Indonesian Journal of Business Analytics (IJBA)
Vol.5 , No.4 (August) 2025: 3281-3296

The Influence of IT, Regulation, and SDG on the Quality of LSK Operations through BPI

Desita Budiharsanti [1*], Tukhas Shilul Imaroh [2]
Universitas Mercu Buana
Corresponding Author: Desita Budiharsanti: desitabudi@gmail.com

ARTICLEINFO

Keywords: Information Technology, Regulatory Compliance, Sustainable Development Goals, Business Process Improvement, Operational Quality, PLS-SEM

Received : 20, June
Revised : 22, July
Accepted: 21, August

©2025 Budiharsanti, Imaroh (s): This is an open-access article distributed under the termsof the Creative Commons Atribusi 4.0 Internasional.

ABSTRACT

This study aims to examine the influence of Information Technology Implementation, Regulatory Compliance, and Commitment to Sustainable Development Goals (SDGs) on Operational Quality, with a particular focus on the mediating role of Business Process Improvement (BPI). The research is motivated by the operational inefficiencies observed in certification bodies amid increasing demands for digitalization, regulatory adherence, and sustainability integration. A quantitative approach was adopted, utilizing Partial Least Squares Structural Equation Modeling (PLS-SEM) for data analysis. Data were collected through a structured survey distributed to internal stakeholders at PT XYZ, a certification organization, and analyzed using SmartPLS 4.0. The findings reveal that all three independent variables—information technology implementation, regulatory compliance, and SDG commitment—positively and significantly influence operational quality. Moreover, Business Process Improvement is found to partially mediate the relationship between each independent variable and operational quality. These results reinforce the theoretical perspective that technology, compliance, and sustainability initiatives yield optimal impact when translated into systematic process improvement efforts. It is recommended that organizations not only invest in digital systems and regulatory alignment but also redesign internal processes to holistically meet performance, efficiency, and sustainability goals.

DOI: https://doi.org/10.55927/ijba.v5i4.15287
ISSN-E: 2808-0718
https://journal.formosapublisher.org/index.php/ijba

INTRODUCTION

The rapid development of the electricity sector increasingly demands professional competence and standardized operational quality, especially in institutions responsible for certification and skills development. The Competency Certification Institute (LSK) for electrical engineering personnel has an important role in ensuring that human resources in this field meet national and international standards. In this context, operational quality is influenced by various organizational, regulatory, and technological factors. The implementation of Information Technology (IT) can improve process efficiency, transparency, and traceability. Compliance with regulations ensures that operations remain aligned with legal and safety standards, while commitment to the Sustainable Development Goals (SDGs) reflects the organization's alignment with the global sustainability agenda. However, these factors often require effective process management mechanisms to have a significant impact on operational outcomes. Business Process Improvement (BPI) offers a structured approach to optimizing workflows, reducing waste, and achieving performance excellence.

Previous research has addressed the relationship between IT adoption and operational performance, highlighting its role in process automation, decision-making accuracy, and service improvement. Studies on regulatory compliance affirm its contribution to operational consistency and risk mitigation, while research on organizational commitment to the SDGs shows its positive influence on long-term sustainability and social responsibility. In addition, BPI is recognized as a driver in aligning organizational processes with strategic goals, technology integration, and regulatory compliance. Nonetheless, most previous studies have examined these factors in isolation—whether focusing on technology adoption, regulatory frameworks, or sustainability initiatives—without integrating them into a holistic operational improvement model. Few studies have specifically examined the role of BPI mediation in translating these factors into a real improvement in operational quality, especially in LSK electrical engineering personnel.

This research seeks to overcome these limitations by integrating IT implementation, regulatory compliance, and commitment to the SDGs in one research framework, with BPI as a mediating variable to improve operational quality. This study fills the literature gap by applying this model to the context of PT XYZ's electrical engineering LSK, which is still rarely studied empirically. Therefore, this study aims to analyze the influence of IT implementation, regulatory compliance, and commitment to the SDGs on operational quality through BPI as a mediating factor. The objectives of this study are: (1) evaluating the influence of each factor on operational quality, (2) examining the role of BPI mediation, and (3) providing recommendations to improve operational quality in LSK of electrical engineering personnel.

METHOD

This study uses a quantitative causal design with an explanatory approach to examine the cause-and-effect relationship between independent variables, namely Information Technology Implementation, Regulatory Compliance, and Commitment to SDGs, to the dependent variable of Operational Quality, and Business Process Improvement (BPI) as the mediating variable.

The research population is all personnel involved in the certification process at the PT XYZ Electrical Engineering Personnel Competency Certification Institute, including assessors, administrative staff, quality management, and implementing technicians. Samples were taken using purposive sampling based on criteria: active in the certification process for at least one year, have roles related to certification operations, and willing to fill out a complete questionnaire. The number of samples was adjusted to the needs of PLS-SEM analysis, which was a minimum of 60 to 120 respondents.

