reduce the negative impacts and losses that occur. Other threats such as radicalism



need to be anticipated so as not to cause terror and loss of life, thereby causing public distrust and distrust of the government. This of course will have an impact on the confidence of investors who invest in various sectors.

The results of the SWOT analysis of the smart city are divided based on the six dimensions of the smart city. See Table 2.

TABLE 2 - SWOT FOR GAP ANALYSIS

Strength	Weakness	Opportunities	Threats
<i>SWOT SMART GOVERNANCE</i>			
<ul style="list-style-type: none"> <li>- Regional Head's commitment to smart city</li> <li>- City leader's flagship program</li> <li>- Smart city master plan available</li> <li>- Have religious pluralist values</li> <li>- Has an operational Command Center facility</li> <li>- Smart city evaluation has been carried out so that you know what needs to be improved</li> <li>- There is a Smart City Board and Implementation Team</li> </ul>	<ul style="list-style-type: none"> <li>- There is still a lack of IT staff with specific skills</li> <li>- Government internal and external socialization related to Smart City is still lacking</li> <li>- Application services that have not been integrated</li> <li>- Lack of supporting infrastructure (sensors, internet access, bandwidth) to support the Smart City concept</li> <li>- Not all applications, infrastructure networks and human resources in the field of ICT have been stipulated in regulations (mayor regulations/decrees)</li> <li>- The arrangement of ICT budgets between Regional Apparatus has not been coordinated</li> <li>- There has never been an audit at the application/information system level</li> <li>- There is no SOP on system security. There needs to be an ISO 27001 certificate and SNI on data security.</li> <li>- Network infrastructure / internet connection in regional devices is not evenly distributed</li> <li>- Digital literacy for all stakeholders needs to be improved</li> </ul>	<ul style="list-style-type: none"> <li>- Collaboration with various stakeholders (Penta helix approach)</li> <li>- Local and nearby universities have study programs that can provide staff in the IT field</li> <li>- There is a community of City IT activists</li> <li>- Strengthening infrastructure including physical, digital and social infrastructure.</li> <li>- Outreach to the public about E-government application services.</li> <li>- There is an opportunity to recruit non-civil servant experts</li> <li>- There is an opportunity to create a City ICT Council</li> <li>- The existence of a National SPBE Master Plan that can be used as a legal product in terms of integrating government electronic services</li> </ul>	<ul style="list-style-type: none"> <li>- COVID-19 pandemic</li> <li>- Lack of staff for a long period of time (ICT staff on average contract status)</li> <li>- There is a possibility of abuse of data access rights by cyber criminals</li> <li>- The onslaught of hoax news and the development of radicalism</li> </ul>
<i>SWOT SMART ECONOMY</i>			
<ul style="list-style-type: none"> <li>- The existence of a food and beverage business area as well as a service business that spreads across all sub-districts in the City</li> <li>- The existence of MSMEs spread throughout the district</li> </ul>	<ul style="list-style-type: none"> <li>- Utilization of natural resources by the community has not been maximized</li> <li>- Lack of development of GIS and IoT models for industry</li> <li>- Many people do not know about the existing financing system and it is supported by the city government</li> <li>- Development of cashless payments</li> <li>- Interest in entrepreneurship is still low</li> </ul>	<ul style="list-style-type: none"> <li>- Collaboration with various parties</li> <li>- Applicability of MEA</li> <li>- Opportunities and market share promised by the creative industry are wide open</li> </ul>	<ul style="list-style-type: none"> <li>- The existence of a modern market which is considered more profitable for consumers is a threat to small traders, especially traditional traders</li> <li>- COVID-19 pandemic</li> </ul>



