Tec Empresarial
P-ISSN: 1659-2395; E-ISSN: 1659-3359

Evaluation of Information Technology Governance Using the COBIT 5 Framework in the Police of the Republic of Indonesia (POLRI)

Azis Andriansyah[A], Edmon Makarim[B], Yudho Giri Sucahyo[C], Chairul Muriman Setyabudi[D]

Abstract

This evaluation research discusses how information technology governance in the Indonesian National Police (POLRI) uses the COBIT 5 model approach. This study aims to determine the extent to which the management and utilization of IT in improving its services in POLRI and recommends policy proposals for effective and efficient IT management using the COBIT 5 model. Data collection was carried out using interviews, questionnaires, and observation methods. The results of data processing that are adjusted to the COBIT 5 domain will be used to evaluate inter-domain capability. The results show that the EDM04 (Ensure Resource Optimization), APO01 (Manage the IT Management Framework), and APO04 (Manage Innovation) domains meet the requirements of the COBIT 5 model but still need to be imprjoved.

Keywords: *Information Technology, Model COBIT 5.*

INTRODUCTION

Judging from the critical function and role of information technology, it is necessary to have an information technology governance that can evaluate information technology in the organization (Blok, 2023). This evaluation is vital considering the vital role of information technology in a organization's performance (Illia et al., 2023). This aims to increase the optimal benefits obtained from information technology projects and be able to manage risks related to information technology (Null, 2023). IT governance is often interpreted as a structured process to ensure the effective and efficient use of IT so that organizations can achieve their vision and goals (Dhoopar et al., 2023). IT governance has several responsibilities, namely (a) ensuring stakeholder needs, (b) providing direction in implementing institutional strategies, (c) ensuring processes can produce outputs, (d) ensuring information from output measurements, (e) ensuring outputs are completed and following expectations, too (f) increasing organizational goals (Yoshikuni & Dwivedi, 2023).

[A]*School of Strategic and Global Studies, University of Indonesia, Depok, Indonesia, Email: azis.andriansyah01@ui.ac.id*
[B]*School of Strategic and Global Studies, University of Indonesia, Depok, Indonesia*
[C]*School of Strategic and Global Studies, University of Indonesia, Depok, Indonesia*
[D]*School of Strategic and Global Studies, University of Indonesia, Depok, Indonesia*

Information system services will not be separated from the state of the infrastructure. Infrastructure is the foundation of an information system. Poorly planned infrastructure will increase complexity lack of focus, and improve operational and IT maintenance costs (Große, 2023). IT infrastructure has a vital role in the success of daily activities, one of which is in the world of public service, for example, facilitating and supporting research activities such as system simulation data processing (Loeffler, 2023). Infrastructure also supports achieving general organizational goals by facilitating collaboration and integration of resources (Qi et al., 2023). The current IT infrastructure paradigm is based on hardware and includes software such as OS, middleware applications, and databases (Jepsen et al., 2023).

Implementing information technology (IT), governance can take place optimally if the organization can consistently apply the principles of information technology governance. The author uses information technology governance principles with the COBIT 5 (Control Objectives for Information and Related Technology) principle approach (Azis et al., 2023), where the IT governance principles from COBIT 5 can be observed in Figure 1 below:

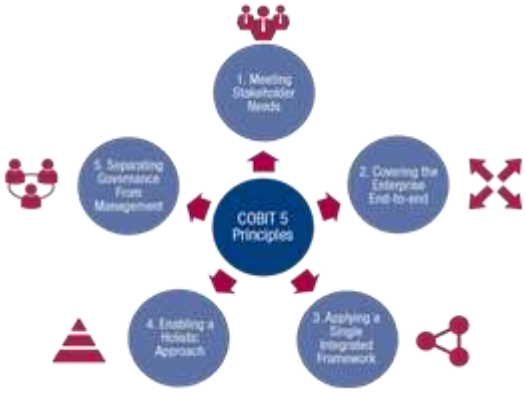

Figure 1. Information Technology Governance Principles from COBIT 5

Sources: ISACA (2012)

From Figure 1. above, it can be seen that COBIT 5 has 5 (five) principles for IT governance, where these principles become a standard guide for IT governance practices as well as a set of best practices documentation for IT governance that can assist auditors, institutional leaders, and users in bridging the gap between operational risk, control needs, and various technical issues (Minkkinen et al., 2023). COBIT 5 was developed by the IT Governance Institute (ITGI), part of the Information Systems Audit and Control Association (ISACA) (Nakano, 2023). COBIT 5 provides operational/business-oriented guidelines, so business process owners (institutional leaders), including auditors and users, are expected to be able to utilize this principle consistently. The principles of IT governance in the development of cyber governance in dealing with the negative impacts of cyberspace developments are considered to need still to be improved, where this can be explained by

facts, data, findings, observations, interviews, confirmation results, and the author's empirical experience (Alreemy. et.al, 2016).

