

Management Audit and Information Technology Governance at Village-Owned Enterprises (BUMDesa) Catu Kwero Sedana Pecatu

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Article Info	ABSTRACT
Corresponding Author: I Kadek Budi Sandika E-mail: ikbsandika@instiki.ac.id	<p>BUMDesa Catu Kwero Sedana Pecatu was formed through Pecatu Village Regulation Number 10 of 2014 as a strategic effort to strengthen the local economy. Operations began in 2017 with a waste management business unit, and in 2022 expanded with a trade and services unit. As legality is strengthened (legal entity 2022, NIB 2024), the need for information technology (IT) governance becomes increasingly important to support efficiency, transparency and accountability. However, there has never been an in-depth study of IT readiness, effectiveness, and risk, so an IT management and governance audit is needed. This research uses a descriptive qualitative approach with a case study method at BUMDesa Catu Kwero Sedana Pecatu. Data was obtained through document analysis, interviews, and observations. The evaluation framework refers to COBIT and the maturity model to assess five main aspects: IT policies and procedures, organizational structure and IT HR capabilities, IT maturity level, IT risk identification, and internal control effectiveness. The audit showed that the IT maturity level was at Level 1 - Initial (average score 0.6) with practices that were ad hoc, lacked documentation, and were not integrated. Significant risks were found such as delays in application development, HPP calculation errors due to system limitations, absence of backup policies, dependence on vendors, and potential data privacy violations. Internal controls are still weak in the aspects of system security, data backup, access authorization, and transaction monitoring. Recommendations include the preparation of an IT Master Plan, establishment of a specialized IT unit, HR training, implementation of information security policies, and implementation of an integrated information system aligned with BUMDesa's business strategy.</p> <p>Keywords: BUMDesa Catu Kwero Sedana Pecatu, Management Audit, Information Technology Governance, COBIT, IT Maturity Level</p>

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INTRODUCTION

Pecatu Village has formulated the basis for the establishment of BUMDesa which was stipulated in the Pecatu Village Regulation Number 10 of 2014 on September 30, 2014. The name of the BUMDesa formed is BUMDesa Catu Kwero Sedana Pecatu. This BUMDesa began actively operating in 2017 after the establishment of the Decree of Pecatu Perbekel Number 2 of 2017 concerning the Appointment of Caretaker Operational Implementation of Village-Owned Enterprises (BUMDesa) Catu Kwero Sedana. The business unit being run is the Waste Management Business Unit. Then the new definitive organizational structure was established in 2022 with the Decree of Pecatu Perbekel Number 3 of 2022 concerning the Appointment of Advisors, Supervisors, and Operational Executors of the Catu Kwero Sedana Pecatu Village-Owned Enterprises. BUMDesa Catu Kwero Sedana Pecatu has obtained a certificate of registration of the establishment of a legal entity from the Ministry of Law and Human Rights RI NUMBER: AHU-02378.AH.01.33.TAHUN 2022 which was issued on March 7, 2022. In 2022 also started running the Trade and Services Business Unit.

To support the operational process of business units, BUMDesa Catu Kwero Sedana Pecatu has planned and utilized information technology. In the Waste Management Business Unit, BUMDesa has appointed a third party, namely MOTA Academy to develop the BUMDesa Pecatu application. This application has been planned since 2020 and in 2023 an agreement was made for its development with a target completion in mid-2024. However, it turns out that until the end of 2024, this application has not been fully completed and can be fully utilized by BUMDesa.

Meanwhile, in the General Trading and Services Business Unit, BUMDesa has leased a system developed by a third party called the OXY program to assist in the administrative management of merchandise purchases and sales since the end of 2022. However, after two years of use, the management of the business unit still faces obstacles especially in determining COGS which causes constraints in monthly reporting.

Some of the identified obstacles indicate a less than optimal management process and governance of information technology in BUMDesa Catu Kwero Sedana Pecatu. Until now, BUMDesa has also not conducted an audit to explore the root causes of the actual problem, so that decision making is only done based on the perceptions of BUMDesa directors on the consideration of supervisors and advisors. To find out more clearly the cause of the less than optimal utilization of information technology in BUMDesa, a study was conducted entitled Management Audit and Information Technology Governance at Village-Owned Enterprises (BUMDesa) Catu Kwero Sedana Pecatu.