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SWOT SMART BRANDING

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|---|---|--|--|
| <ul style="list-style-type: none"> <li>- City Mission as a world tourist city</li> <li>- Commitment of regional leaders</li> <li>- The city has a unique and beautiful tourist attraction</li> <li>- Comfortable and safe conditions</li> </ul> | <ul style="list-style-type: none"> <li>- Weak tourism management</li> <li>- Not yet optimal development of government-owned tourist destinations.</li> <li>- There is no typical local souvenir and craft center</li> <li>- The infrastructure for supporting tourism events based on culture and local wisdom on a national and international scale is not yet maximized, including the absence of an integrated area</li> <li>- Lack of skilled and certified tourism staff/staff (foreign speakers, tour guides, etc.)</li> <li>- There is still a lack of attractions or tourism supporting activities.</li> <li>- The need for mapping new tourist destinations/areas.</li> <li>- Management of ICT (Information, Communication, Technology) Tourism that has not been maximized.</li> </ul> | <ul style="list-style-type: none"> <li>- Collaboration with various parties</li> <li>- Digitization of tourism services</li> </ul> | <ul style="list-style-type: none"> <li>- COVID-19 pandemic</li> <li>- The development of new tourist destinations around the city</li> <li>- The shift of tourists out of city destinations</li> <li>- Moral/cultural degradation</li> </ul> |
|---|---|--|--|

SWOT SMART LIVING

- |   |  |  |  |
|---|--|--|--|
| <ul style="list-style-type: none"> <li>- There is a very adequate health insurance</li> <li>- Availability of adequate health service facilities and infrastructure and meet standards</li> <li>- Available modes of transportation from third parties using Online and offline</li> <li>- Medical appointments conducted remotely</li> </ul> | <ul style="list-style-type: none"> <li>- The parking system is not neatly organized and manual</li> <li>- The hospital administration system still requires paper documents (not all of them are facilitated online and integrated).</li> <li>- Healthy lifestyles in people's daily lives are still very low, such as the high number of family members who consume cigarettes</li> <li>- There is no integrated and cashless transportation application available</li> <li>- There is no pedestrian crossing equipped with an easily accessible signal</li> <li>- There is no information system related to spatial planning that can be accessed online by the general public.</li> </ul> | <ul style="list-style-type: none"> <li>- There is an opportunity to create a fast and efficient public transportation system and open people's thinking about technology</li> <li>- More intensive promotion of health services</li> </ul> | <ul style="list-style-type: none"> <li>- COVID-19 pandemic</li> <li>- People are increasingly critical in getting health services</li> </ul> |
|---|--|--|--|

SWOT SMART SOCIETY

- |  |   |   |  |
|--|---|---|--|
| <ul style="list-style-type: none"> <li>- There is a community of start-up/ software developers and SMEs/IKM</li> <li>- Many schools have been accredited with national standards ranging from basic education to universities</li> <li>- Increased number of public library books and e-book titles</li> </ul> | <ul style="list-style-type: none"> <li>- Many teachers will retire in the next 5 years but there are no new teacher recruits</li> <li>- There are still limited learning support facilities such as laboratories, libraries, sanitation facilities, and teachers' rooms.</li> <li>- CCTV is not evenly distributed</li> </ul> | <ul style="list-style-type: none"> <li>- The high need for information technology in solving community problems</li> <li>- Improve IT-based security</li> <li>- Synergize with universities with research programs and community service</li> <li>- There are opportunities for collaboration with institutions that handle security</li> </ul> | <ul style="list-style-type: none"> <li>- COVID-19 pandemic</li> <li>- The development of hoax information on social media</li> <li>- Data security is not guaranteed</li> <li>- Technological advances tend to lead to individualism behavior</li> </ul> |
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SWOT SMART ENVIRONMENT

- The topography of the outskirts of the city consisting of hills and lakes that can be a tourism potential	- Development of settlements that take agricultural land and forest areas into residential areas	- Improved waste treatment technology so that it can be used as an alternative energy source	- Cities are included in disaster-prone areas, with volcanoes
- A comprehensive environmental management policy with the implementation of environment-based development	- Heavy rainfall makes it prone to floods and landslides	- Ground water that is still maintained so that it can provide an adequate supply of clean water	- As a transit capital, the City experiences dynamic and very diverse population migration, which can lead to social conflicts
	- Inadequate waste management infrastructure results in waste not being managed properly	- Utilization of alternative energy from natural gas, water, wind and sun which is still abundant.	