This research aims to evaluate which will form a policy recommendation for the POLRI IT Strategic Plan, which can be used to facilitate the process of managing POLRI IT using the COBIT 5 framework. Furthermore, by optimizing the COBIT framework function to produce evaluation data for the management and utilization of POLRI IT, in the end, it can make policies and assist in the integration and development of the management and utilization of POLRI IT.

This research evaluates the governance of the COBIT 5 framework in IT Polri with respect to Organizational Resource Optimization, IT Governance Framework, and Innovation Governance?

LITERATURE REVIEW

IT Governance consists of leadership and organizational structure and organizational processes that ensure organizational achievement. Technology is able to help organizations achieve their goals by evaluating stakeholder interests and environmental conditions around the organization (Chi, 2017).

Organization Information Technology maintains and expands organization strategies and goals (Wang & Huang, 2023). Information Technology Governance and Information Technology Management determine that organization goals are implemented by evaluating stakeholders, needs, conditions and choices. Determining direction through preferences and making decisions, monitoring performance, compliance and progress towards directions and goals (Pratt & Hedden, 2023).

COBIT 5 as Control Objective of Information Technology

COBIT 5 is a business framework for the governance and management of IT organizations and companies (IT governance framework). COBIT is a system that supports managers to coordinate organization needs. COBIT 5 has the following principles (Figure 2):

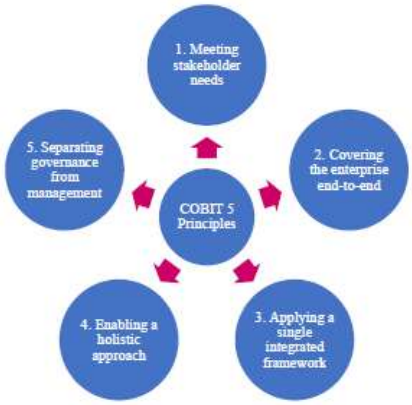

Figure 2. COBIT 5 Principles

1. Recognizing the needs of stakeholders where the organization can create value for stakeholders, one way is to analyze the risks and opportunities that exist (DesJardine, 2023).

2. Provides a comprehensive view of the condition of the organization which in IT is called from the front end to the back end stage by providing information on how the lines of communication are interconnected in the organization's operating system.
3. Apply the COBIT 5 framework with the existing IT management framework within the organization to see how the COBIT 5 framework can improve the organization's information system.
4. Combining the IT framework with the organization's operational framework so that the IT framework becomes a unified or inseparable part of the organization's operations (Wang & Ran, 2023).
5. Separating governance according to its level. Governance consists of various levels of the upper organization at the strategic level that carries out planning to the lower level of governance that carries out daily activities (Wang, 2023).

Process Reference Model In COBIT 5

COBIT 5 has a process reference model that defines and explains governance and management processes. In COBIT 5, there are two process domains, namely IT governance and management processes, namely Evaluate, Direct, and Monitor (EDM) and Plan, Build, Run, and Monitor (PBRM) with the following explanation: Evaluate, Direct, and Monitor (EDM). In this process, how to evaluate and monitor IT governance in an organization is regulated (Hilliard et.al, 2023).

There are five process domains (Pavone et.al, 2023), namely: 1) Ensure governance framework setting and maintenance (EDM01); 2) Ensure benefits delivery (EDM02); 3) Ensure risk optimization (EDM03); 4) Resource optimization (EDM04); 5) Ensure stakeholder transparency (EDM05). The details are in Table 2.

