Identification of Synchronization of The RPJMD and Smart City Master Plan in Indonesia

Ani Lestari Juniawati1*, Lukito Edi Nugroho1, and Paulus Insap Santosa1

1Gadjah Mada University, Department of Electrical Engineering and Information Technology, 55281 Yogyakarta, Indonesia

Abstract. The implementation of the smart city concept in Indonesia has become a necessity and is no longer an option, but a necessity. Indeed, the complexity of the problems facing the government is very high and requires smart solutions. As a form of supporting local governments in Indonesia in developing smart city master plans, the Ministry of Communication and Informatics of the Republic of Indonesia in 2017 launched the "Movement Towards 100 Smart Cities" program. During the implementation of the program, the Ministry of Communication and Informatics has compiled a guidebook that was used by local governments. However, the guidebook is considered unable to accommodate all the needs of local governments to develop smart city master plans. This research aims to identify the synchronization between RPJMD and smart city master plans in Indonesia by using literature analysis and document analysis methods that aim to facilitate local governments in preparing smart city master plans. The analysis results show a link between the RPJMD document and the smart city master plan based on the mapping carried out on the RPJMD document which has previously been prepared as a regional development planning document.

Keywords: smart city, master plan, RPJMD, guidebook

1 Introduction

Nearly 55% of the world's population lives in urban areas and this number is estimated to increase to 66% by 2030 [1]. Meanwhile, based on the results of population projections from the Central Statistics Agency (BPS) of the Republic of Indonesia, the percentage of people living in urban areas will continue to increase. In 2020, 57% of Indonesia's population lived in urban areas, and it is estimated that the number will increase to 67% by 2035 [2].

Along with the population growth in urban areas, the conditions in urban areas will become more complex, and the problems in urban areas will be more diverse [3]. New problems will arise such as traffic congestion, waste management, pollution, car park allocation, and resource scarcity [1].

A concept is needed to create solutions to these problems. One of the concepts currently used by many countries is the concept of "Smart City". A smart city is considered an effective solution to reduce the problems arising in urban areas [4]. A smart city can be defined as a city

* Corresponding author: ani.lestari0992@mail.ugm.ac.id
concept that uses information technology to integrate all government infrastructure and services for the community [4] [5] [6].

Indonesia is one of the countries that use the smart city concept to overcome various problems that occur in regions in Indonesia. It takes commitment from all local governments in Indonesia to implement the smart city concept to provide faster and more efficient public services according to the needs of the community.

However, in implementing the smart city concept, many challenges are faced, especially by local governments in planning and implementing the smart city concept [7]. Each local government has different challenges and obstacles in the process of planning and implementing the smart city concept depending on the conditions of the region, society, and existing local regulations.

As a form of support for local governments in Indonesia, in 2017 the Ministry of Communication and Informatics of the Republic of Indonesia launched a program called "The Movement Towards 100 Smart Cities". The program gradually selected 100 local governments to be assisted and guided by experts in implementing the smart city concept. In 2017, 25 local governments were selected, in 2018 50 local governments, also in 2019 25 local governments were selected.

Although local governments in Indonesia have followed guidance to implement and adopt the smart city concept, there are still difficulties, including a lack of knowledge about the smart city concept, how to identify smart city solutions and work programs, and the benefits of implementing smart city concepts in their regions [8]. Poor management of all resources is also causing smart city roadmap implementations to fail [9].

To support the success of the program and to overcome the difficulties experienced by local governments in implementing the smart city concept, the Ministry of Communication and Informatics, assisted by a team of experts from the Citiasia Center for Smart Nation (CCSN) and a team of experts from the Indonesian Information Technology Consultants Association (IKTII), compiled a smart city technical guidance guidebook that can be used as a systematic and comprehensive reference for regions in visioning, determining strategy and policy direction, and developing smart city priority programs and activities, especially for making master plans and identifying and implementing quick wins programs. The master plan preparation guideline published by the Ministry of Communication and Informatics Technology already contains the smart city framework used by the Citiasia Center for Smart Nation (CCSN). With the use of this framework, all local governments in Indonesia also use the same framework in preparing smart city master plans following those in the guideline document for preparing smart city master plans [10].

The guidance document for the preparation of smart city master plans is a document used in technical guidance activities to develop smart city master plans in the local governments, but the guidance document has not been able to accommodate all the needs of local governments to compile and map the programs in each local government into smart city development programs. Thus, the implementation of technical guidance activities is still less effective and has not produced the maximum output as expected.