3.4. Priority Analysis

After we did the gab analysis using the SWOT analysis tools, the strategy formulation was continued by using the McFarland Strategic Grid analysis. This analysis is very appropriate to formulate the priorities of the strategic options that have been formulated. Through this priority analysis, each initiation can determine the priority strategy for the smart city that will be implemented. To be able to formulate the order of priority we label the following:

- STRATEGIC(S). The Strategic label means that this initiation is very important to do because it is related to services that are urgently needed right now to be prepared by the government.
- KEY OPERATIONAL (K). This Key operational label views the initiation as important but not urgent. Will be very much needed in the future.
- HIGH POTENTIAL (H). The High potential label is given to important initiatives but still far from being implemented.
- SUPPORT (U). This Support label is given to initiations that are not very important for service, but are quite helpful if done.

We do prioritization according to the four labels. Priority analysis using McFarland Strategic Grid analysis, we categorize according to the six dimensions of the smart city as follows:

TABLE 3 - SMART GOVERNANCE DIMENSION PRIORITY ANALYSIS

No	Initiation	Priority
1	Advanced preparation of the City's smart city master plan book in a sustainable manner	S
2	Implementation of socialization of all public application services to the entire community, through the media and official websites.	K
3	Recruitment of non-civil servant experts according to the specialization of expertise needed	K
4	Establishment of City ICT Council	S
5	Socializing the SPBE Master Plan for Government Agencies	S
6	Addition of Fiber Optic network infrastructure throughout the city	S

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7	Implementation of Capacity Building for all staff which intersects with the Smart City programs	H
8	Implementation of smart city socialization to local government organizations	S
9	Creating a system to facilitate coordination between regional and provincial and national organizations	K
10	Integrated app logging	S
11	Preparation of all services and implementation of strategic steps to obtain ISO 27001 and SNI on Data security	S
12	Making a system to facilitate coordination between regional and provincial apparatus organizations and the center	S
13	Installing sensor systems or firewalls on the outgoing and incoming data packets, implementing IDS and IPS systems and cooperating with Antivirus Companies	K
14	Prioritizing budgets in ICT related to Smart City and SPBE.	S
15	Improving critical thinking, collaborative, communication and creative ASN and society	U
16	Implementation of ASN capacity building that handles network security	U
17	Prepare a Smart City budget based on the RPJMD to make it possible in terms of budgeting	S

The results of the priority analysis on the dimensions of smart governance in Table 3, identified a strategy that is very important and becomes a top priority to be implemented and is strategic which is labelled S. Some of them are the preparation of a smart city master plan which is very important to be a direction in the smart city implementation. In addition to this, another strategy that is a priority in this dimension of smart governance is the establishment of the City ICT Council, a very important strategy to harmonize collaboration and participation of all components of the city as a whole so that governance and integration of various ideas are developed in the implementation of smart cities. We also develop a strategy that is Key operational where this strategy is very much needed in the future. We label it K. Some of the existing strategies include the implementation of socialization of all public application services to the entire community, through the media and official websites and the creation of a tourism system starting from the tourism budget to marketing typical city products. The strategy labelled K, will be very useful in the future. There are also several strategies that are high potential which are important initiations, but are still far from being implemented. Some of the strategies that have been formulated are the Implementation of Capacity Building for all staff, which intersects with the City Smart City program. The last part of the strategy is a strategy for support which is not too important but is quite helpful if done. Several strategies Improving critical thinking, collaboration, communication and creative ASN and the community and Implementation of ASN capacity building that handles network security.

We have formulated the priority strategy on the smart branding dimension in Table 4.