The purpose of this research is to analyze the implementation of information technology management and governance at BUMDesa Catu Kwero Sedana Pecatu, including policies, procedures, existing management practices and assess the maturity level of IT governance.

The results of this study are useful, both theoretically and practically. Theoretically, the results of this research are expected to enrich the literature and scientific references related to management audits and information technology governance, especially in village-based organizations, and become a case study that can be used as a reference for further

research in the field of IT management. From the practical side, this research provides direct benefits for BUMDesa Catu Kwero Sedana Pecatu in the form of an objective description of the current state of IT governance along with recommendations that can be implemented for improvement. For the village government and related agencies, this research can be taken into consideration in formulating policies for the guidance and development of village information systems. Meanwhile, for the community, the results of this research are expected to encourage the improvement of BUMDesa service quality through more effective, secure, and sustainable IT utilization.

METHOD

The PROMETHEE (Preference Ranking Organization Method for Enrichment Evaluation) method is a multicriteria decision-making method used to rank alternatives based on competing criteria (Ahmad et al., 2023; Kurniawan et al., 2021; Mahendra, Hariyono, et al., 2023; Sudipa, Kharisma, et al., 2023). This method allows decision makers to choose the best alternative by considering preferences on each criterion, both maximization (gains) and minimization (losses). PROMETHEE has advantages in terms of ease of implementation, flexibility, and intuitive results, making it suitable for cases such as the selection of the best flower shop in the INSTIKI campus area, which involves many criteria and alternatives.

This research uses a qualitative descriptive approach with a case study method to deeply analyze the condition of information technology management and governance at BUMDesa Catu Kwero Sedana Pecatu. This approach was chosen because it is able to provide a comprehensive overview of IT policies, procedures, organizational structure, maturity level, risks, and effectiveness of internal controls. Data was collected through direct observation, in-depth interviews with BUMDesa management and staff, and document studies related to IT policies and procedures that have been implemented.

The research instruments are interview guidelines, observation sheets, and checklists compiled based on the COBIT 2019 framework and IT Governance Institute (ITGI) guidelines. COBIT 2019 was chosen because it provides a comprehensive IT governance maturity level measurement standard, from planning to evaluation aspects. Meanwhile, the IT risk checklist is adapted to the ISO 31000 risk management standard, so as to identify potential vulnerabilities and obstacles in IT utilization. The following table summarizes the stages in an information technology governance audit, including the process, outputs, and achievement indicators:

Table 1. Audit Stages, Processes, Outputs and Outcome Indicators

Audit Stages	Process	Outputs	Outcome Indicator
1. Audit Planning	<ul style="list-style-type: none"> - Understand the organization and applicable IT policies. - Develop the scope and objectives of the audit. 	- A clear and structured audit plan.	- The existence of an audit plan document that includes the scope, objectives, and appropriate methodology.

2. Risk Assessment and Internal Control	<ul style="list-style-type: none"> - Identification and assessment of IT risks. - Evaluation of existing internal controls. 	- Risk assessment and internal control report.	- Identification of significant IT risks and adequate internal controls for risk mitigation.
3. Evaluation of IT Policies and Procedures	<ul style="list-style-type: none"> - Evaluation of existing IT policies. - Examination of the conformity of procedures with standards and regulations. 	- IT policies and procedures evaluation report.	- IT policies and procedures are in accordance with international standards and organizational needs.
4. IT System and Infrastructure Testing	<ul style="list-style-type: none"> - Testing of IT systems (hardware, software, and network). - System feasibility and security tests. 	- Report on the results of testing IT systems and infrastructure.	- IT systems function in accordance with the objectives, are safe from potential threats, and there are no security gaps.
5. Assessment of IT Performance and Management	<ul style="list-style-type: none"> - Assess whether IT supports business objectives. - Evaluate IT performance in operations. 	- IT performance evaluation and management report.	- IT performance supports organizational efficiency and effectiveness and the achievement of business objectives.
6. Preparation of Audit Findings and Reports	<ul style="list-style-type: none"> - Compile audit findings. - Provide recommendations for improvement. 	- Audit report that includes findings and recommendations.	- The audit report is complete, clear, and includes all findings and recommendations that can be implemented.
7. Follow-up and Monitoring	<ul style="list-style-type: none"> - Monitoring of recommendation implementation. - Evaluation of follow-up by management. 	- Follow-up report and monitoring results.	- Audit recommendations have been implemented and show improvements in the organization's IT management.

