



Electrical One Stop Monitoring System (E-OSMOSYS) Innovation in West Java as an Integrated Electrical Energy Monitoring and Control System

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Abstract. This research is about the application of the “Electrical One Stop Monitoring System” (E-OSMOSYS) in West Java as an Integrated Electricity Monitoring and Control System. This research is significant because electricity is a basic need and is one of the main components in realizing and improving the welfare of the people as well as the intellectual life of the nation, specifically creating a just and prosperous society that is materially and spiritually evenly distributed based on Pancasila and the 1945 Constitution of the Republic of Indonesia. The population in this study is an area that has made innovations related to electric power by utilizing technology. Meanwhile, the research subject is in West Java Province which has an innovation called the “Electrical One Stop Monitoring System” (E-OSMOSYS), an application in West Java as an Integrated Electricity Monitoring and Control System. The results of this study indicate that the application of “Electrical One Stop Monitoring System” (E-OSMOSYS) in West Java as an Integrated Electricity Monitoring and Control System has succeeded in achieving the designed objectives. With this innovation, it can support bureaucratic reform and improve policy performance and the quality of public services which are the responsibility of the agency, particularly the formation of a system for developing public service applications in the electricity sector that integrates the service processes of the business sector and electricity safety which can increase the efficiency of service duration and accuracy and resulting data integration.

Keywords: Innovation · Electric Power · Public Service · Technology

1 Introduction

This research is about the application of the “Electrical One Stop Monitoring System” (E-OSMOSYS) in West Java as an Integrated Electricity Monitoring and Control System. Where, in order to facilitate the integration of systems and data, it is necessary to prepare a system integration design concept including optimization of systems/applications that have been developed as embryos of the development of electricity monitoring and control systems. Fulfillment of this electricity permit and safety is required for every owner of an electric power installation in the province of West Java with the provision of fines and criminal sanctions for violators, in accordance with Law number 30 of 2009, Articles 49 to Article 51, and Article 54.

Innovation is no longer a new thing in the public sector. Although in practice, innovation in the public sector is strongly influenced by innovation practices carried out by the private sector. The success of innovations carried out by the private sector provides great motivation for the public sector to develop various types of innovations [1]. For this reason, innovation in the public sector is considered very important to contribute to improving the quality of public services to the community [2].

As one of the important actors, innovation is needed by the Regional Government to improve the quality of the decisions and actions it produces so that the impact can improve the welfare of the local community [3]. Where the community becomes one of the factors determining the success of a policy [4], innovation in government is a creative idea in carrying out reforms in the government system in order to improve the performance of the government itself [5]. In addition, utilization of Information and Communication Technology (ICT) in local government can improve city functions and management [6].

The focus of this research focuses on the Development of the “Electrical One Stop Monitoring System” (E-OSMOSYS) Application in West Java as an Integrated Electricity Monitoring and Control System. There are several problems behind this innovation. One of them is that up to now, the owner of the power plant who has applied for the permit and the electricity feasibility certification is still very far from expectations. With the potential population of West Java as much as 47.79 million people, 6,633 types of industry, and 203,419 business units [7], of course, the potential for power plants as a source of electricity supply is either the main, emergency, back up or temporary source. On the other hand, for installations that already have a permit, the supervision is not optimal because it is still carried out in a conventional way.

Indonesia has a lot of potential for renewable energy, such as hydro power (including mini-hydro), geothermal, biomass, wind and solar which are clean and environmentally friendly, but their utilization is not optimal. The use of renewable energy is not yet optimal because the cost of generating renewable energy power plants, such as solar power, cannot compete with the cost of generating power plants using fossil fuels (fuel oil, natural gas, and coal). Indonesia is located on the equator, so Indonesia has abundant sources of solar energy with an average solar radiation intensity of around 4.8 kWh/m² per day throughout Indonesia. With the abundance of solar energy sources that have not been used optimally, while on the other hand there are parts of Indonesia that are not yet electrified because they are not covered by the PLN electricity network, so that a Solar

Power Plant (PLTS) with its modular and easy-to-move system is one solution that can be used and can be considered as an alternative power plant [8].

Information systems can increase the company's competitive advantage in the development of modern organizations. Information systems can be used to increase the speed, flexibility, integration and accuracy of the information produced, thus many parties use information systems to achieve company excellence [9, 10].

Collaboration between governance (management) and technology will help the government to improve the quality of public services. Electronic Government is the use of information technology that can improve relations between the government and other parties (society). With the establishment of e-government, it is expected to increase public service transactions that are not limited by time and location barriers, and at affordable costs by the community. In developing a management system and taking advantage of advances in information and communication technology, the government must immediately implement the transformation process towards e-government [11].