TABLE 4 - SMART BRANDING DIMENSION PRIORITY ANALYSIS

No	Initiation	Priority
1	Improved verbal and digital literacy to support regional promotion and branding	K
2	Development of Regional Leading Potential by implementing ICT	S
3	Development of an integrated financial feedback system that can attract cooperation with various stakeholders	H
4	Development of unique tourist and information marker infrastructure in collaboration with ICT	U
5	Application of big data analytics for integrated Tourism	S
6	Data collection and implementation of technical guidance for tourism actors	S
7	Making a tourism system starting from the tourist budget to marketing typical city products	K
8	Utilization of regional products to be used as regional branding and utilizing digital marketing and media	H
9	Utilization of Information Technology and implementing information technology in promotion	H
10	Implementation of routine coordination with all tourism stakeholders that can be monitored with a system	U
11	Preparation of SOPs for monitoring and giving warnings to those who violate and the sanctions that will be imposed	S
12	Improvement of tourist attractions to make them more attractive and increase tourist attractions, both heritage and artificial tourist attractions	K

Prioritizing strategies for smart branding have been formulated, some of which are strategic, such as Developments of Regional Leading Potential by implementing ICT, Application of big data analytics for integrated tourism and data collection, and implementation of technical guidance for tourism actors. While the key operational strategies are increasing verbal and digital literacy to support regional promotion and branding, making tourism systems ranging from tourism budgets to marketing typical city products, and improving tourist attractions to make them more attractive and to increase tourist attractions, both heritages, and tourism. Artificial tourist spot. High potential strategies that have been generated such as the Development of an integrated financial feedback system that can attract cooperation with various stakeholders, Utilization of regional products to be used as regional branding and utilizing digital marketing and media, and Utilization of Information Technology, and implementing information technology in the promotion. While the strategies that are supported are the development of unique tourist and information marker infrastructure in collaboration with ICT and the implementation of routine coordination with all tourism stakeholders that can be monitored with a system.

In the priority strategy for the smart economy dimension, it is prioritized for the strategy for developing creative economy-based applications, and implementing cashless-based transactions on all lines. Both of these strategies are very strategic. See Table 5. For key operational strategies, there are three strategies, namely establishing an IT-based business incubator, integrating MSME and IKM and

cooperative services with local market places, and improving the quality of traditional markets by participating in marketing them through the online market and being able to provide competitive prices.

TABLE 5 - SMART ECONOMY DIMENSION PRIORITY ANALYSIS

No	Initiation	Priority
1	Creative economy-based application development	S
2	Establishing an IT-based business incubator	K
3	Implementation of technical guidance for creative business actors	H
4	Application of cashless-based transactions on all lines	S
5	Integration of MSME and IKM and Cooperative services with local market places	K
6	Improving the quality of traditional markets by participating in marketing them through the online market and being able to provide competitive prices	K

In the smart living dimension, various strategies have been produced whose priorities have been divided according to the pattern of the McFarland Strategic Grid model. See Table 6. The strategies that are very important and become the main priority include the implementation of a child-friendly environment in hospitals, the creation of an integrated health service system, and ICT-based and friendly public transportation services for groups with special needs. While the key operational strategies are the implementation of an ICT-based parking system, the application of an integrated transportation system based on ICT and cashless, and building an information system related to spatial planning that can be accessed online by the general public. High potential strategies such as providing pedestrian crossings equipped with easily accessible signals.

TABLE 6 - 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	S
7	Provide pedestrian crossings equipped with easily accessible signals	H
8	Building an information system related to spatial planning that can be accessed online by the general public.	K

In the smart society dimension, various strategies are formulated as shown in Table 7. Strategies that are the main priority and are strategic in nature, such as the development of an electronic-based school information system to support data integration, integrated teacher databases, and the development of learning applications. Key operational strategies such as making MoU with universities related to research and community service that can have a direct impact on the community, increasing apparatus in the field

of data security, and strengthening community digital literacy. Meanwhile, strategies that are high potential are the implementation of training and scholarships for young people who excel in academics, religion, and sports, and CCTV integration. Supportive strategies such as socialization of the ITE Law, and involvement of security-based communities in dealing with threats related to data security.

