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EVALUATING IMPLEMENTATION OF E-GOVERNMENT PUBLIC SERVICES IN DKI JAKARTA TOWARDS A SMART CITY USING THE CIPP AND KIRKPATRICK EVALUATION MODEL

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ABSTRACT

This study evaluates the implementation of the E-Government program in DKI Jakarta using the CIPP (Context, Input, Process, Product) evaluation model and the Kirkpatrick model. The CIPP evaluation results indicate that the E-Government program has successfully integrated various public services into a digital system aligned with the Regional Medium-Term Development Plan (RPJMD). The program requires ongoing investment in information technology infrastructure and training for civil servants, as well a increased participation from various government agencies and the public. The product evaluation results show improved government transparency and accountability, making it easier for the public to access public services and government policy information. The evaluation using the Kirkpatrick model shows positive results at every evaluation level, with users providing positive feedback on e-government services, increased understanding, adoption of digital services, and significant long-term impacts on operational efficiency, transparency, and public satisfaction. However, this study also identifies challenges that need to be addressed, such as technology infrastructure gaps, digital literacy among the public, and data security and privacy issues. Addressing these challenges will optimize the implementation of E-Government in DKI Jakarta and support the government's vision of an efficient, inclusive, and responsive Smart City.

INTRODUCTION

Global changes in information and communication technology have had a significant impact on various sectors, including government. Governments around the world are now realizing the importance of e-government, defined by the World Bank as the use of information technology by government agencies to transform their relationships with citizens, businesses, and other government agencies. This technology can be used for various purposes such as improving the provision of public services, improving business-industry relations, empowering citizens through access to knowledge, and facilitating more efficient government management (Ebrahim & Irani, 2005; Erhan et al., 2017; Mi'rojul & Yunas, 2016; Management, 2010; Sanchez-Torres & Miles, 2017; Woro & Supriyanto, 2013).

In Indonesia, e-government implementation has begun, including in the DKI Jakarta area, which shows significant changes in e-government implementation plans and philosophies. However, the progress of e-government is often hampered

by delays which make it difficult to change values, improve public service standards, and ultimately hamper community welfare (Alshehri & Drew, 2010; Farida et al., 2020; Baeuo et al., 2016).

Citizen engagement has become an important component of today's digital government. Public participation can strengthen strategy and policymaking at all levels of government, and improve responsibility, accountability and service delivery in a democratic environment. Many international organizations such as the UN emphasize the importance of high-quality stakeholder consultation and participation in good governance. Expanded dialogue and participation can lead to better decisions regarding issues affecting populations at various levels as well as the markets and organizations involved (Management, 2010; Nations, 2013; UNDP, 2004).

However, in developing countries such as In Indonesia, e-government efforts are often limited by a lack of technical infrastructure, financial capital, and public administration capacity. However, innovation in programs and technology is expected to overcome many of these obstacles (Ebrahim & Irani, 2005; Griffin & Trevorrow, 2014; Management, 2010).

The high level of bureaucracy in government institutions is one of the main obstacles to the conduct of legitimate business, both private and commercial, and creates a negative impression on the public sector. According to information published by the World Bank in 2012, Indonesia ranks 12th among G20 member countries in terms of ease of bureaucracy, which is one of the lowest in Southeast Asia. Based on the 2012-2013 Global Growth Competitiveness Index, Indonesia was ranked 50th out of 144 countries (Bashar et al., 2011; Cordella & Tempini, 2011; Turnip et al., 2018; Abadi et al., 2015; Welch & Welch Pandey, 2008; Woro & Supriyanto, 2013).

Technology plays an important role in adding value, using, or producing certain products. The Indonesian government, especially DKI Jakarta, must maximize their technical capabilities to provide better public services, increase opportunities for SMEs, and increase global competitiveness (Choi et al., 2018; Sánchez-Torres & Miles, 2017; Sulehat & Taib, 2016; Woro & Supriyanto, 2013).