In addition, innovation in the public sector tends to lead to radical and incremental changes. Currently, public service innovation has become a political agenda that can provide regulatory changes in government. Innovation under government will change the role of policy makers, government leaders and public participation in translating new ideas into new forms of action. The implementation of innovation governance will be easier to do if it can identify the elements and factors of innovation governance. Elements of innovation governance reflect the influence on the implementation of innovation will be successful. Therefore, institutional arrangements, policy actors, and the community are the main things that must be considered. Apart from the elements of innovation governance, the success factor for innovation governance is also influenced by organizational, business, and technological innovation activities in government service activities [12].

Research related to electric power innovation has been carried out by several previous researchers. Among them are research conducted by Indah and Sinurat. In the research, it was explained that electric power is the basis for modern life and its availability in sufficient quantity and quality is a requirement for a society that has a good standard of living and advanced industrial development. For this reason, it is necessary to generate interconnected electricity to produce electricity that is in accordance with the needs of the community, by measuring the level of electricity use in the community, especially in remote areas through the size of the electric power component in the energy supply for the whole community. Therefore, electric power innovation is very much needed today so that every community, especially in remote areas, can have electricity at home through a different operating system than before and carry out service strategies that are suitable for the area and problems or problems with electricity in the area can be resolved [13].

In addition, there are also studies conducted by Setiawan who researched related to Government Innovation in Generating Cheap Electricity Micro Hydro Power Plant (PLTMH) in Kayu Biranga Village, Bulukumba Regency. In his research, he explains that innovations in technology, economy and knowledge are very much encountered in everyday life. All aspects of our lives today are supported by innovation, be it innovation in the form of products or innovations in the form of services. The role of the government

here is very much needed in making a policy considering the role of the government as a public servant. We can see and feel it for ourselves in this digital era that more and more people's activities are assisted by electronic goods. This then makes electricity consumption in Indonesia very huge. The uneven distribution of electricity, which in general can only be reached in areas with easier access and then for underdeveloped areas that are relatively isolated or difficult to access, is still lacking in the flow of the PLN network, and is also becoming an obstacle in seeking to fulfill electricity needs nationally. Therefore, PLTMH is here to be an alternative to fulfill electricity, especially in disadvantaged areas. That way at least efforts to meet electricity needs can be slightly overcome [14].

Not only that, there are also innovations related to electricity carried out by the Benowo TPA Surabaya, namely the Innovation of Waste Management into a Waste Power Plant (PLTSA) by the Surabaya Cleanliness and Green Open Space Service (DKRTH). The waste management innovation is needed to overcome the waste problem. As some of the theories put forward by Halvorsen regarding innovation, namely about technology procurement and technology development. In this case, waste management can utilize technology as a new innovation, namely by providing technology and developing technology. In this case, waste management innovation creates big changes with more useful output or results, specifically by converting it into electrical energy [15].

In contrast to previous research, this research will focus on only one area by thoroughly discussing the innovations carried out by the Province of West Java which have the aim of ensuring the availability of electricity in sufficient quantities, good quality at reasonable prices, and complying with the rules and regulations of electricity safety, namely safe, reliable and environmentally friendly.

This research is significant because electricity is a basic need and is one of the main components in realizing and improving the welfare of the people as well as the intellectual life of the nation in order to realize the ideals of the nation, namely creating a just and prosperous society that is materially and spiritually evenly distributed based on Pancasila and the the 1945 Constitution of the Republic of Indonesia. This research is also expected to be an inspiration for other regions experiencing similar problems to innovate about electricity by utilizing technological developments, so as to minimize the problems that occur.

2 Method

This study uses a qualitative method, namely the method used is an emphasis on interview observations for people, as opposed to a description of scientifically objective conditions, where the researcher is the key instrument, the data collection technique is carried out by triangulation, the data analysis is inductive, and the results of qualitative research emphasize more meaning of generalization [16]. The research will interview the West Java Regional Development Planning Agency as the government office, and observe the citizen as a user. In addition to analyzing documents related to system development. In qualitative research, conceptualization, categorization, and description are developed on the basis of "events" obtained during field activities. Therefore, the activities of data collection and data analysis cannot be separated from each other [17].

In this study, data collection was also carried out through searching various sources which were then processed and described in narrative form according to data needs. The population in this study is an area that has made innovations related to electric power by utilizing technology. Meanwhile, the research subject is in West Java Province which has an innovation called the “Electrical One Stop Monitoring System” (E-OSMOSYS) Application in West Java as an Integrated Electricity Monitoring and Control System.

