Antecedents and Consequences of Smart Management Information System for Supervision to Improve Organizational Performance

Minan Sinulingga[1], Pantja Djati[2], SuyonoThamrin[3], Harlina Juni Risma Saragi[4], Bambang Slamet Riyadi[5*], Tri Ubayanto[6]

[1,2,3,4]*Universitas Pertahanan, Jakarta, Indonesia.*
E-mail: minan.sunulingga.univ.pertahanan@gmail.com
[5]*Associate Professor of the Faculty of Law. Universitas Nasional, Jakarta. Lecturer of Program Doctoral Universitas Jayabaya Jakarta. Indonesia.*
Emal : bambang.riyadi@civitas.unas.ac.id
[6]*Indonesian College of Administration and Management, Jakarta, Indonesia.*

Abstracts: This study aims to determine the management information system based on a smart system (Smart SIM) which depends on user satisfaction and its impact on organizational performance. The study of the intelligent system-based supervisory management information system (Smart SIM) was analyzed based on the theory of Public Policy, Management Information System, and Supervision Management. The context of this research is the organization of the ministry of defense in Indonesia. Data was collected using a questionnaire for 100 managers related with MIS. Data analysis used partial least square (PLS). The results of the study found that user satisfaction has a positive and significant effect on Smart SIM and Organizational Performance. Smart SIM also has a positive and significant effect on Organizational Performance. Smart SIM mediates the effect of User Satisfaction on Organizational Performance. Based on the research findings, it is known that the management of supervisory management information system policies is very necessary to provide information to stakeholders. The results of this study also provide input on the need for regulation and implementation of better policies on supervisory management information systems in the organizational policies of the ministry of defense in Indonesia.

Keywords: Public policy, Management information system, Supervision management.

1. INTRODUCTION

1.1. Background

There is a paradigm shift in auditors, not only as watchdogs but also as consultants and catalysts in the implementation of supervision before (pre), during implementation (current), and after (post). Assessment of the performance of auditors in particular and in general as well as the Electronic-Based Governance System (SPBE) index still needs to be improved. The use of technology in data collection has resulted in an increasing number of digitally processed data (due to the implementation of SPBE). In data processing, an intelligent data processing system is needed that can process data and recognize irregularities in the audit process. Technological developments require auditors to be able to use technology. However, the auditor's performance has not been optimal, especially in terms of understanding information technology.

There is a new paradigm of internal control, namely internal control that is more consultative and catalytic in an organization. Since 2018, the use of an Electronic-Based Government System (SPBE) has been implemented in every ministry. There is a challenge, namely the existence of a SPBE Grand Design plan to make all activities one in a Single Cloud Big Data. The application of an electronic-based Supervisory Management Information System (SIMWAS) is related to the use of computer-assisted audit techniques (CATTs). This includes the increasingly widespread use of artificial intelligence in assisting human work. The digital era has encouraged the Government to continue carry out various innovations and optimizations. Optimization leads to Continuous Auditing/Continuous Monitoring (CA/CM) in supervision.

The Supreme Audit Agency's (BPK) assessment of the Ministry of Defense in 2020 is an Unqualified Opinion. Other assessments are carried out in various ways, including the following. The Minister for Administrative Reform and Bureaucratic Reform (PANRB)'s assessment of the Bureaucratic Reform Index is 68.12 out of 100 (target 75).

The Minister for Administrative Reform and Bureaucratic Reform (PANRB)'s assessment of the Government Agency Performance Accountability System (SAKIP) is 65.72 out of 100. The MenpanRB's assessment of the SPBE Index is 2.74 out of 5 (ministry average: 3.19). BPKP's assessment of the Maturity of the Government Internal Control System (SPIP) is 3.24 out of 5. And BPKP's assessment of the Government Internal Supervisory Apparatus Index (APIP) is 2.80 out of 5. All of the above achievement assessments still need to be improved, including increasing HR competence, strengthening Internal supervision (SPIP), Strengthening SPBE and the need to evaluate business processes and performance achievements.