Jakarta, the capital of the Republic of Indonesia, is a province with a total area of 662.33 km^2 which is divided into five administrative cities and one administrative district. These administrative cities include Central Jakarta with an area of 48.13 km^2, North Jakarta with an area of 146.66 km^2, West Jakarta with an area of 129.54 km^2, South Jakarta with an area of 141.37 km^2, and East Jakarta with an area of 188.03 km^2. Meanwhile, the Seribu Islands Administrative Regency has an area of 8.70 km^2. Jakarta borders the Java Sea in the north and several other areas such as Depok City, Bogor Regency, Bekasi City and Bekasi Regency in the south and east, as well as Tangerang City and Tangerang Regency in the west. In 2021, the population of DKI Jakarta was recorded at 10,644 ,776 people with a composition of 50.37% men and 49.63% women. DKI Jakarta also has the highest population density in Indonesia, with a density of 15,978 people/km^2.

Jakarta Smart City (JSC) is a Regional Public Service Agency (BLUD) which was formed by the DKI Jakarta Provincial Government in 2014. JSC aims to make Jakarta a smart city 4.0 by optimizing technology in government and public services. JSC operates based on seven smart city indicators: Smart Environment, Smart Economy, Smart People, Smart Mobility, Smart Governance, Smart Living, and Smart Branding. Some of JSC's superior products include the JAKI application, a super-app that provides various public services through one door, and CRM (Quick Response to the Community), an integrated complaint channel. JSC is also developing innovations such as Monitor Flood for information on flood points and the Current Jakarta Map to facilitate access to public facilities in Jakarta.

Factors such as administrative support, consistent policies, competence in IT, protection and privacy, IT infrastructure, and trust in e-government services, greatly influence the interoperability of e-government information systems. This research focuses on evaluating the implementation of e-government in DKI Jakarta towards a Smart City.

METHOD

This e-Government evaluation of DKI Jakarta's public services towards a Smart City was practically carried out to answer program evaluation research questions. Methodologically theoretically, this research uses several alternative evaluation approaches as proposed by Stufflebeam and Shinkfield, including: evaluation approach improvement and accountability oriented with the CIPP evaluation model, and a goal-oriented evaluation approach with the Kirkpatrick evaluation model.

Place and Time of Research

The Evaluation Study on the Implementation of e-Government for DKI Jakarta public services towards a Smart City began with an FGD with stakeholders within the DKI Jakarta government. The research was divided into three stages: the first stage was carried out in the office of the Governor of DKI Jakarta, the second stage in the district/Regent areas, and the third stage in sub-district units throughout DKI Jakarta for impact evaluation.

The first stage of research was carried out from March to May 2023, followed by the second stage from June to November 2023. The third stage to evaluate the impact of the training was carried out six months later, namely from December 2023 to May 2024. The research data collection location covered the DKI Jakarta Province area .

Referring to the objectives of this program evaluation research, the combination of the CIPP evaluation model and the Kirkpatrick evaluation model is considered relevant. Research methods are basically scientific ways to obtain data with specific purposes and uses. Meanwhile, the evaluation method is a procedure used to obtain and organize information/assessment data that is linked to statements of objectives, standards or criteria.

Data Collection Techniques

Data collection techniques used in this research include observation, interviews, questionnaires, document review, and multiple choice tests. Observations were carried out to directly observe various activities carried out by participants during training activities. Interviews are used to ask a number of questions verbally to predetermined informants, while questionnaires are used to collect data in the form of participants' perceptions of program implementation.

Document review was carried out to complete and strengthen the data obtained from observations, interviews and questionnaires. This documentation study also aims to see changes in participants' knowledge after participating in the training program.

Data Analysis Techniques

This research uses quantitative and qualitative data analysis. Quantitative analysis is used as the basis for preparing the objects being evaluated, which is then deepened with qualitative analysis. Descriptive statistical data analysis is carried out to provide an overview of evaluation symptoms in answering questions or program evaluation statements, not to test hypotheses. The qualitative data analysis technique used is the Milles and Huberman technique, which consists of three activity or process flows: data reduction, data presentation, and drawing conclusions with an improvement and accountability-oriented evaluation approach with the CIPP evaluation model, and a goal-oriented evaluation approach with the evaluation model Kirkpatrick.

Literature Review Evaluation

The concept of evaluation has various meanings and definitions expressed by many experts from their respective perspectives and expertise. Evaluation is a basic human behavior that always wants to examine and compare things. In human civilization, evaluation has become a basic discipline of life that is oriented towards assessing all aspects of life, so that it is present in various fields and helps improve the quality of these various aspects. According to Stufflebeam and Shinkfield (2007), evaluation is present in all areas of life and is useful for improving quality in various fields.