Data analysis techniques were carried out through three main stages, namely data reduction, data presentation, and conclusion drawing according to the Miles & Huberman model. Data from interviews and observations were reduced to select information relevant to the research focus. Furthermore, the data was presented in the form of tables, maturity level matrices, and narrative descriptions to facilitate interpretation. The final stage is

drawing conclusions that integrate the findings with the theoretical framework, so as to provide recommendations for improving IT management and governance at BUMDesa Catu Kwero Sedana Pecatu.

Research Limitations

This research is limited to the scope related to the management and governance of information technology at BUMDesa Catu Kwero Sedana Pecatu. The research focus includes:

a. IT Policies and Procedures

The discussion is limited to the identification and evaluation of policies, procedures, and information technology management practices applied, including data management, digital financial systems, and services to customers or business partners.

b. Organizational Structure and IT HR Capability

The analysis is conducted on the suitability of the organizational structure that handles the IT function as well as the competence of human resources in managing digital systems and information platforms.

c. IT Governance Maturity Level

Maturity level assessment is focused on aspects of IT governance planning, implementation, and evaluation based on relevant assessment models.

d. IT Risk Identification

The research only includes the analysis of significant risks that affect the operational sustainability of BUMDesa, such as data leakage vulnerability, dependency on manual systems, and risk of system failure in supporting key business processes.

e. IT Internal Control Effectiveness

The discussion covers the effectiveness of internal controls on system security, data backup, access authorization, and digital transaction monitoring, without discussing aspects of new software development or technological innovation that are not relevant to current conditions.

RESULTS AND DISCUSSION

Pecatu Village has taken a strategic step in strengthening the local economy through the establishment of a Village-Owned Enterprise (BUMDesa) which is legally regulated in Pecatu Village Regulation Number 10 of 2014, dated September 30, 2014. The BUMDesa is named Catu Kwero Sedana Pecatu, as an institutional forum designed to manage and develop the potential of village resources independently and sustainably. Although its legal basis has been established since 2014, this BUMDesa only began running its operational activities in 2017, after the issuance of the Decree of the Pecatu Perbekel Number 2 of 2017 which establishes a caretaker for BUMDesa operations. In the early stages, the business unit being run is the Waste Management Unit, which is the initial form of BUMDesa's involvement

in the provision of public services based on local needs.

The institutional development of BUMDesa was further strengthened when in 2022, the definitive organizational structure was established through the Decree of Pecatu Perbekel Number 3 Year 2022, which regulates the appointment of Advisors, Supervisors, and Operational Executives. This decision became an important milestone in building professional and responsible BUMDesa governance. In the same year, BUMDesa Catu Kwero Sedana Pecatu also expanded its economic activities by establishing a Trade and Services Business Unit, as part of a business diversification strategy and increased village revenue. The establishment of this unit expanded the operational scope of BUMDesa from its original focus on environmental-based services to a more competitive trade and services sector.

To strengthen legal legitimacy in its business activities, the BUMDesa has obtained a certificate of legal entity registration from the Ministry of Law and Human Rights of the Republic of Indonesia with Number AHU02378.AH.01.33.Tahun 2022, issued on March 7, 2022. Furthermore, as part of the fulfillment of administrative regulations in the OSS (Online Single Submission) system, BUMDesa also obtained a Business Identification Number (NIB): 1908240097449 in 2024. The issuance of NIB is an important legality that strengthens BUMDesa's position in establishing economic cooperation, opening market access, and facilitating more formal and integrated business growth.

Along with the development of business activities and the expansion of the operational scope of BUMDesa Catu Kwero Sedana Pecatu, the need for an effective management system and reliable Information Technology (IT) governance is becoming increasingly urgent. This BUMDesa not only runs the Waste Management Business Unit, but since 2022 has also developed a Trade and Services Business Unit, which requires an information system that supports operational efficiency, service transparency, and accountability of financial reporting and business performance.