Table 2. Five Controls on Evaluate, Direct, and Monitor

No	Domain	Questions
1	EDM01	Establish governance
2	EDM02	Establish target benefits from implementing the IT framework
3	EDM03	Perform risk management that minimizes risk
4	EDM04	Optimization of owned resources
5	EDM05	Provide transparent information to stakeholders

Plan, Build, Run, and Monitor (PBRM) In this management domain, there are 4 domains, namely: 1) Align, Plan, and Organize/APO, in which there are 13 sub-processes; 2) Build, Acquire, and Implement (BAI) which has 10 sub-processes; 3) Deliver, Service and Support (DSS), has 6 subprocesses; 4) Monitoring, Evaluation, and Assessment (Monitor, Evaluate, and Assess/MEA), has 3 sub-processes

Implementation of COBIT 5

The implementation life cycle provides access for enterprises to use COBIT, in order to understand the complexities and challenges

faced during implementation. The following is the life cycle along with its 7 phases in COBIT implementation to ensure the implementation process runs smoothly (ISACA, 2012):

1. Fase 1: *What are the drivers of technological needs?*
   This first phase describes identifying the need for change initiation by looking at current pain points and triggers, to create a desire for change at the executive management level (Cardinali et al., 2023).
2. Fase 2: *Where are our position now?*
   This second phase focuses on explaining the scope of implementation using COBIT mapping starting from organization goals -> goals related to IT -> associated IT processes. In this phase, risk scenario considerations are also carried out. Next, an assessment of the current situation is carried out with a process capability assessment (Dillenberger et al., 2023).
3. Fase 3: *What is the condition we want to achieved?*
   In this third phase, determination of development goals and detailed analysis of the benefits of COBIT guidelines is carried out, to identify gaps and solutions. However, it is important that we can determine the priority scale of solutions that are easy to achieve and generate profits in this phase (Neumann et al., 2023).
4. Fase 4: *What needs to be done?*
   In this fourth phase, practical solution planning is carried out, by defining projects that are supported by business case justification. This aims to ensure that the benefits that can be obtained from this project are identified and noticed. In this phase, the development of the implementation of changes to the plan is also carried out (Barbieri et.al, 2023).
5. Fase 5: *How do we get there?*
   In this fifth phase, the implementation of solutions that have been previously developed is carried out. Measurements are made using the COBIT matrix and goals, so that business fit can be achieved and maintained, and performance can be assessed. At this stage, the involvement of top management is required.
6. Fase 6: *Did we get there?*
   This sixth phase focuses on the ongoing operation of new or previously developed enablers, as well as monitoring the expected benefits.
7. Fase 7: *How do we keep the momentum going?*
   In this seventh phase, an assessment of the success of the initiation is carried out, identification of further requirements for enterprise IT governance or management, and determination of sustainable development.

METHODS

The approach used in this research is a qualitative descriptive method where the data collection results are described based on the source's perspective by paying attention to actual conditions in the field

(Salter et al., 2023). The method used in this study follows a framework of thinking that begins with formulating the problem. The existing problems include evaluating the maturity level of POLRI IT management with the COBIT 5 framework and POLRI IT management policies to improve services effectively and efficiently.

This form of research was carried out in a descriptive qualitative and quantitative manner using interviews and questionnaires. POLRI IT governance analysis is carried out using the COBIT framework by collecting data, mapping, and then processing it. The results to be achieved through this research are in the form of recommendations for policymakers (Zhang et al., 2023).

RESULT AND DISCUSSION

The initial stages contained in the Assessment Process Activities in COBIT 5 are initiation. This stage is carried out to obtain organizational information and current organizational conditions and find out what the organization hopes for in the future. At this stage the process of determining the domain to carry out the evaluation is also carried out. The following is the result of the initiation stage (Javadpour et al., 2023).

Division of Technology, Information and Communication of the Republic of Indonesia Police or commonly abbreviated (Div ICT Polri). The Polri ICT Division is tasked with carrying out management functions, fostering and developing electronic Information and Communication Technology (ICT) systems as well as ICT supervision within the Polri environment.

In carrying out its duties the ICT Div Polri carries out the following functions:

1. Guidance and development of Electronic Technology, Information and Communication Systems (Sistekinfokomlek) within the Police which includes:Planning, construction, development and maintenance of Information and Communication Systems.
2. Preparation of systems and methods in the form of technical and implementation guidelines in the form of police regulations for the operation of the Information and Communication System.
3. Monitoring and supervision as well as providing direction and technical guidance to ensure the implementation of the Information and Communication System.
4. Providing considerations and suggestions for the placement of personnel in the context of career development for the development of the Information and Communication System function (Demircioglu, 2023).
5. Compilation of standardization of the hardware and software of the Information and Communication System within the National Police to create an integrated and effective Information and Communication System
6. Fostering and developing the Information and Communication System which includes: Data collection and analysis system;

application programs; website; security systems and information technology infrastructure.
7. Guidance and development of the Information and Communications System to support the smooth implementation of Polri's duties.
8. Fostering and developing technology systems and applications related to operational information and coaching information that are national and centralized.