Evaluation is a value justification process which is interpreted in various ways

depending on the field and paradigm used. In the field of education, Popham (1975) stated that there is no single best definition for evaluation, because this term includes various concepts such as measurement, scoring, accountability, assessment, and consideration. Evaluation comes from the English word 'evaluation' which means the activity of considering or testing something to justify its value, quality, importance, achievement or condition. This definition shows that evaluation involves determining value through assessing the 'merit' and 'worth' of an object or phenomenon. The definition of evaluation also includes determining whether goals are achieved or not, as well as reviewing the program's goals, processes and impacts. In the field of education, evaluation is the process of justifying the value of educational programs which produces important data for policy analysis and education management. Evaluation can play a formative or summative role. Formative evaluation helps modify and improve programs as they are implemented, while summative evaluation provides accountability information after the program has been implemented. Evaluation and research are closely related, although different in purpose and application. Evaluation focuses on decision making related to policy and management, while research aims to develop understanding of phenomena. Both use similar methods and techniques, but the evaluation results are immediately used for decision making, while the research results are stored until needed.

CIPP evaluation model

The CIPP (Context-Input-Process-Product) evaluation model was developed by Stufflebeam in 1966 at Ohio University with the aim of providing information for decision makers. This model consists of four components: context, input, process, and product. Context evaluation aims to assess the current situation and identify program needs. Input evaluation focuses on the appropriateness of the chosen strategy to achieve program objectives. Process evaluation checks the conformity of program implementation with plans, identifies obstacles, and provides feedback for improvement. Product evaluation measures and assesses program achievements, important during program implementation as well as in conclusion, for both direct and indirect effects of the program.

The CIPP model can be grouped into two parts based on its objectives: predetermined objectives (intention) and actualization in the program (actual). These four components interact dynamically, making this model suitable for comprehensively evaluating large-scale programs. The CIPP model has a formative function for program improvement and a summative function for program accountability. The advantages of the CIPP model lie in its ability to expand the scope of evaluation, answer broad-scale program problems, and be compatible with a systems approach. However, weaknesses of this model include implementation difficulties if there are political obstacles and the inability to address issues regarding values and standards.

Kirkpatrick Model

The Kirkpatrick evaluation model is widely used to evaluate training programs and was developed to help determine the data that should be collected in human resource development (PSDM) evaluations (Ghokan, 2015). The first stage, reaction, evaluates how participants respond to learning and experiences during training. Participant satisfaction can be assessed from various aspects such as materials, facilities, teaching strategies, and learning environment. The second stage, learning, evaluates changes in participants' knowledge, attitudes, or skills. This evaluation can be done by comparing the groups who took part in the training and those who did not, or through a pretest and post-test. The third stage, behavioral, evaluates the extent to which participants apply learning in their work. This stage measures changes in behavior after training, which are often difficult and time-consuming to measure. Finally, the fourth stage, results, evaluates the final impact of the training, including improvements in work output and knowledge.

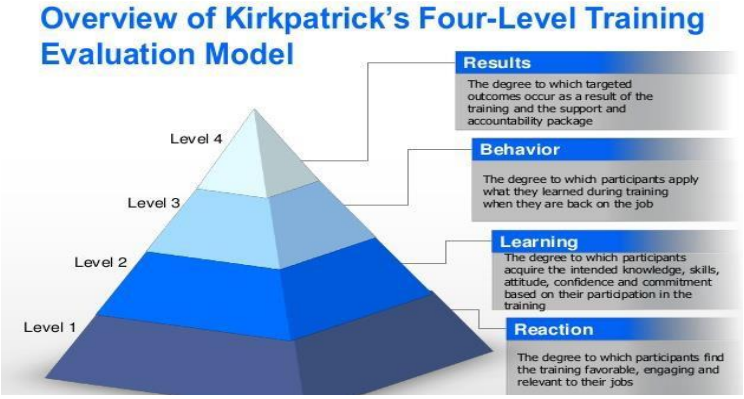

Figure 1. Overview of Kirkpatrick's Four-Lever Traning Evaluation Model
Source: kloudlearn.medium.com, 2020

Kirkpatrick's model is recognized for its comprehensive nature, simplicity, and applicability to a variety of training situations. This model covers all aspects of the training program and has a simple logic flow and clear categorization. The first two levels of evaluation, reaction and learning, are carried out during training, while the last two levels, behavior and results, are carried out after training is completed. Although this model has advantages, it also has weaknesses, such as the assumption that training program inputs are standardized and the difficulty of measuring the program's impact on productivity. Modifications and more comprehensive assessments can help minimize these weaknesses, so that the information obtained is of higher quality and relevant to training conditions.