In the midst of efforts to improve institutional capacity and business legality, such as the acquisition of a legal entity in 2022 and the issuance of a Business Identification Number (NIB) in 2024, digital transformation is an inevitable strategic aspect. However, until now there has been no in-depth study of the readiness, effectiveness, or risks of the information systems used by BUMDesa. Therefore, it is important to conduct an IT management and governance audit to ensure that the utilization of information technology is in line with BUMDesa's strategic objectives, supports the principles of good governance, and is able to anticipate various digital risks and internal control weaknesses.

The following is a complete and systematic description of the five important aspects of an IT management and governance audit at BUMDesa Catu Kwero, namely IT policies and procedures applied, suitability of the IT organizational structure, IT governance maturity level, identification of significant IT risks, and effectiveness of internal controls.

1. Applied IT Policies and Procedures

a) Data Management:

Currently, data management at BUMDesa is semi-manual, with high reliance on physical documents and the use of basic spreadsheets (such as Excel) for record keeping. There are no formal policies in place regarding data classification, security of customers' or

partners' personal data, and data destruction or retention procedures. This poses risks to data integrity, confidentiality and availability.

b) Financial System:

Financial management is done internally with a simple bookkeeping system, without the support of an integrated financial system. Procedures for recording transactions, financial reporting, and internal audits have not been optimally digitized. This opens up opportunities for human error, duplication, or even undetected data manipulation.

c) Service to Customers/Partners:

Service interactions with the community and business partners are still carried out conventionally (face-to-face and communication via WhatsApp). There is no digital platform or customer service dashboard that can speed up the transaction process, complaint reporting, or service status tracking. There is no system-based service SOP.

2. Appropriateness of IT Organizational Structure and HR Capability

BUMDesa Catu Kwero Sedana Pecatu does not yet have a special unit or position that handles Information Technology management professionally. IT functions are still additionally assigned to general operational staff, who have limited technical capacity. There are no roles such as IT Administrator, Data Officer, or Digital Business Officer, which should be established to support BUMDesa modernization.

HR training or capacity building in the digital field has not been a priority program. As a result, IT initiatives tend to be reactive and poorly planned, and only technical-practical (e.g. network installation or hardware purchase), rather than strategic.

3. IT Governance Maturity Level

BUMDesa Catu Kwero Sedana Pecatu IT Governance *Maturity Score Matrix* as summarized in the following table.

Table 2. Maturity Score

Evaluation Domain	Description of Current Condition	Score (0-5)	Notes/Recommendations
1. IT Strategic Planning	There is no IT strategic plan document yet. Procurement is ad hoc and not synchronized with long-term goals.	1	Develop an IT Master Plan that refers to business needs and digital village development.
2. IT Policies & Procedures	No formal policies are in place. IT activities are conducted without written guidelines or operational standards.	1	Create IT SOPs covering data security, system usage, and IT service management.

3. Organizational Structure & HR	There is no dedicated IT unit or officer. HR digital capability is low and there has been no technical training.	1	Appoint an IT focal point and conduct basic digital training for all board members.
4. IT Risk Management & Information Security	No adequate security system; no risk register or IT risk mapping.	0	Identify IT risks and establish basic mitigation procedures (e.g. password policy, backup).
5. IT System Monitoring & Evaluation	No tools or systems in place to monitor IT performance or assess system effectiveness.	0	Establish an IT reporting and internal audit system on a regular basis, at least annually.

Average IT Maturity Score:

Average = $(1+1+1+0+0)/5=0.6 \approx \text{Level 1 - Initial}$

Referring to the COBIT 2019 framework or the general maturity model approach, BUMDesa Catu Kwero Sedana Pecatu's IT governance maturity level is currently at IT maturity level Level 1 (Initial), which means IT practices are still ad hoc, undocumented, and not yet integrated in institutional management. This indicates institutional risks and governance gaps that can impact service effectiveness, data security, and business sustainability. In general, the conditions of planning, implementation, and evaluation are as follows.

- **Planning:** There is no written IT strategic plan that is in line with BUMDesa's business vision. IT procurement is done based on short-term needs and is ad hoc.
- **Implementation:** IT implementation is limited to the procurement of basic equipment such as computers, printers, and internet connections. There is no integrated information system between business units.
- **Evaluation:** There are no specific performance indicators (KPIs) or evaluation methods for IT system performance. IT success is assessed based on the smooth use of tools, not effectiveness in achieving business goals.