In the process of preparing the smart city master plan document, there were discrepancies with the established national guidelines, namely indications of differences in the stages of preparation implementation with the established guidelines [11]. Thus, there is a need for guidelines for preparing smart city master plans that are clearer, more detailed, and easily understood by local governments. This aims to produce a better quality regional smart city master plan [11] so that local governments can build and develop smart city concepts in their regions to the fullest.

This research aims to identify synchronization between RPJMD and smart city master plans in Indonesia using literature analysis and document analysis methods that aim to facilitate local governments in preparing smart city master plans. The identification of linkages
and synchronization is generic which means that it can be used by all local governments in Indonesia and can be adjusted based on conditions in each region.

The paper is organized as follows. Section II discusses the literature review related to the research. Section III contains the methods used in this research. Section IV focuses on the results and discussion. Section V explains the conclusions of this research.

2 Literature Review

2.1 Smart City Framework

The framework used in the guidebook for the preparation of a smart city master plan is a framework used to build a smart city, especially in Indonesia. Based on the guidebook, to build a smart city in an area, the local governments must have smart city readiness. There are 3 main elements to building smart city readiness consisting of structure, infrastructure, and superstructure elements.

The next framework of a smart city is the dimensions contained in the smart city itself. The guidebook for the preparation of smart city master plan divides smart city into 6 dimensions consisting of smart governance, smart branding, smart economy, smart living, smart society, and smart environment.

In other research, it explains the meaning of frameworks in general. The smart city framework is a simple decision methodology that enables the public and private sectors to plan and implement smart city concepts more efficiently [12].

2.2 Regional Smart City Master Plan Document

The smart city master plan document contains the vision, mission, and work programs that have been aligned with the local government work program in the Regional Medium-Term Development Plan (RPJMD) document [13] [14] [15]. The smart city master plan document prepared by the local government is presented in three sections. This aims to clarify the analysis section, master plan section, and master plan summary.

In preparation for the smart city master plan, the Ministry of Communication and Informatics developed steps consisting of 10 stages, namely:
1. establishment of a smart city master plan drafting team,
2. determining the theory and framework of smart city development,
3. analysis of the future and readiness of smart city development,
4. determining the vision, mission, and policy direction of smart city development,
5. determination of priority programs for smart city development,
6. determination of 1-year quick-win program,
7. determination of implementation roadmap (5-10 years),
8. determination of monitoring and evaluation tools,
9. completion of smart city master plan document,
10. socialization, literacy, legalization, implementation, and monitoring and evaluation

2.3 Regional Medium-Term Development Plan (RPJMD)

In the Regulation of the Minister of Home Affairs of the Republic of Indonesia Number 86 of 2017, it explains that the RPJMD is the formulation of the regional leadership’s vision, mission, and program including goals, objectives, strategies, political orientation, regional development, and regional finance, as well as regional and inter-regional apparatus programs with a projected funding framework for 5 years developed regarding the RPJPD, RTRW, and
RPJMN [16]. From this understanding, it can be concluded that the RPJMD document is a document that contains regional development plans as a basis and guideline for local governments in carrying out development for five years [17] [18] [19] [20] [21].

2.4 Guidebook for Master Plan Preparation

The Ministry of Communication and Informatics, with the support of an expert group from the Citiasia Center for Smart Nation (CCSN) and an expert group from the Indonesian Information Technology Consultants Association (IKTII), compiled a smart city technical guidance guidebook that can be used as a systematic and comprehensive reference for regions in visioning, determining strategy and policy direction, and developing smart city priority programs and activities, especially for making master plans and identifying and implementing quick wins programs [10]. The guidebook for smart city master plan preparation prepared by the Ministry of Communication and Informatics together with a team of experts uses a framework developed by a domestic think tank where the framework has been adapted to the Indonesian context. In addition to the frameworks mentioned, several institutions have also developed smart city development frameworks, including the Smart Cities Council, CISCO, the European Union, and IEEE.

The guidebook consists of three chapters consisting of an introduction, methods for preparing the master plan, and a concluding section. The introduction contains the background, objectives, and goals. The master plan preparation method section contains the systematics and stages of preparing a smart city master plan, smart city master plan analysis tools, smart city institutional formation guidelines, monitoring and evaluation guidelines, and smart city regulations. While the closing section contains attachments to the smart city master plan document instrument.

3 Method

This study uses the qualitative analysis method, especially by researching different documents to enhance the analysis of research problems and find solutions. Literature comes from scholarly articles published in scientific journals and conferences, research reports, government documents, and non-scientific articles published online.