Based on the results of data analysis and discussion, the author obtains conclusions that can be drawn from research regarding This research evaluates the E-Government program in DKI Jakarta using the CIPP (Context, Input, Process, Product) evaluation model. The research results show that:

Table 1. CIPP Evaluation Model

No	Aspect	Variable	Indicator	Question	Results
1.	Context	Improving public services through digitalization	Availability of E-Government implementation planning which is integrated into the RPJMD	1. Is there a plan for protecting, restoring, improving and maintaining digital services according to community needs? 2. What is the planning concept like? 3. How reliable is the planning concept in supporting sustainable development and optimal public services?	Already appropriate
		Increasing the capacity of Regional Governments in collaboration and implementation of E-Government	Establishment of a management organization and formulation of an E-Government strategic plan	1. Has an E-Government management organization been formed? If so, how optimal is its role? 2. What is the strategic and technical role of the Regional Government in providing support for the E-Government program? 3. Can E-Government activities be clearly understood by implementers in the field?	Already appropriate

2.	Input	Determination of E-Government Priority Activities	Determining priority activities that need to be continued based on analysis of program achievements	1. What are the priority activities that need to be continued after the initial phase of E-Government implementation?	Already appropriate
				2. What technical considerations underlie this activity to be feasible?	Already appropriate
		Structural measures and non-structural measures for E-Government	Development and integration of various digital services	1. Does E-Government development adhere to the principles of increasing efficiency, accessibility and transparency of public services? 2. Are digital innovations such as public service applications used optimally to improve service quality?	Already appropriate
3.	Process	Criteria for E-Government beneficiaries	Full participation from various agencies and the community in the E-Government program	1. What are the recipient selection criteria? the benefits of E-Government from technical, social and economic aspects? 2. Are the expected conditions in place? achieved? 3. If so, what real conditions describe the achievements? 4. If not, what real conditions occurred, then what factors caused it?	Already appropriate
		Program Approach	Public services become more efficient and transparent through the implementation of E-Government	1. Is the program implementation according to schedule? 2. Are the personnel/relevant parties involved in program implementation capable of handling activities during the program and possibly if it continues? 3. Are the facilities and infrastructure provided being utilized optimally? 4. What obstacles were encountered during program implementation and what are the possibilities if the program is continued?	Already appropriate
4.	Product	Independence in managing E-Government	Achieving the effectiveness of public services and community welfare through E-Government	1. To what extent have the effects originally planned to be achieved by the policy been realized? 2. What impacts were caused (both expected impacts and previously unforeseen impacts)?	Already appropriate
		Determination of the parties (key stakeholders)	Commitment and potential support for the implementation of E-Government programs/activities	1. Who are the stakeholders who are ready to collaborate to continue the program and provide sustainable funding? 2. What are the reasons behind these stakeholders being declared strategic?	Already appropriate

		E-Government Program Evaluation	Formulation of a project termination strategy that can be part of the exit strategy	1. How to formulate a project completion strategy that is transformed into sustainable, independent programs and activities to increase the effectiveness of public services and community welfare? 2. Is this strategy only sufficient to continue assuming the E-Government Program is successful or is the strategy also able to compensate for the failure of the Program? 3. What are the technical considerations for this strategy?	Already appropriate

CIPP Evaluation (Context, Input, Process, Product)

1) Context Evaluation: E-Program The DKI Jakarta Government has succeeded in integrating various public services into a digital system that is in line with the Regional Medium Term Development Plan (RPJMD). The main goal is to improve the efficiency of public services and government transparency.

2) Input Evaluation: This program requires continued investment in information technology infrastructure and training for civil servants to keep up with technological developments and community needs.