4. Identification of Significant IT Risks

The identification of significant information technology (IT) risks at BUMDesa Catu Kwero Sedana Pecatu revealed challenges that could potentially hinder the effectiveness of IT governance. The first risk detected was a delay in the development of an application for the Waste Management Business Unit, caused by weak project supervision and complete reliance on a third party. The impact is very significant as it directly affects operational performance. For mitigation, it is necessary to implement internal controls in the form of periodic audits of project progress, work agreements with strict SLAs, and transparent vendor evaluations.

The second risk is inaccuracy in the calculation of Cost of Goods Sold (COGS) due to limited features in the OXY system used in the Trade and Services Business Unit. This causes financial reporting errors and hampers business decision making. Recommended internal controls are accounting staff training, the application of manual SOPs as a backup, as well as the possibility of system reconfiguration or replacement of a more suitable application.

Furthermore, there is a serious risk related to the unavailability of a data backup and recovery policy, which risks causing the loss of important data. Mitigation can be done by implementing an automated backup system, storing data in a separate or cloud-based location, and conducting periodic data recovery simulations.

In addition, over-reliance on technology vendors without internal technical documentation is also a major risk. Internal controls for this condition include the obligation of the system provider to submit complete documentation, involvement of internal staff in the implementation process, and inclusion of an exit strategy in the cooperation contract.

Other risks include the lack of stakeholder involvement in IT decision-making, which causes IT solutions to be less in line with operational needs. This can be minimized by organizing IT evaluation forums involving all business units, as well as systematically documenting user needs.

There is also a risk of violation of customer data privacy and security, arising from the absence of a formal data protection policy. For this reason, it is necessary to immediately develop and socialize a privacy policy, equipped with role-based system access restrictions, and routine monitoring of access logs.

Finally, a strategic risk is the absence of information technology to optimally support business objectives, due to the absence of an integrated IT strategic plan. For mitigation, it is important for BUMDesa to develop IT strategic and operational plans that are aligned with business needs, and integrate IT evaluation into organizational performance indicators. Through proper internal control, these risks can be controlled so that IT governance becomes more adaptive, accountable and strategic.

The following is the IT Risk Matrix for BUMDesa Catu Kwero Sedana Pecatu, which includes aspects of: *risk description, likelihood, impact, risk level, and mitigation strategy.*

Table 3. IT Risk Matrix

No	IT Risk Description	Likelihood	Impact	Risk Level	Mitigation Strategy
1	Delay in developing waste management business unit applications	High	High	High	Regular project progress audits, vendor evaluations, SLA agreements and penalties
2	Inaccuracy of COGS determination due to OXY system limitations	Medium	High	High	System reconfiguration, SOP manual preparation, staff training

3	Unavailability of data backup and recovery policy	High	High	High	Implementation of automatic backup, external/cloud storage, disaster recovery simulation
4	Over-reliance on third-party vendors	High	Medium	High	Mandatory technical documentation, internal staff engagement, exit strategy agreement
5	Lack of stakeholder involvement in IT decision making	Medium	Medium	Medium	Periodic IT evaluation forum, user survey, user needs documentation
6	Potential breach of customer data privacy and security	Medium	High	High	Data protection policy, access restriction, system log monitoring
7	IT does not support business objectives effectively	High	Medium	High	Development of IT strategic plan, strengthening the role of IT in business planning

Risk Level Description:

- Low: Not significant, acceptable.
- Medium: Needs management attention, mitigation in place.
- High: Requires immediate action and top priority.

5. Effectiveness of IT Internal Controls

Table 4. Effectiveness of IT Internal Controls

Internal Control Aspect	Current Condition	Risks Faced
System Security	No password policy, no separate login system for each user	Risk of unauthorized access or misuse of data
Data Backup	There is no routine backup system (either manual or automatic)	Permanent data loss in case of damage
Access Authorization	No role-based access rights structure	Potential for unauthorized data modification
Transaction Monitoring	No log system or user activity tracking available	Difficult to audit transactions or detect anomalies