Focus of IT Governance

At this stage, domain determination will be carried out in COBIT 5 which will then be evaluated at the National Police ICT Div.Based on the results of the interviews, it can be seen that the Polri ICT Div provides value to customers in achieving their goals through information and communication technology. So that the Polri ICT Div focuses on technological capabilities in order to help customers achieve their goals. Then the stakeholder needs that will be used by the Polri ICT Div are "How to get value from the use of IT? Are users satisfied with the quality of IT services?" and "How to manage IT performance?".

After determining stakeholder needs, the next step needed to determine the domain is to set enterprise goals. After determining stakeholder needs, the next step needed to determine the domain is to set enterprise goals. The Polri ICT Div provides value to customers in achieving their goals through information and communication technology, so the selected enterprise goals are competitive services. Furthermore, these enterprise goals will be aligned with IT-related goals that have been mapped in COBIT 5.

Through the mapping results and by connecting with the IT implementation objectives of the organization, there are 6 main COBIT results, namely EDM 04 Optimization of owned resources, APO (Align, Plan and Organize)1 IT framework governance, APO4 Fostering innovation, AP3 Serving stakeholders (suppliers), and also by analyzing the business, there are three main parts based on the level of urgency after interviews with the ICT division of the Indonesian National Police.

1. EDM04 Optimization of Owned Resources
   The purpose of optimization of owned resources is to maximize the assets of the organization. The organization has the option to upgrade or invest additionally for its information technology needs (Kou et.al, 2023). However, investment will require the sacrifice of additional resources from the organization. In contrast to the optimization of resources that utilizes the resources that the organization already has both tangible resources such as software, but also intangible such as fine tools. Likewise with assets in the form of goods and assets in the form of labor (Gautier, 2023).
2. APO (Align, Plan and Organize)1 IT framework governance
   The governance of the information technology framework is related to the vision and mission of management towards the use

of information technology in the organization. Management, especially management, is the party that has a vision in the application of IT. This vision is then translated into a mission and then into an application plan for each period. This approach needs to be carried out in a structured and consistent manner so as to produce IT implementation in accordance with the framework that management has planned (Robles, 2023).

3. APO4 Fostering Innovation
   Innovation is a continuous process. To recognize the potential for innovation can be done through a top down or bottom up process. Top down can be done by upper management at a strategic level that has all organizational data or bottom up from those responsible for each field or individuals carrying out tasks in the field. Innovation from above and below must be able to flow so that the spirit of innovation can grow (Wu et.al, 2023).

Trends in information technology that are dynamic always increase from year to year. Likewise with the ability of information technology which will always increase every year. Because of this, conducting an assessment on managing innovation is very important to find out how far a organization can manage existing innovation (Cao et al., 2023).

Planning the Assessment

At the planning the assessment stage, a list of respondents will be explained for carrying out the evaluation in accordance with COBIT 5 (Heruatmadja et al., 2023). In the RACI chart, only those with a responsible role will be used as evaluation respondents. This is because the responsible role is the person who is responsible for getting the task and carrying out the task and also ensuring that the activity or operational activities are successful (Bearman et al., 2023). The following is a list of respondents in the EDM04 Ensure Resource Optimization process, APO01 Manage the IT Framework, APO04 Manage Innovation adjusted to the RACI chart:

Results of Respondents in the EDM04 (Ensure Resource Optimization) Process

In accordance with the results of the RACI chart mapping in COBIT 5, the respondents who will participate in the evaluation are all work units in the ICT Div Polri. These respondents are respondents who are responsible for operational activities to run successfully.

Tabel 1 Mapping RACI *chart* EDM04

No.	RACI *chart* EDM04 at COBIT 5	Responsibilities
1	Chief Executives Officer (CEO) is part of top management that responsible of organization strategic policy.	Responsible for strategic policy including investment in technology and fostering innovation. CEO decide to choose and invest technology based on input from CIO.