Government Internal Supervisory Apparatus (APIP) is an Auditor assigned by the Inspector to carry out internal supervision of performance and finances through Audit, Review, Evaluation, Monitoring, and other supervisory activities. Auditors are personnel who have qualifications according to their fields and or other parties who are given the full task, authority, responsibility and rights by the authorized official to carry out supervision and examination on behalf of APIP. Audit is the process of problem identification, analysis, and evaluation of evidence that is carried out independently, objectively and professionally based on audit standards, to assess the truth, accuracy, credibility, effectiveness, efficiency and reliability of information on the implementation of duties and functions of government agencies. Review is a review of evidence of an activity to ensure that the activity has been carried out in accordance with the provisions, standards, plans or norms that have been set. Evaluation is a series of activities comparing the results or achievements of an activity with predetermined standards, plans or norms and determining the factors that influence the success or failure of an activity in achieving goals. Monitoring is the process of assessing the progress of a program or activity in achieving the goals that have been set.

To be able to explore more about the Supervisory Management Information System (SIMWAS), it is necessary to propose the formulation of the problem that the smart system-based SIMWAS needs to be developed in order to improve the performance of the Ministry of Defense (Kemhan). Furthermore, it is broken down into several research questions, namely: what are the factors that affect the Smart System? And how does it impact on Organizational Performance?

1.2. Research Originality

The development of core competencies is very important for the company. This requires strong competence. The complexity of the product results in many different competency groups. This causes problems for management to coordinate the disparate resources. Another problem area is the need for extensive communication for external, cross-functional collaboration, and achieving fast times to market products of the right quality. The resource model is applied to organize into information axes provided as an informatics tool in the perspective of individuals, organizations, and communication technology (Lucas, 2008).

There is a study to explore the factors influencing MIS implementation in Jordanian public institutions and to investigate the impact of MIS implementation on organizational performance. Human, organizational, technological, environmental, and MIS factors, and organizational performance. Data were collected using a valid and reliable questionnaire which was developed based on a literature review. Human factors are conceptualized as skills and experience using computers, usefulness of IS, and ease of use of IS. Organizational factors are assessed using three indicators, namely: top management support, user training, and IS confidentiality. Technological factors are evaluated by systematic quality, information quality, and service quality. The industry as a whole, the industry environment and external pressures are three indicators used to measure environmental factors. Two variables were chosen to measure the implementation of MIS, namely IT/IS capabilities and technological aspects related to the quality of information services. Questionnaires were distributed to 125 informants from the IT/IS department. The study findings indicate the acceptance of the hypothesis that the factors in question are significant and positively related to the implementation of MIS (Al-Tit, 2016).

There are also other studies to explain strategies for using information systems to improve institutional performance. To identify and evaluate the impact of using management information systems in identifying problems and difficulties and the importance of managing public relations in revealing strategies that can be followed by

public relations in institutions in making strategic decisions that lead to plans and directions for dealing with public institutions and developing systems programs Administrative information in accordance with international standards for administrative work., enhancing the image of the institution in their vision and goals of integrated institutional work plans and scientific information on the best ways and techniques to simplify the work. Research related to public relations strategies in the use of management information systems to improve work in institutions, and support, decision making and direction (Abdalaziz, 2020).

There is a comparison between previous studies when compared with the research conducted, so that it raises the originality of the research. Previous studies have discussed more aspects of coordinating different resources covering the problem areas of communication, collaboration, cross-functionality, time and quality (Lucas, 2008). Other studies emphasize aspects of the factors that influence MIS implementation in public institutions to investigate the impact of MIS implementation on organizational performance based on human factors, organization, technology, environment, and organizational performance (Al-Tit, 2016). There is also an emphasis on strategic aspects of using information systems to improve institutional performance in terms of public relations strategy in the use of management information systems to improve work in institutions (Abdalaziz, 2020). The originality of this research emphasizes the use of the Management Information System for Supervision (SIMWAS) at the Ministry of Defense in terms of the role of system quality factors, information quality, and user satisfaction, which are expected to contribute to SIMWAS in order to improve performance.

1.3 Significance of the Research

It is necessary to revitalize the management information system based on an intelligent system so that the performance of supervisors and auditors can be improved which in turn will have an impact on improving performance in the field of supervision. Therefore, more in-depth research is needed on the application of supervisory management in the governance of state defense and security for the benefit of the people's welfare which is a priority in the implementation in the Ministry of Defense.