Research data was obtained by analyzing several documents. The documents analyzed included smart city master plans guidelines prepared by the Ministry of Communication and Informatics, an analysis of RPJMD documents by several local governments in Indonesia and their implementation, and studies from different literary works.

4 Results and Discussion

Conceptually, the preparation of smart city master plans in Indonesia is guided by regional planning documents, namely RPJMD documents in each region. In preparing a smart city master plan, local governments need to map regional work programs into smart city work programs.

From this concept, it can be concluded that there is a need for synchronization between the previously prepared planning documents and the smart city master plan to serve as a guideline for the implementation of the smart city program. With the synchronization between the two planning documents, it is expected that the smart city master plan can be used as a document to accelerate the implementation of existing work programs in the region.

To establish synchronization, researchers analyzed the linkages between the RPJMD document and the smart city master plan. The linkage analysis of the two planning documents
was carried out in each chapter to produce the right mapping. The linkage between the RPJMD document and the smart city master plan can be seen in Fig. 1.

Fig. 1. RPJMD and Smart City Master Plan Relationship.

After identifying the linkages and developing a mapping between the two documents, the researchers then analyzed the synchronization process that occurred in the RPJMD and smart city master plan documents. The regional smart city master plan document is closely related to the RPJMD document. This relationship occurs because the smart city master plan refers to the RPJMD document which was first prepared and determined. The smart city master plan is prepared to provide a smart city approach and help optimize or improve the achievement of performance targets in the RPJMD document. Furthermore, the relationship that exists between the two plans leads to the diversity of the planning process as it involves different types of synchronization at each stage of the planning process. The synchronization process can facilitate the local government in mapping the work programs in the RPJMD into a smart city master plan. Synchronization between the RPJMD document and the smart city master plan can be seen in Fig. 2.

Fig. 2 shows that the synchronization process is carried out at each stage of the smart city master plan preparation. The preparation of each stage in the smart city master plan refers to the RPJMD so that harmony between the two documents can occur at each stage of document preparation.
To compile the chapters in the smart city master plan, one or more chapters in the RPJMD are used as data sources for the chapters in the smart city master plan following the linkages between the two documents. Then, each sub-chapter in the RPJMD is mapped again to produce a sub-chapter in the smart city master plan. An explanation of the preparation of each chapter in the smart city master plan is as follows:

1. Future Analysis and Regional Readiness

To compile the future analysis and regional readiness to build a smart city, the local government refers to RPJMD Chapter II and Chapter III. The chapter discusses the general description of regional conditions and the regional financial picture.

The future analysis relates to the analysis of current regional conditions and the analysis of future conditions. The things that are analyzed include analysis of geographical location, population, government, technology, culture, economy, and community behavior or regional stakeholders. The future analysis section, reveals trends and changes or developments that occur in the region, which include regional superior potential and regional development directions.

The analysis of regional readiness aims to build a smart city readiness. It consists of 3 elements namely, analysis related to structural elements (population, number of ICT human resources, etc.), infrastructure (road conditions, internet network conditions, etc.), and superstructure (policies and institutions).

2. Gap Analysis

Gap analysis is an analysis to find out regional problems in implementing the smart city. To find out the problems that exist in the region, it can be guided by the RPJMD chapter IV which discusses the problems and strategic issues of the region. The gap analysis is prepared based on each smart city dimension. To find out the condition of the region based
on the smart city dimension, it can be guided by RPJMD chapters II and III as in the previous stage.

To make the analysis easier, local governments can use SWOT analysis as a tool to develop a gap analysis. SWOT analysis stands for Strengths, Weaknesses, Opportunities, and Threats analysis. The analysis is conducted to identify the strengths, weaknesses, opportunities, and threats that local governments have in planning the implementation of smart city in their areas. SWOT analysis also serves to determine the gap between the potential and readiness of local governments to implement smart city. SWOT analysis was conducted on the 6 dimensions of smart city to determine the current real conditions and the conditions to be achieved in the future.

3. Smart City Vision, Mission, and Goals

In determining the vision, mission, and goals of smart city, the local government is guided by the vision and mission of the region listed in the RPJMD in chapter V which discusses the vision, mission, goals, and objectives of regional development. This is so that the vision and mission of a smart city are in line with the vision and mission of the region. Being aligned does not mean that the vision and mission of a smart city must exactly match the vision and mission of the region. It can be interpreted that the smart city vision and mission do not conflict with the regional vision and mission but serve to accelerate the implementation of the regional vision and mission. The conception of smart city vision and mission must be able to embody and actualize the vision and mission of the local government listed in the RPJMD document into various existing programs and activities.