2	The Chief Information Officer (CIO) is the highest person in an organization that in charge of a business technology.	Responsible for IT planning, implementation, evaluation and investment for an organization. CIO give advice to CEO the investment needed in IT.

Results of Respondents in the APO04 (Manage Innovation) and APO01 (Manage the IT Framework) Processes

In accordance with the results of the RACI chart mapping in COBIT 5, the respondents who will participate in the evaluation are all work units in the Polri ICT Div. These respondents are the respondents who are responsible for successful operational activities (Letaw, 2023).

Tabel.3 Mapping RACI Chart APO04 & APO01

No	RACI *chart* APO04 at COBIT 5	Div TIK Polri
1.	Executives is an individual who responsible for organization operational.	Responsible for all the organization process included information system process. This role is important due that information system is integral part with organization process.
2.	Head Development is an individual who in charge for technology development in an organization.	Responsible for building IT infrastructure. Head of Development are working together with Head of Architecture to build the IT infrastructure. If the Head of IT Architect is responsible for the planning, Head of Development is responsible for implementation.
3.	Head Architect is an individual who plan for IT in an organization.	Responsible for planning the information system process based on organizational process for current and future.
4.	Information Security Manager, is a manager who specialize in organization data securities.	Responsible for all part of data securities starting from data collecting, data saving, and data retrieval.

Data Collection Proses EDM04 (Ensure Resource Optimisation)

The following below is the output requirement for the EDM04 (Ensure Resource Optimization) process.

Table 4 Output Process EDM04 (Ensure Resource Optimisation)

Key Management Practice	Outputs
EDM04.01 Evaluate resource management	Guidance process for resources planning and allocation.
	Enterprise Architecture Planning
	Ideally an optimum resources allocation.
EDM04.02 Direct resources management	Communication line toward personnel that responsible for resources.
	Allocation personnel to resources.
	Guidance of resources usages.
EDM04.03 Monitor resource management	Monitoring and evaluate resources usage regularly.
	Evaluate and improve resources usages.

The goal of this process is to ensure that the organization's resource requirements are optimally met, IT costs are optimized, and there is an increased likelihood of benefit realization and readiness for future changes (Glennerster, 2023).

Data Collection Proses APO01 (Manage the IT Framework)

The following below is the output requirement for the APO01 (Manage the IT Framework) process.

Tabel 6 Output Process APO01 (Manage the IT Framework)

Key Management Practice	Outputs
APO01.01 Design organizational structure.	Organizational structure and functions.
	Operational guidelines for organizations.
	Communication line in organizations.
APO01.02 Establish responsibilities for organizational parts.	Definition of IT-related roles and responsibilities
	Definition of responsibilities for organizational parts.
APO01.03 Build management system that connect parts of organizations.	IT policy for organizations.
APO01.04 Communication line.	Communication through IT infrastructures.
APO01.05 IT usage optimization	Evaluate and optimize IT function inside organizations.
	Integration between IT and organization unit.
APO01.06 Data ownership procedure.	Data classification procedures.
	Data securities procedures.
	Data integrity.
APO01.07 Continuous	Assessment of current process.

Improvement Process	Continue continuous improvement.
	Performance metrics.
APO01.08 Compliance toward organizational rule and procedures	Remedial and improvement current procedures.

The aim of this process is to provide a consistent management approach to enable corporate governance requirements to be met, including management processes, organizational structure, roles and responsibilities, reliable and repeatable activities, and skills and competencies (Penpokai et.al, 2023).

Data Collection Proses APO04 (Manage Innovation)

The following below is the output requirement for the APO04 (Manage Innovation) process.

Tabel 7. Output Process APO04 (Manage Innovation)

Key Management Practices	Outputs
APO04.01 Creative conducive environment to foster innovation.	Innovation plan.
	Reward program for improvement
APO04.02 Understanding organization process.	Innovation based on improvement organization process.
APO 04.03 Monitoring technology improvement	Monitoring and evaluation result for technology.
APO04.04 Analysis of innovation possibilities in organization unit.	Innovation ideas progression.
	Innovation trial and progress.
	Proven initiative.
APO04.05 Individual initiatives toward organization improvement.	Analysis of initiatives.
	Choose and apply initiative.
APO04.06 Monitoring and Evaluation for the Implementation of Innovation	Asses innovative approach
	Evaluate the benefit from innovation.
	Adjustment of innovation plan based on real conditions.