2. LITERATURE REVIEW

2.1. Public Policy

The development of a public policy paradigm emphasizes focus, locus, and values. First, classical bureaucracy focuses on organizational structure and management functions, locus on government bureaucracy and business organizations, while values on efficiency, effectiveness, economics and rationale. The second Neo-bureaucracy, focuses on behavior-based decision-making processes, management, systems, and research, locuses on government bureaucratic decisions, and values efficiency, effectiveness, economy and rationality. The three institutions, focusing on understanding bureaucratic behavior and decision making are gradual and incremental in nature. The four human relations, focus and locus on the organization, and values are participation in decision making, minimizing differences, status, openness, self-actualization, and increasing job satisfaction. The five public options focus on providing services to the community. And Sixth New Public Management (NPM) pays attention to human values and social justice which is focused on organizational design based on decentralization, democracy, responsiveness, participation, and providing services needed by the community (Frederickson, 1976).

A new model in public policy is needed to improve the performance of results-oriented public services and the dynamics of competition by changing the rules of the game and fostering creativity in providing services. The paradigm can be divided into 5 periods. The first period was a separation between politics and public administration, with a focus on government budgets, with political and policy loci. The second period is the principles of administration which focuses on the principles of administration, namely planning, organizing, coordinating, reporting and budgeting with loci in each organization. The third period is political science because the focus is on the formulation of public policies that are full of political values and the locus is the bureaucracy. The fourth period views public administration as part of administrative science that must be developed scientifically with a focus on public administration and business administration. The fifth period focuses on public administration as public

administration, with a focus on organizational theory, management theory and public policy, while the locus is on public issues and the public interest. A new paradigm has emerged that public policy is a government with a multi-dimensional approach and focus on public affairs that requires the private sector and the community and a locus on the public, private and civil society sectors (Tulkens, 1986).

Public policy is a complex pattern of interdependent collective choices, including decisions to act made by government agencies or offices. Public policy is a series of actions that are determined and implemented by the government that have certain goals for the benefit of the whole community. The implication of this understanding is that the determination of government action is not enough to only be stated but also carried out in a tangible form, based on certain aims and objectives, and is essentially aimed at the interests of the whole community. Public Policy Analysis is an intellectual and practical activity aimed at creating, critically assessing, and communicating knowledge about and in the policy process (Dunn, 2012).

The concept of public service for the public interest consists of elements of efficiency, effectiveness, justice and responsiveness to the needs and welfare of the community. This is based on the need for public services that are carried out oriented to the public interest. There is a paradigm shift in public services for public institutional organizations towards public satisfaction. There is a study that uses a qualitative method of studying literature on public administration theory related to the new public service concept. It was explained that in Indonesia currently faced with the dynamics of globalization and an increasingly competitive economic environment, the government must act professionally so as to reduce the negative impact on society. The demands of globalization today are not only a challenge because it is proven that the organizers of public administration must provide excellent service to meet the quality of life and welfare of the community. The concept of a paradigm shift in governance in the era of globalization needs to be carried out in various dimensions. The first dimension is the behavior of the bureaucracy, both individuals and institutions, and should not be overly influenced by the view of power. The reorientation of the quality of public services in the administration of the state must also prioritize aspects of effectiveness, justice and responsiveness. Thus, the implementation of public services can change the quality of life and public welfare for the better (Solong, 2017).

Besides, it is necessary to avoid the abuse of power in managing policies. Abuse of power in Indonesia has an impact on deviant actions that are not only under pressure from power, but also the moral behavior of public officials. There is a weak system when public officials who abuse power depart from people who do not have a proper view of life as a nation and state. Therefore, it is necessary to have a system by carrying out collaborative practices and not just rhetoric (Riyadi, 2020b). Abuse of power in managing policies often leads to conflicts of interest and corruption. Service policies must be controlled by the state for the greatest prosperity of the people. The results of the study that abuse of power occurs as a result of a conflict of interest to maintain power in service policies, which causes state losses. It takes cultural morality and limits the extent of that power (Riyadi, 2020a).

Corruption behavior shows organized crime based on individual and group interests in maintaining power. Weak law enforcement in resolving corruption cases by easing court decisions has caused many cases to be delayed in the prosecution process, or even terminated. This is an indication of weak law enforcement against white-collar criminals (Riyadi, Wibowo, & Susanti, 2020). There is also a case study with a qualitative method which explains that there has been an abuse of power against the authority of state institutions. Therefore, it is better for regulators to think about operational accountability which requires a system of checks and balances (Riyadi, Hermanto, Harlina, & Purnomo, 2020).