3 Result and Discussion

In view of the importance of electric power, the implementation of electricity is carried out by the Government and Regional Governments with the aim of ensuring the availability of electricity in sufficient quantities, of good quality, at reasonable prices, and complying with the principles of electricity safety, namely safe, reliable, and environmentally friendly.

3.1 Electricity Regulation in Local Government

Based on an interview with the West Java Regional Development Planning Agency, it was found that in the framework of the implementation of electricity, to ensure the supply of electricity and safety of electricity, it is important that it will be in accordance with the mandate of Law Number 30 of 2009 concerning Electricity, Law Number 23 of 2014 concerning Regional Government and Regional Regulation of West Java Province Number 21 of 2014 concerning the Implementation of Electricity, as well as West Java Governor Regulation Number 72 of 2015 concerning the Elaboration of Details of Government Affairs of the Province of West Java. The authority of the Provincial Government in the electricity sector, especially those directly related to public services, among others.

Firstly, the establishment of a business license for the provision of electricity for business entities whose businesses are located in the province. Second, the determination of operating licenses whose installation facilities are located in the province. Third, the determination of electricity tariffs, approval of the selling price of electricity and network leases as well as approval of the sale of excess electricity. Fourth, the issuance of an operation-worthy certificate (SLO) for electric power installations located in the province from an unaccredited Technical Inspection Agency and SLO registration. And lastly, coaching and supervision.

In addition to analyzing documents related to system development, the exploitation of electricity is carried out by regionally owned enterprises, private enterprises, cooperatives and non-governmental organizations can participate in the provision of electricity. The electricity supply business can be carried out after obtaining a business license, which in this case is in accordance with the applicable authorities and provisions, carried out by the licensing implementing OPD, namely the West Java Province DPMPTSP. In the process of issuing the permit, DPMPTSP will ask for technical considerations from the relevant technical OPD, namely the ESDM Office, which has been determined through the Decree of the Governor of West Java as the Technical Licensing Team for the Electricity Sector.

Other provisions in the operation of electricity are the fulfillment of electricity safety to create safe, reliable and environmentally friendly conditions, both in terms of installation and human resources/operators. In order to comply with the electricity safety provisions, each electrical power installation that is operated must have an operation-worthy certificate issued by an accredited Technical Inspection Institute (LIT), electrical power utilization equipment in accordance with Indonesian National Standards, and technical operators must have a competency certificate. Issued by an accredited Competency Certification Institute (LSK).

In accordance with his authority, the Governor issues a Certificate of Operation Worthiness (SLO) from an LIT that has not been accredited and provides a registration number for all SLOs of electric power installations within the province issued by both accredited and non-accredited LITs. Fulfillment of this electricity permit and safety is required for every owner of an electric power installation in the province of West Java with the provision of fines and criminal sanctions for violators, in accordance with Law No. 30 of 2009, Articles 49 to Article 51 and Article 54.

3.2 Management of Permits in Regional Device Organizations

Several authorities directly related to these public services, such as licensing and certification services for operation and registration, have been held by the ESDM Office of West Java Province together with the DPMPTSP of West Java Province through conventional mechanisms or by using breakthroughs in the form of online applications such as the SIMPATIK online licensing service, and application for Operation and Registration Eligibility Certification developed by the Department of Energy and Mineral Resources.

In addition to analyzing documents related to system development, as a consequence of the electricity permit, there are several obligations that must be fulfilled by the installation owner as the holder of the electricity permit, including the obligation to report periodically, SLO and SKTTK. These obligations have administrative and even criminal sanctions if they are not implemented, as stated in Law 30/2009 and West Java Regional Regulation No. 21 of 2014. It should be noted that certification of operational worthiness, certification of technical personnel is one of the government's efforts in realizing electricity safety. Data show that, 70% of fires that occur in buildings are caused by electrical power installations, both building installations (TR) and generators (TM).

Until now, the owner of the power plant who has applied for the permit and the electricity feasibility certification is still very far from expectations. With the potential population of West Java as much as 47.79 million people, the number of industries is 6,633 types and 203,419 business units [7] which means that electrical consumption is very huge. On the other hand, for installations that already have a permit, the supervision is not optimal because it is still carried out in a conventional way.

In view of the limited number of personnel, time and budget, in the context of increasing supervision and control of business actors in the provision of electricity and electricity safety, breakthrough efforts are needed in the form of innovations that can facilitate the implementation of electricity administration as well as its supervision.