The aim of this process is to achieve competitive advantage, business innovation, and increase operational effectiveness and efficiency by utilizing the development of information technology.

CONCLUSIONS

Information technology governance in the Polri ICT Div. The process has generally been managed regularly in the EDM04 (Ensure Resource Optimization) domain, including planning and monitoring activities. Meanwhile, for the condition to be (which is expected), it can be interpreted that the EDM04 (Ensure Resource Optimization) domain has met the requirements. In the APO01 (Manage the IT Management Framework) domain, processes have generally been managed regularly,

including planning and monitoring activities. Meanwhile, results can be achieved according to what was previously targeted for the to-be state (expected) in the APO01 (Manage the IT Management Framework) domain. The process has been managed regularly in the APO04 domain (Manage Innovation), including planning and monitoring activities. Meanwhile, for the to-be stated (which is expected), the process that has been implemented is expected to achieve the results that were previously targeted.

REFERENCES

Blok, V. (2023). The ontology of technology beyond anthropocentrism and determinism: The role of Technologies in the constitution of the (post) anthropocene world. *Foundations of Science*, *28*(3), 987-1005.

Illia, L., Colleoni, E., Etter, M., & Meggiorin, K. (2023). Finding the tipping point: When heterogeneous evaluations in social media converge and influence organizational legitimacy. *Business & Society*, *62*(1), 117-150.

Null, L. (2023). *The essentials of computer organization and architecture*. Jones & Bartlett Learning.

Dhoopar, A., Sihag, P., & Gupta, B. (2023). Antecedents and measures of organizational effectiveness: A systematic review of literature. *Human Resource Management Review*, *33*(1), 100915.

Yoshikuni, A. C., & Dwivedi, R. (2023). The role of enterprise information systems strategies enabled strategy-making on organizational innovativeness: a resource orchestration perspective. *Journal of Enterprise Information Management*, *36*(1), 172-196.

Große, C. (2023). A review of the foundations of systems, infrastructure and governance. *Safety science*, *160*, 106060.

Loeffler, E. (2023). Co-production of public services and outcomes. In *Public Management and Governance* (pp. 299-314). Routledge.

Qi, D., Zhang, M., & Zhang, Y. (2023). Resource integration, value co-creation and continuance intention in MOOCs learning process. *Interactive Learning Environments*, *31*(2), 701-713.

Jepsen, S. C., Siewertsen, B., & Worm, T. (2023, March). A Reconfigurable Industry 4.0 Middleware Software Architecture. In *2023 IEEE 20th International Conference on Software Architecture Companion (ICSA-C)* (pp. 1-11). IEEE.

Azis, N., Edinata, A., Andry, J. F., & Tannady, H. (2023, July). Audit of IT helpdesk application using COBIT 5. In *AIP Conference Proceedings* (Vol. 2798, No. 1). AIP Publishing.

Minkkinen, M., Zimmer, M. P., & Mäntymäki, M. (2023). Co-shaping an ecosystem for responsible AI: Five types of expectation work in response to a technological frame. *Information Systems Frontiers*, *25*(1), 103-121.

NAKANO, M. (2023). Toward Building the Framework for Artificial Intelligence Audit Theory. *工業技術= Industrial Technology*, *45*, 52-55.

Alreemy, Z., Chang, V., Walters, R., & Wills, G. (2016). Critical Success Factors (CSFs) for Information Technology Governance (ITG). International Journal of Information Management.

Bianchi, I. S., & Sousa, R. D. (2016). IT Governance mechanisms in higher education. Procedia Computer Science.

Chi, M., Zhao, J., George, J. F., Li, Y., & Zhai, S. (2017). The influence of inter- firm IT governance strategies on relational performance: The moderation effect of information technology ambidexterity. International Journal of Information Management.

Wang, X., & Huang, Y. H. C. (2023). Uncovering the role of strategic orientation in translating communication strategies to organizational performance: An analysis of practitioners from two Chinese societies. *International Journal of Business Communication*, *60*(1), 234-259.

Pratt, M. G., & Hedden, L. N. (2023). Accounts and accountability: On organizational purpose, organizational identity, and meaningful work. *Strategy Science*.

DesJardine, M. R., Zhang, M., & Shi, W. (2023). How shareholders impact stakeholder interests: A review and map for future research. *Journal of Management*, *49*(1), 400-429.