2.2. Management Information System (Smart SIM) for Supervision

Definition of management information system is defined as "*a computer based system that makes information available to users with similar needs*" (McLeod, R., & Schell, 2007). That the management information system is "*Sytems designed to provide past, present and future routine information appropriate for planning, organizing, and controling the operations of functional areas in an organization*" (Turban, E., & Volonino, 2010).

Management information system is a system that provides organizational managers with both data and information related to the implementation of organizational tasks. Management information system is an integrated system that uses computer hardware and software, guiding procedures, management models, and decisions, a database to present routine information both now, past and in the future, which used for planning, management and control to support the functions of the organization's operations, management and decision-making processes within an organization (Kumorotomo & Margono, 2009),

Based on the regulation of the minister for the utilization of state apparatus and bureaucratic reform number 220/7/2008 concerning the Functional Position of Auditor and its Credit Score defines supervision in the context of internal supervision as the entire process of auditing, consulting, socializing, assisting, on the implementation of organizational tasks and functions in order to provide confidence that the activities have been carried out in accordance with the established benchmarks effectively and efficiently for the benefit of the leadership in realizing good governance. The supervisory management functions consist of Supervision Planning, Supervision Organizing, Supervision Implementation, Supervision Control, and Supervision Coordination and Quality Assurance. The stages of the Management Information System of Supervison Management can be explained from several components, namely the Annual Supervision Work Program (PKPT), Audit Planning consisting of Types of Audit Activities and Audit Budgets, Audit Implementation consisting of Audit Assignments, Field Audits, and Review Writing. Audit Reporting which consists of Issuance of Reports, Delivery of LHP and Problems, and Management of Examination Results. Management Information System of Supervison Management flow is as follows. After PKPT, planning and audit assignments are carried out, then proceed to Audit Implementation using Audit References until the reporting stage. Auditors play an important role in the Supervisory Management Information System.

The development of the Smart SIM model is based on the Self-Assessment Model of Brocratic Reform Implementation by focusing on improving the SPBE index using an Expert System for use in supervision by improving management information systems and improving supervisory management. Besides that, to improve the performance of the Auditor as the executor of supervision, it will be measured through the maturity of the SPIP and the capability of the APIP using the electronic system (SPBE). It is hoped that it will be able to improve performance by measuring performance accountability (SAKIP) and finance (BPK's opinion).

2.3. Hypothesis Development

Based on the explanation above, several hypotheses can be made as follows.

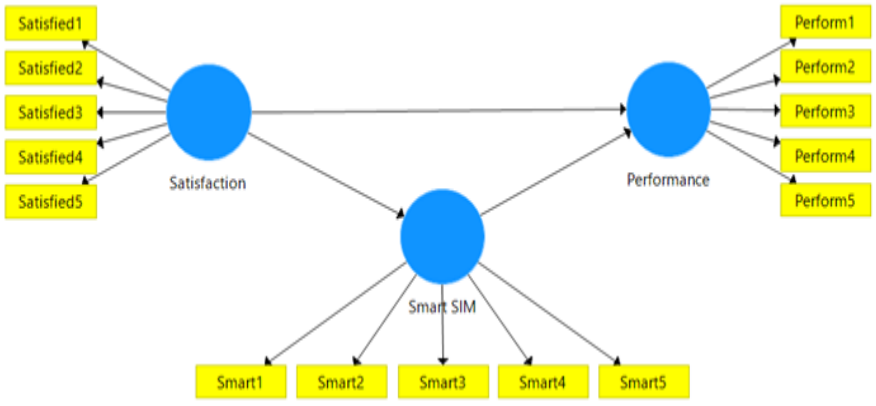

Figure 1.

Hypothesis 1, User Satisfaction has a positive effect on Smart SIM.

Hypothesis 2, User Satisfaction has a positive effect on Organizational Performance.

Hypothesis 3, Smart SIM has a positive effect on Organizational Performance.

Hypothesis 4, Smart SIM mediates the effect of satisfaction on organizational performance.

3. RESEARCH METHOD

This research was conducted based on a predictive quantitative approach by proposing a quantitative predictive research model to test a research model that integrates the 3 variables studied. Based on the development of hypotheses, a predictive research model can be made to be calculated, analyzed, and tested using the smartPLS application. The development of the hypothesis is then poured with smartPLS into Figure 1 as follows.