3) Process Evaluation: Participation from various government agencies and the public in using E-Government services has increased, which has an impact on increasing the efficiency of public services, reducing waiting times, and easier access to information for citizens.

4) Product Evaluation: The E-Government program has increased the transparency and accountability of the DKI Jakarta government. The public can more easily access public services, submit complaints, and get the latest information regarding government policies. E-Government is expected to support local economic improvement through administrative efficiency and better services.

Evaluation of E-Government Implementation in DKI Jakarta Public Services Towards a Smart City using the Kirkpatrick Model

1) Level 1: Reaction, On This level, evaluation measures satisfaction and initial response users of e-government services. This can be done through surveys and questionnaires to collect feedback from citizens regarding ease of use, accessibility and satisfaction with the service. This data is important to determine initial perceptions and build a basis for improving services. Positive reactions from users regarding ease of access and convenience of services.

2) Level 2: Learning, Evaluation at this level measures the extent to which users improve their knowledge and skills use e-government services after attending outreach or training. This can be measured through knowledge tests before and after training, as well as by observing users' increased understanding of how e-government services work and the benefits. Increased user understanding of the use of e-government services, although there are still some who require further training.

3) Level 3: Behavior, This level measures changes in user behavior after interacting with e-government services. Evaluations can include how often citizens use digital services compared to manual services, as well as whether they adopt e-government usage on an ongoing basis. This data can be obtained through analysis of service use and interviews with users. Changes in user behavior that are starting to shift from manual services to digital services.

4) Level 4: Results, The final level measures the long-term impact of e-government implementation on public

services and achieving Smart City goals. Indicators include increased operational efficiency, transparency, public satisfaction and cost savings. These results show the extent to which e-government contributes to the strategic goals of the DKI Jakarta government in moving towards a Smart City. The real results are in the form of increased administrative efficiency, transparency and responsiveness of public services.

RESULT AND DISCUSSION

The implementation of E-Government in DKI Jakarta has had a significant positive impact in increasing the accessibility, efficiency and transparency of public services. Here are the main findings from the evaluation:

1. Enhanced Accessibility: Adoption of E-Government services has enabled citizens to access government services more easily and quickly from anywhere and at any time through digital platforms. This has reduced geographical and time barriers, allowing wider participation from various levels of society.
2. Increased Efficiency: Implementation of E-Government has resulted in increased efficiency in the public service process. The use of automation systems and data integration has reduced the time required to obtain services, reduced bureaucracy, and increased responsiveness to community needs.
3. Strengthened Transparency: The adoption of E-Government has increased the level of transparency in public services by providing wider access to public information and decision-making processes. The public can easily access information about government policies, programs and budgets, which supports accountability and active participation in the decision-making process.

However, the evaluation findings also identified several challenges that need to be addressed:

1. Unequal Technological Infrastructure: There is still inequality in access to technological infrastructure in various areas of DKI Jakarta, which can hinder people's access to E-Government services. Further investment in ICT infrastructure is needed to ensure equitable and quality access.
2. Community Digital Literacy: Even though there has been an increase in the adoption of digital services, there are still some people who do not understand or are unfamiliar with technology. Efforts are needed to increase digital literacy and provide training to the public so that they can make maximum use of E-Government services.
3. Data Protection and Privacy: The issue of data security and privacy is an important concern in the implementation of E-Government. Strong policies and effective data protection mechanisms are needed to maintain the security of user information and build public trust in government digital services.

Managerial Implications

The results of research evaluating the E-Government program in DKI Jakarta using the CIPP (Context, Input, Process, Product) model show that the implementation of this program has gone well and is in accordance with the established strategic planning. This success has several significant managerial implications. First, the successful integration of public services into a digital system that is in line with the Regional Medium Term Development Plan (RPJMD) shows that thorough strategic planning and collaboration between government agencies is very important. Therefore, management needs to continue to invest resources in comprehensive planning and the establishment of an effective E-Government

management organization. This includes providing ongoing training to civil servants to improve their skills in information technology.