CONCLUSION

Based on the research results above, it can be concluded that the current maturity level of BUMDesa Catu Kwero Sedana Pecatu's IT governance is at IT maturity level 1 (Initial), which means that IT practices are still ad hoc, undocumented, and not yet integrated in

institutional management. This indicates institutional risks and governance gaps that can impact service effectiveness, data security, and business sustainability. Some recommendations that can be given to the manager of BUMDesa Catu Kwero Sedana Pecatu, including: 1) Develop formal and comprehensive IT policies and SOPs. 2) Appoint or recruit specialized IT human resources, at least on a part-time or outsourced basis. 3) Develop an IT strategic plan (IT Master Plan) based on medium and long term needs. 4) Establish a basic data backup and security system, and implement access control. 5) Conduct digital literacy training for BUMDesa business unit managers and operators. 6) Implementation of basic systems: such as accounting software, customer database, and cloud backup. 7) IT annual monitoring and audit: with system performance, compliance, and risk indicators.

REFERENCES

- Ali, S., & Green, P. (2012). Effective information technology (IT) governance mechanisms: An IT outsourcing perspective. *Information Systems Frontiers*, 14(2), 179–193. <https://doi.org/10.1007/s10796-009-9183-y>
- Caralli, R. A., Stevens, J. F., Willke, B. J., & Wilson, W. R. (2012). *Introducing OCTAVE Allegro: Improving the information security risk assessment process*. Carnegie Mellon University.
- De Haes, S., & Van Grembergen, W. (2015). *Enterprise governance of information technology: Achieving alignment and value, featuring COBIT 5*. Springer.
- Gelinas, U. J., Dull, R. B., & Wheeler, P. R. (2018). *Accounting information systems*. Cengage Learning.
- Gurgu, E., Podgoreanu, R.I., & Dragan, M. (2024). Beyond Compliance: Harnessing the Power of Internal Public Audits for Sustainability Management Excellence. https://www.researchgate.net/profile/Kolawole-Kazeem-4/publication/385089953_Workers%27_Perceptions_of_Social_Security_Social_Opportunities_and_The_Challenges_in_Hotel_Employment/links/6716d8d8035917754c143b3c/Workers-Perceptions-of-Social-Security-Social-Opportunities-and-The-Challenges-in-Hotel-Employment.pdf#page=108.
- ISACA. (2018). *COBIT 2019 framework: Introduction and methodology*. ISACA.
- Kumari, R. (2024). Remote Audits in Public Governance. *Public Money & Management*. <https://www.tandfonline.com/doi/full/10.1080/09540962.2024.2350743>.
- Laudon, K. C., & Laudon, J. P. (2022). *Management information systems: Managing the digital firm* (17th ed.). Pearson.
- Anggraini, F. D., Sumartono, S., & Rusman, H. (2024). Information Technology Audit in Optimizing Resources and Utilization of Financial Information Systems. *TECHNOVATE: Journal of Information Technology and Strategic Innovation Management*, 1(1), 35–44.
- Winarko, T., Bakri, A. A., Susanto, E., & Sumartono, S. (2024). IT Governance Capability Analysis in Digital Service Improvement at Pizza Hut Sunset Point: COBIT 5 Approach. *TECHNOVATE: Journal of Information Technology and Strategic Innovation Management*, 1(3), 117–126.

- McBrien, S. (2024). Risk Stratification in Type 2 Diabetes Care. *European Heart Journal*.
https://academic.oup.com/eurheartj/article-abstract/45/Supplement_1/ehae666.3304/7839026.
- Peltier, T. R. (2016). *Information security policies, procedures, and standards: guidelines for effective information security management*. Auerbach Publications.
- Sunitha, R. (2023). Performance Evaluation in Insurance Using TOPSIS.
https://www.researchgate.net/profile/Sunitha-Rangantha/publication/381311229_application_of_TOPSIS_Method_in_Evaluating_performance_insurance_companies_A_case_study/links/666814bdb769e769192a0d42/application-of-TOPSIS-Method-in-Evaluating-performance-insurance-companies-A-case-study.pdf.
- Thomas, C., Roberts, H., Mökander, J., & Tsamados, A. (2024). The Case for a Broader Approach to AI Assurance. *AI & SOCIETY*.
<https://link.springer.com/article/10.1007/s00146-024-01950-y>.
- Turban, E., Pollard, C., & Wood, G. (2021). *Information technology for management: Driving digital transformation to increase local and global performance* (12th ed.). Wiley.
- Weill, P., & Ross, J. W. (2019). *IT governance: How top performers manage IT decision rights for superior results*. Harvard Business Review Press.