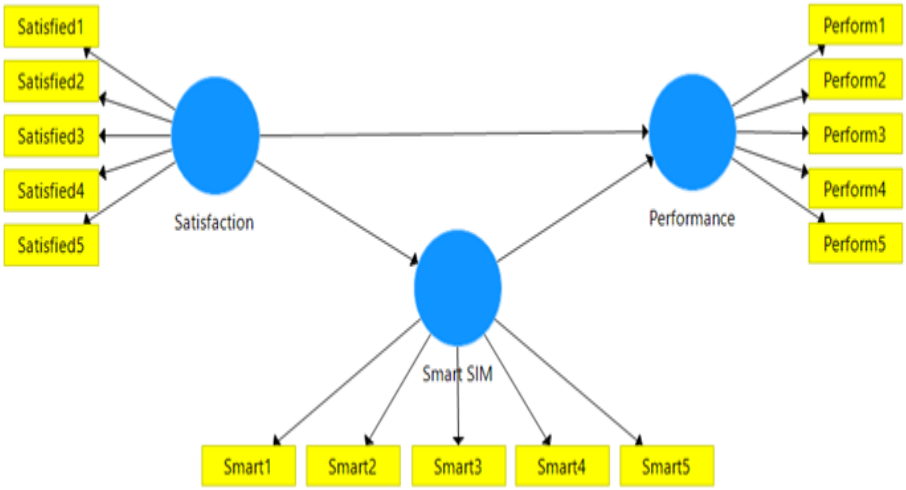

Figure 1. Research Model.

There are 3 variables in the Research Model. The independent variable is User Satisfaction. The Dependent Variable is Organizational Performance. The Mediating Variable is Smart SIM. Each variable is latent and will be measured through indicators that reflect the reflection of the variable. The Customer Satisfaction variable consists of 5 indicators, namely Satisfaction1 to Satisfaction5. The Smart SIM variable consists of 5 indicators, namely Smart1 to Smart5. The Organizational Performance Variables consist of 5 indicators, namely Performance1 to Performance5. The scale that will be used is a 5-point Likert scale with responses to the questionnaire questions given a score of 1 for the answer Strongly Disagree (STS), a score of 2 for the answer Disagree (TS), a score of 3 for the answer doubtful/neutral, a score of 4 for the answer Agree (S), and a score of 5 for the answer Strongly Agree (SS).

Data was collected using a questionnaire which was developed based on a set measure for all variables and submitted electronically to 200 respondents related to the Supervisory Management Information System (SIMWAS). Obtained 100 completely usable responses (or 50%) which are in line with the study. Data analysis using Partial Least Square (PLS) smartPLS version 3.0. Descriptive statistics were conducted to explain the characteristics of respondents and variables. Inductive Statistics is performed using Variance-Based Structural Equation Modeling. Path analysis uses Partial Least Square (PLS) which consists of 3 relationships. First, the Outer-Model which specifies the relationship between latent variables and their indicators (measurement model). Second, the Inner-model that determines the relationship between latent variables (structural model). And the three weights in assessing the latent variables to be estimated (Ringle, Wende, & Will, 2015).

Each indicator variable will be assessed for validity which refers to the extent to which the accuracy and accuracy of a measuring instrument can measure a construct. Calculation of construct validity was assessed with convergent validity and discriminant validity. Each variable will be assessed for reliability which refers to the internal consistency between indicators of a construct that shows the extent to which each indicator shows the same latent factor. Calculation of reliability or reliability will be assessed using Cronbach's Alpha values and Composite

Reliability (Ringle et al., 2015).

4. RESULT AND DISCUSSION

4.1. Measurement Model Evaluation (Outer Model)

The evaluation of the measurement model or the outer model uses the PLS Algorithm statistical calculation to assess the validity of each indicator item (questionnaire item). Based on Figure 2, it can be seen that the value of convergent validity can be seen from the outer loading on each indicator item. The calculation results of the algorithm are as follows.