Based on the results of document analysis and user observations through the online system, it was found that the service process for issuing technical considerations is still

carried out manually by submitting files from DPMPTSP to the ESDM Office as a technical team, although in a system manner, DPMPTSP has prepared a SIMPATIK application for the licensing process. On the other hand, the SLO certification and registration process has been carried out on-line through the Operational and Registration Eligibility Certification Application. The same substance contained in each service and related to each other which is the input for supervision and control activities is the identity of the installation owner and the technical specifications of the installation. For this reason, it is efficient when the two applications can be integrated which can have a positive impact on the orderly governance of the issuance of licensing considerations, certification and registration of SLO services as well as the duration of service time.

The results of this integration can be further developed by adding features or content to submit periodic reports as part of the monitoring process with an online system. The short-term goal of this innovation is the realization of the design concept and application of the “Electrical One Stop Monitoring System” (E-OSMOSYS) in West Java as an integrated electricity monitoring and control system in West Java. In addition, the medium-term goal is the realization of the improvement of the “Electrical One Stop Monitoring System” (E-OSMOSYS) application system in West Java which integrates the Online licensing system/SIMPATIK application and the application system for Operational Eligibility Certification and Electricity Installation Registration. While the long-term goal is the implementation of the “Electrical One Stop Monitoring System” (E-OSMOSYS) application system in West Java to optimize electricity monitoring and control in West Java.

3.3 Benefits of Electricity Innovation

The benefits of this innovation, namely supporting bureaucratic reform and improving policy performance and the quality of public services that are the responsibility of the agency, are the formation of a system for developing public service applications in the electricity sector that integrates the service process of the business sector and electricity safety which can increase the efficiency of service duration and accuracy and resulting data integration.

In detail, the benefits of the change project can be stated as follows: First, the benefits for the work unit, namely facilitating the service process for issuing technical considerations for electricity licensing and operation-worthy certification, facilitating the implementation of supervision and control in the electricity sector, increasing the effectiveness of services and supervision and control of electricity supply. One could also use the results of this study to improve the performance of public services, facilitate the collection, presentation and accuracy of data in terms of periodic reporting obligations by the Governor to the Central Government, and facilitate decision making and policy formulation in the administration of electricity.

Second, the benefits for provincial government units are improving the performance of public services in the electricity sector and accelerating the achievement of the objectives of electricity administration. Third, the benefits for the community, namely providing convenience in licensing and certification services for operation worthiness, obtaining guarantees of legal certainty and the feasibility of the installation of electric power

installations owned, and increasing the level of security for electric power installations so as to reduce the incidence of fires due to electrical power installations.

Development of the application for supervision and control of public services in the electricity sector “Electrical One Stop Monitoring System” (E-OSMOSYS) which integrates the service process of the business sector (licensing) and electricity safety (SLO and registration) is important. In order to facilitate the integration of systems and data, it is necessary to prepare a system integration design concept including optimization of the system/application that has been developed as an embryo of the development of the electricity monitoring and control system.

In line with this, the administration of government in the era of decentralization (regional autonomy) has given great hope to efforts to increase regional independence which has implications for the implementation of services and improving the quality of life of the people towards a better direction [18]. In the urban planning field, the smartness in smart growth is treated as a normative claim and ideological dimension. Being smart entails strategic directions [19].

While systems in industrial cities are mostly skeletons and skin, post-city-smart cities are like organisms that develop artificial nervous systems, which allow them to behave in intelligent coordinated ways [20]. Making a city “smart” is emerging as a strategy to mitigate the problems generated by the urban population growth and rapid urbanization [21]. Although smart city technology investment are mainly comprised of upgrades rather than true innovations, on the citizen user side, they potentially offer access to information on local conditions [22].

However, some lessons may be learned from their cautious method of smart city construction. For example, Singapore seems to make good use of pilot projects before implementing smart service nationwide [23]. Therefore, the development of the concept of “empowerment of civil society” is one of the most contested issues in the contemporary development discourse along with the terms citizen participation, partnership, good governance, and sustainable development [24]. Smart city ideas are an alternative to solving urban problems and ensuring livable cities even during relatively fast urban population growth [25].

4 Conclusion

The “Electrical One Stop Monitoring System” (E-OSMOSYS) application in West Java as an Integrated Electricity Monitoring and Control System has succeeded in achieving its designed objectives. With this innovation, it can support bureaucratic reform and improve policy performance and the quality of public services which are the responsibility of the agency, namely the formation of a system for developing public service applications in the electricity sector that integrates the service processes of the business sector and electricity safety which can increase the efficiency of service duration and accuracy and resulting data integration.

Not only work units and provincial government units have benefited from the creation of this innovation. The community also feels the benefits of this innovation, namely providing convenience in licensing services and operational-worthy certification, obtaining

legal certainty and installation worthiness guarantees for their electric power installations, and increasing the level of security for electric power installations so as to reduce the incidence of fires due to electrical power installations.

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