Meanwhile, smart city targets are vehicles toward regional development goals. The setting of smart city program targets must be aligned with and support the achievement of targets in regional programs listed in the RPJMD. So that in setting targets, local governments do not need to create new targets. This is also because the goals of the smart city program are part of smart governance.

4. Smart City Development Strategy

Local governments are required to develop a smart city development strategy that is following the objectives to be achieved. The preparation of smart city development strategies refers to the RPJMD document chapter VI which discusses strategies, policy directions, and regional development programs.

It is intended that the smart city development strategy prepared by the local government serves as a vehicle toward the smart city goals that have been previously set. The smart city development strategy must also support the achievement of regional development goals and be in line with regional development strategies.

In the strategy development section, local governments can elaborate smart city development strategies for all 6 smart city dimensions. The elaboration of strategies for each dimension aims to synchronize the goals and strategies in each smart city dimension.

5. Smart City Development Roadmap

The smart city development road map is prepared based on the priority programs in each regional apparatus. The priority programs of regional apparatus are found in RPJMD Chapter VII. Then, the existing programs are analyzed to determine which programs can be used as regional innovations. Smart city programs are prepared specifically for each smart city dimension and include the regional apparatus that owns the program or is the implementer of the program. This is so that the smart city programs are aligned and support the achievement of regional programs.

The smart city program should be an innovation that aims to answer strategic issues in an area and is in line with smart city goals. Regional issues and problems can be seen in the RPJMD document chapter IV. Thus, to develop a smart city program, the local government can refer to the RPJMD and RKPD documents. RKPD document is the regional development work plan, which is an annual planning document owned by each
regional apparatus as an implementation of the RPJMD document [16]. The RKPD is also the parent to the local government budget (APBD).

In developing smart city development programs, some local governments use the regional long-term development plan (RPJP) document as a reference. This is not recommended, because the RPJP document does not contain regional programs but only contains the main objectives and direction of regional policies that are long-term (10 years).

6. Quick Wins Program

Quick wins programs are programs that must be implemented by local governments within 1 year (short term). Quick wins programs are expected to resolve issues and problems that must be resolved immediately and have a good impact on the wider community.

In determining the activities that will be used as quick wins, local governments can conduct Focus Group Discussions (FGDs) as a means to discuss with regional apparatus to identify programs owned by regional apparatus that can be proposed as quick wins programs. In the FGD, local governments can focus on analyzing the priority programs of each local government unit that can be proposed as quick wins programs. Another solution is quick wins programs that can be taken from the policy directions that emerge each year or what is called the annual theme of the RKPD.

5 Conclusion

The identification results show that there is a link between the RPJMD document and the smart city master plan. Based on the identification results, the research stage continued to analyze synchronization. Synchronization analysis resulted in the finding that in the RPJMD document, some chapters and sub-chapters can be used as guidelines for preparing a smart city master plan.

Based on the overall research results, it is concluded that in preparing a smart city master plan, local governments in Indonesia must be guided by the RPJMD as a document that was first prepared as a regional development planning document. Each chapter and sub-chapter in the smart city master plan must be synchronized and aligned with the RPJMD document. This is so that the smart city programs planned do not contradict the regional program.

The results of this study can serve as a guide for local governments to develop smart city master plan in line with the RPJMD documents. Produce quality smart city programs to improve the quality of public services and strive to improve the quality of life in the community. Prepared smart city programs can also play a role in promoting the implementation of existing programs in the region.

This study has limitations in the validation and verification mechanism of the designed synchronization and analysis results. Future research is expected will facilitate this so that the Ministry of Communication and Informatics can apply it as an authorized agency to guide local governments in the preparation of regional smart city master plan documents. The author has been supported by the Ministry of Communication and Informatics of the Republic of Indonesia in writing this article as well as a master's scholarship program at Gadjah Mada University.

References


16. Ministry of Internal Affairs of the Republic of Indonesia, Ministerial Regulation of internal affairs of the Republic Indonesia Number 86 of 2017 on Procedures for Planning, Control, and Evaluation of Regional Development, Procedures for Evaluation of Draft Regional Regulations Concerning Regional Long-Term Development Plans (RPJPD) and Regional Medium-Term Development Plans (RPJMD), as well as Procedures for Changing Regional Long-Term Development Plans (RPJPD), Regional Medium Term Development Plans (RPJMD), and Local Government Work (RKPD), (2017).