TABLE 7 - SMART SOCIETY DIMENSIONAL PRIORITY ANALYSIS

No	Initiation	Priority
1	Strengthening star-up /software developer communities that can work with the community	K
2	Making MoU with universities related to research and community service that can have a direct impact on the community	K
3	Implementation of training and scholarships for young people who excel in academics, religion, and sports	H
4	Development of an electronic-based school information system to support data integration	S
5	Integrated teacher database	S
6	Learning application development	S
7	ITE Law Socialization	U
8	Improvement of the apparatus in the field of data security	K
9	Involving security-based communities in dealing with threats related to data security	U
10	CCTV Integration	H
11	Strengthening community digital literacy	K

The priority strategy formulated in the smart environment dimension is shown in Table 8. The strategy formulation of the main and strategic priorities such as improvement of drinking water infrastructure network. The key operational strategies are the use of systems in the separation of organic and non-organic waste, the installation of sensors needed in the city environment, and the creation of an SMS flash system related to disasters in collaboration with providers and BMG. While the strategy that is high potential is the implementation of education related to the waste management and grouping system in schools. A supportive strategy that needs to be implemented is the socialization of disaster SOPs at every government and school event.

TABLE 8 - SMART ENVIRONMENT DIMENSIONAL PRIORITY ANALYSIS

No	Initiation	Priority
1	Installation of sensors required in the city environment	K
2	Improvement of drinking water infrastructure network	S
3	The use of the system in separating organic and non-organic waste	K
4	Creating an SMS blast system related to disasters in collaboration with Providers and BMG	K
5	Dissemination of disaster SOPs at every government and school event.	U
6	Implementation of education related to waste management and grouping systems in schools	H

There are various factors that must be considered in formulating a smart city strategy so that it can be successfully implemented in cities such as information technology infrastructure factors (Heaton and Parlikad, 2019), the use of the internet of things that can be used as sensors and integrated with various systems that are run. In smart cities, including energy (Zhang, Manogaran and Muthu, 2021) (Jararweh, Otoum and Ridhawi, 2020), smart city development requires the right policies (Masik, Sagan and Scott, 2021) and the formulation of strategies that are in line with the vision and mission of the head area that is the leader of the city. This will encourage synergy in the implementation of more tangible and measurable programs according to the previous design. Budget support is an important factor as an instrument in smart city financing. In cities in developing countries, limited budget conditions due to a low economic level force various ways to absorb a limited budget. Sometimes this creates obstacles to the decline in the quality of infrastructure and the implementation of smart city applications so that it only produces low output and does not have a broad impact on the community (Sharifi, 2020) (Koca, Egilmez and Akcakaya, 2021).

The formulation of the right strategy for cities in developing countries must be in accordance with the uniqueness and potential of each city. This is what will make the strategy in each city different from one another. Each city has characteristics that do not exist in other cities and has different characteristics, including the potential and resources of that city. This is what causes the formulation of a smart city strategy cannot be replicated in other cities. It is very important to also pay attention to human resources, both for staff and operators who operate various systems installed in smart cities, service users in both communities, businesses, and industry (Wang et al., 2021), and the general public who use smart city services. Staff and operators must have sufficient competence to run a smart city system starting from maintaining information technology infrastructure, operating various applications, and the ability to repair the damage that occurs. The general public who use services must also have good knowledge and skills in using various digital-based services that have been provided by the city government. It is very important to formulate an appropriate strategy that considers various existing and complex factors to produce a smart city implementation strategy that is appropriate and has better outcomes for the city and all stakeholders.

#### 4. CONCLUSIONS

We conclude from this study that the smart city implementation strategy has been successfully carried out by mapping out alignment strategies, analyzing gaps, and formulating strategies based on implementation priorities. We have used Alignment Analysis to map between the mission and goals of smart city organizers, which makes it easier to analyze and formulate strategies. While the smart city



implementation strategy, we built using gab analysis on 6 smart city dimensions and we have succeeded in formulating an implementation strategy using the McFarland Strategic Grid analysis model to determine priority programs to be implemented. This result is expected to be able to build a smart city master plan document that becomes a guide in the smart city development in cities in developing countries.

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