Second, increasing the efficiency and transparency of public services through E-Government requires proactive management in overcoming barriers to technological infrastructure and public digital literacy. Management must ensure that adequate technological infrastructure is available throughout the DKI Jakarta area to support equitable and quality access to digital services. In addition, it is important for management to develop intensive training and outreach programs to increase people's digital literacy. In this case, an inclusive and sustainable approach is needed to ensure that all levels of society can utilize E-Government services effectively. Finally, the issue of data security and privacy must be a top priority in implementing E-Government. Management must develop strong policies and effective data protection mechanisms to maintain the security of user information and build public trust in government digital services.

The results of the Kirkpatrick model evaluation also provide important managerial implications. At Level 1 (Reaction), management needs to continue to monitor and evaluate user satisfaction and initial responses to E-Government services through surveys and questionnaires. This data is important to determine initial perceptions and build a basis for improving services. At Level 2 (Learning), increasing user understanding of the use of E-Government services needs to continue to be measured and improved through socialization and training. Management must ensure that the training provided is effective in increasing user knowledge and skills. At Level 3 (Behavior), management needs to observe changes in user behavior in using digital services and ensure continued adoption. Analysis of service usage and interviews with users can provide insight into the extent to which digital services are being adopted effectively. At Level 4 (Results), management must focus on the long-term impact of E-Government implementation on public services and achieving Smart City goals. This includes measuring improvements in operational efficiency, transparency, public satisfaction, and cost savings. This evaluation will help management understand the contribution of E-Government to the strategic goals of the DKI Jakarta government in moving towards a Smart City. Thus, management can identify areas that require improvement and continue to develop effective strategies to improve public services through E-Government.

CONCLUSION

Based on the results of data analysis and discussion, this research concludes that the implementation of the E-Government program in DKI Jakarta has been running effectively and has had a significant positive impact in increasing the accessibility, efficiency and transparency of public services. Evaluation using the CIPP (Context, Input, Process, Product) model shows that this program has succeeded in integrating various public services into a digital system that is in line with the Regional Medium Term Development Plan (RPJMD). The program requires continued investment in information technology infrastructure and training for civil servants, as well as increasing participation from various government agencies and the public. The product evaluation results show increased government transparency and accountability, making it easier for the public to access public services and government policy information. Evaluation of the implementation of E-Government towards a Smart City using the Kirkpatrick model also shows positive results at every level of evaluation. Users responded positively to e-government services, demonstrated increased understanding and adoption of digital services, and noted significant long-term impacts on operational efficiency, transparency and public satisfaction. However, this research also identifies several challenges that need to be overcome, such as technological infrastructure gaps, people's digital literacy that still needs to be improved, and data security and privacy issues. By overcoming these challenges, it is hoped that the implementation of E-Government in DKI

Jakarta can be more optimal and support the government's vision towards a Smart City that is efficient, inclusive and responsive to community needs.

Recommendation

1. Based on the results and discussion of the evaluation of the E-Government program in DKI
   Jakarta uses the CIPP (Context, Input, Process, Product) model and the Kirkpatrick model, there are several recommendations that can be taken for further research. First, future research should include a more in-depth evaluation of E-Government implementation planning that is aligned with community needs. This can be done through case studies or in-depth interviews with various stakeholders to get a more comprehensive picture.
2. Apart from that, further research needs to expand the population and sample coverage to obtain more representative data. Using more diverse sample selection methods can help ensure that research findings are more accurate and generalizable. Research can also adopt a more balanced quantitative and qualitative approach to combine statistical data with in-depth insights from participants.
3. In terms of technological infrastructure, it is recommended to carry out a more detailed analysis of the inequality of technological infrastructure in various areas of DKI Jakarta. Research could explore how investments in technology infrastructure can be optimized to ensure equitable and quality access. In addition, research needs to evaluate the effectiveness of various digital literacy training programs that have been implemented, as well as identify new strategies to increase society's digital literacy.
4. Data protection and privacy issues are also important areas for further research. Future research should focus on developing and evaluating more effective data protection policies, as well as mechanisms to increase public trust in government digital services. Comparative studies with other cities or countries that have successfully overcome these challenges can provide valuable insights for policy development in DKI Jakarta.
5. Finally, for further research, it is recommended to develop more specific and measurable performance indicators for each evaluation stage, both in the CIPP and Kirkpatrick models. The use of analytical technology and big data can help in collecting and deeper data analysis, thereby providing a more accurate picture of the effectiveness and impact of E-Government implementation.

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