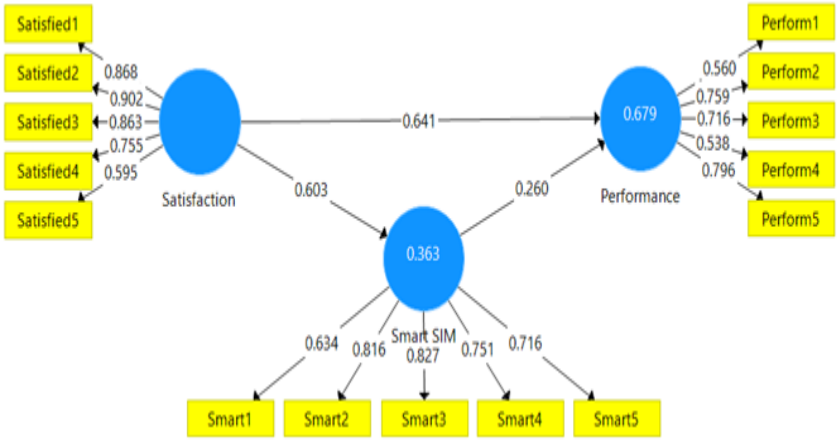

Figure 2. PLS Algorithm Calculation.

Based on Table 1, if it is considered, all variables have met the reliability requirements because the Cronbachs Alpha value, Composite Reliability value, and Average Variance Extracted value have met the requirements.

Tabel 1. Reliability Calculation.

Variabel	Cronbach's alpha	Composite reliability	Average variance extracted
User satisfaction	0.86	0.90	0.65
Smart SIM	0.81	0.87	0.57
Organizational performance	0.71	0.81	0.57

Thus, all indicator items have met the requirements of convergent validity and each variable has met the reliability requirements. And R square on the Smart SIM variable is 0.363 meaning above 0.35 and R square on the Organizational Performance variable is 0.679 meaning above 0.35 then the model is declared strong enough and can be continued for hypothesis testing by bootstrapping on SmartPLS.

4.2. Structural Model Evaluation (Inner Model)

Based on Figure 3, it can be seen that the results of hypothesis testing are as follows. That User Satisfaction is proven to have a positive influence on Smart SIM. User satisfaction also has a positive and significant effect on Organizational Performance. Smart SIM has a positive and significant effect on Organizational Performance. Smart SIM mediates the effect of User Satisfaction on Organizational Performance.

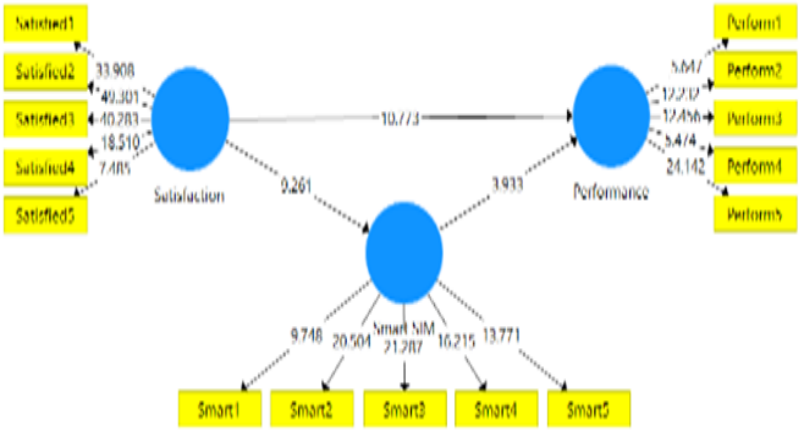

Figure 3. Calculation of PLS Bootstrapping Hypothesis Testing.

Based on Table 2, it can be seen that the results of hypothesis testing are as follows. Hypothesis 1 is supported, that User Satisfaction has a positive effect on Smart SIM. Hypothesis 2 is supported, that Smart SIM has a positive effect on Organizational Performance. Hypothesis 3 is supported, that user satisfaction has a positive effect on organizational performance. Hypothesis 4 is supported, that Smart SIM mediates the effect of User Satisfaction on Organizational Performance.

Table 2. Hypothesis Test Calculation.

Corelation	R	T statistics	P Value
User satisfaction >> Organizational performance	0.64	11.27	0.000
User satisfaction >> Smart SIM	0.60	8.82	0.000
Smart SIM >> Performance	0.26	3.95	0.000
Satisfaction >> Smart SIM >> Org performance	0.16	3.56	0.000

5. CONCLUSION

The conclusions that can be drawn are as follows. Information system user satisfaction is proven to have a positive and significant effect on Smart SIM. User satisfaction also has a positive and significant effect on Organizational Performance. Smart SIM has a positive and significant effect on Organizational Performance. And Smart SIM mediates the effect of User Satisfaction on Organizational Performance.