Wang, L., Müller, R., & Zhu, F. (2023). Network Governance for Interorganizational Temporary Organizations: A Systematic Literature Review and Research Agenda. *Project Management Journal*, *54*(1), 35-51.

Wang, H., & Ran, B. (2023). Network governance and collaborative governance: A thematic analysis on their similarities, differences, and entanglements. *Public management review*, *25*(6), 1187-1211.

Cardinali, S., Pagano, A., Carloni, E., Giovannetti, M., & Governatori, L. (2023). Digitalization processes in small professional service firms: drivers, barriers and emerging organisational tensions. *Journal of Service Theory and Practice*, *33*(2), 237-256.

Hilliard, A., Kazim, E., Kemp, T., & Bageire, K. (2023). Overview and commentary of the California Workplace Technology Accountability Act. *International Review of Law, Computers & Technology*, *37*(1), 91-109.

Dillenberger, D., Krishna, R. V., & Sadowski, P. (2023). Subjective information choice processes. *Theoretical Economics*, *18*(2), 529-559.

Neumann, O., Guirguis, K., & Steiner, R. (2023). Exploring artificial intelligence adoption in public organizations: a comparative case study. *Public Management Review*, 1-28.

Barbieri, M., Micacchi, L., Vidè, F., & Valotti, G. (2023). The performance of performance appraisal systems: A theoretical framework for public organizations. *Review of Public Personnel Administration*, *43*(1), 104-129.

Demircioglu, M. A. (2023). The effects of innovation climate on employee job satisfaction and affective commitment: Findings from public organizations. *Review of Public Personnel Administration*, *43*(1), 130-158.

Gautier, A. L., Rigter, M., Lacerda, B., Hawes, N., & Wooldridge, M. (2023). Risk-constrained planning for multi-agent systems with shared resources.

Robles, P., & Mallinson, D. J. (2023). Catching up with AI: Pushing toward a cohesive governance framework. *Politics & Policy*.

Salter, M. B., Mutlu, C. E., & Frowd, P. M. (Eds.). (2023). *Research methods in critical security studies: An introduction*. Taylor & Francis.

Zhang, W., Zhang, M., Yuan, L., & Fan, F. (2023). Social network analysis and public policy: what's new?. *Journal of Asian Public Policy*, *16*(2), 115-145.

Cao, L., West, B., Ramesh, B., Mohan, K., & Sarkar, S. (2023). A platform-based approach to ambidexterity for innovation: An empirical investigation in the public sector. *International Journal of Information Management*, *68*, 102570.

Wu, Q., Sun, Z., Jiang, L., & Jiang, L. (2023). "Bottom-up" abatement on climate from the "top-down" design: lessons learned from China's low-carbon city pilot policy. *Empirical Economics*, 1-35.

Letaw, L. (2023). Project Management and Teamwork. *Handbook of Software Engineering Methods*.

Glennerster, H. (2023). *Social service budgets and social policy: British and American experience*. Routledge.

Penpokai, S., Vuthisopon, S., & Saengnoree, A. (2023). The relationships between technology adoption, HR competencies, and HR analytics of large-size enterprises. *International Journal of Professional Business Review*, *8*(3), e0971-e0971.

Pavone, F., Piironen, J., Bürkner, P. C., & Vehtari, A. (2023). Using reference models in variable selection. *Computational Statistics*, *38*(1), 349-371.

Javadpour, A., Ja'fari, F., Pinto, P., & Zhang, W. (2023). Mapping and embedding infrastructure resource management in software defined networks. *Cluster Computing*, *26*(1), 461-475.

Bearman, M., Nieminen, J. H., & Ajjawi, R. (2023). Designing assessment in a digital world: an organising framework. *Assessment & Evaluation in Higher Education*, *48*(3), 291-304.

Kou, G., Pamucar, D., Dinçer, H., & Yüksel, S. (2023). From risks to rewards: A comprehensive guide to sustainable investment decisions in renewable energy using a hybrid facial expression-based fuzzy decision-making approach. *Applied Soft Computing*, *142*, 110365.4.

Heruatmadja, C. H., Gaol, F. L., Supangkat, S. H., & Ranti, B. (2023, August). Ensuring Success in Quick Commerce by Evaluating Its Application Development Capability Maturity Using COBIT 2019.

In *2023 International Conference on Information Management and Technology (ICIMTech)* (pp. 265-270). IEEE.