The implementation of policies regarding the intelligent system-based supervisory information management system (Smart SIM) is an important stage. No matter how good a policy that has been made it will be in vain if there is no effort to implement it because it will not bring the desired goal. Without effective implementation in a policy of intelligent system-based supervisory information management system (Smart SIM), the decision of policy makers will not be successfully implemented properly.

It is recommended that the legislature and executive as public officials in making policies and regulations regarding the intelligent system-based supervisory information management system (Smart SIM) which must be implied to improve regulations and policies that have existed previously. Relevant agencies as public officials in making regulations regarding service policies for intelligent system-based supervisory information management systems (Smart SIM) need to be equipped with an understanding to make better multi-regulations and include policies for holistic intelligent system-based supervisory information management system services (Smart SIM).

REFERENCE

[1] Abdalaziz. (2020). Public Relations Strategy in the use of Management Information Systems to Improve the Work of Institution. *International Journal of Management and Humanities*, *4*(10), 33–41. https://doi.org/10.35940/ijmh.j0949.0641020

[2] Al-Tit, A. A. (2016). Management Information Systems in Public Institutions in Jordan An Eye on Implementation Success Factors and their Relationship with Organizational Performance. *International Journal of Advanced Computer Science and Applications*.

[3] Dunn, W. (2012). *Public Policy Analysis* (Fifth). Upper Sadle: Pearson Education Inc.
[4] Frederickson, H. G. (1976). The lineage of new public administration. *Administration & Society*. https://doi.org/10.1177/009539977600800202
[5] Kumorotomo, & Margono. (2009). Sistem Informasi Manajemen dalam Organisasi Publik. Yogyakarta: UGM.
[6] Lucas, H. C. (2008). Information Technology for Management. Text (Vol. 14).
[7] McLeod, R., & Schell, G. P. (2007). *Management information Systems (Vol. 10)*. Upper Saddle River New Jersey: Pearson/Prentice Hall.
[8] Ringle, C. M., Wende, S., & Will, A. (2015). SmartPLS 3.0. *Http://Www.Smartpls.De*.
[9] Riyadi, B. S. (2020a). Culture of abuse of power due to conflict of interest to corruption for too long on the management form resources of oil and gas in Indonesia. *International Journal of Criminology and Sociology*, *9*(61), 247–254. https://doi.org/10.6000/1929-4409.2020.09.23
[10] Riyadi, B. S. (2020b). Culture of abuse of power in indonesia from the perspective of criminology and law. *International Journal of Criminology and Sociology*, *9*(2008), 274–284. https://doi.org/10.6000/1929-4409.2020.09.26
[11] Riyadi, B. S., Hermanto, A. B., Harlina, I., & Purnomo, H. (2020). Discretion of power of the indonesian national police impacts the abuse of power in the case of letter forgery of red notice "Fugitive Djoko Tjandra." *International Journal of Criminology and Sociology*, *9*(October), 1292–1300. https://doi.org/10.6000/1929-4409.2020.09.148
[12] Riyadi, B. S., Wibowo, B. R., & Susanti, V. (2020). Culture of corruption politicians' behavior in parliament and state official during reform government Indonesia. *International Journal of Criminology and Sociology*, *9*, 52–62. https://doi.org/10.6000/1929-4409.2020.09.06
[13] D. A. P. . Sari, A. . Rahmah, and N. A. . Sasongko, "Life Cycle Assessment (LCA) in Palm Oil Plantation and Mill with Impact Categories Global Warming Potential, Acidification, and Eutrophication", International Journal of Membrane Science and Technology, vol. 10, no. 2, pp. 797-807, 2023.
[14] Tulkens, H. (1986). The Performance Approach in Public Enterprises: An introduction and an example. *Annals of Public and Cooperative Economics*. https://doi.org/10.1111/j.1467-8292.1986.tb01937.x
[15] Turban, E., & Volonino, L. (2010). *Information Technology for management*. Asia: John Wiley & Sons.

DOI: https://doi.org/10.15379/ijmst.v10i2.1262