Data collection was carried out through a closed questionnaire based on a 5-point Likert scale, which was distributed online using Google Form. In addition to primary data, secondary data such as internal audit reports and customer satisfaction surveys are also collected as a complement.

Data analysis used the Partial Least Squares Structural Equation Modeling (PLS-SEM) method with the help of SmartPLS software to test the direct relationship and mediation between variables. The analysis began with descriptive statistics to see the characteristics of the data, followed by testing the validity and reliability of the indicators, as well as testing the structural model through R-square values, effect size, predictive relevance, and significance of relationship paths (t-statistics).

RESULT AND DISCUSSION

Respondent Characteristics

This study involved 120 respondents who had filled out a complete questionnaire. Table 1 shows the profile of respondents by age, length of service, and job title.

Table 1. Respondent Characteristics

Characteristics	Category	Frequency	Percentage (%)
Age	21–30 years	18	15,0
	31–40 years	28	23,3
	41–50 years	54	45,0
	>50 years	20	16,7
Tenure	1 years	12	10,0
	2 years	20	16,7
	3 years	26	21,7
	4 years	24	20,0

Characteristics	Category	Frequency	Percentage (%)
	≥5 years	38	31,6
Position	Adviser	48	40,0
	Operational Staff	22	18,3
	Technical Person in Charge	16	13,3
	Administration	14	11,7
	Finance/Accounting	12	10,0
	IT Division	8	6,7

Source: Survey data, 2025

Descriptive Analysis of Variables

The research measures five key variables: Technology Implementation, Regulatory Compliance, SDG Commitment, Business Process Improvement, and Operational Quality. Descriptive statistics in the form of averages and standard deviations for each indicator are presented in Table 2 to Table 4.

Table 2. Descriptive Statistics of Technology Implementation and Regulatory Compliance

Indicator	Statement	Average	Std. Dev.
X1.1	Easy access to information trough the system	4,03	0,92
X1.2	Digitized services and integrated with SOP	3,92	0,92
X1.3	The system is capable of storing and tracking document revisions	3,97	0,94
X2.1	Annual picking test according to the guidelines and competencies of certified personnel	3,97	0,97
X2.2	Routine training related to quality regulation is carried out	3,94	0,90

Source: Survey data, 2025

The results show that respondents generally agree with the ease of access to information and integration of digital services, in accordance with the findings of Lee & Chen (2021) which emphasizes digitalization as a factor for increasing operational efficiency. Compliance with regulations is also quite good, in line with the concept of regulatory compliance according to Johnson (2018).

Table 3. Descriptive Statistics on SDG Commitments and Business Process Improvement

Indicator	Statement	Average	Std. Dev.
X3.1	Commitment to developing a sustainable quality system	4,01	0,94
X3.2	Transparent and accountable certification process	3,96	0,91
Z1	The work process is regularly reviewed and adjusted	4,01	0,89

Indicator	Statement	Average	Std. Dev.
Z2	Competency test improvements based on audits and feedback	4,32	0,78

Source: Survey data, 2025

The highest score on the competency test improvement indicator (4.32) reflects a culture of continuous improvement according to the principle of total quality management (Deming, 1986).

Table 4. Descriptive Statistics of Operational Quality

Indicator	Statement	Average	Std. Dev.
Y1	Service according to quality standards and time	4,41	0,78
Y2	Customer satisfaction survey results are used for service improvement	3,79	0,91
Y3	Customers are believed to be satisfied with the certification process	4,21	0,81

Sumber: Data survei, 2025

The high quality of service (4.41) indicates the seriousness of the institution in meeting service standards, supporting the findings of Garcia et al. (2020). However, the use of survey results for improvement still needs to be improved, in line with the importance of customer feedback in service quality management (Brown & Taylor, 2017).

PLS-SEM Test Results

Uji Outer Model

The outer model tests the direct relationship between the latent construct and the indicator that measures it. Testing the validity and reliability of the instrument is carried out as a first step.

Convergent Validity is tested through outer loading and Average Variance Extracted (AVE) values. According to Hair et al. (2021), the indicator is valid if the outer loading value is > 0.70 and AVE > 0.50.

Table 5. Outer Loading Test Results

Variabel	Indicator	Outer Loading	Result
IT Implementation	X1_1	0,937	Valid
	X1_2	0,923	Valid
	X1_3	0,897	Valid
Regulatory Compliance	X2_2	0,943	Valid
	X2_3	0,952	Valid
SDG Commitment	X3_1	0,932	Valid
	X3_2	0,931	Valid
	Y1	0,891	Valid

Variabel	Indicator	Outer Loading	Result
	Y2	0,837	Valid
	Y3	0,858	Valid
Business Process Improvement	Z2	0,926	Valid
	Z3	0,923	Valid

The results showed that all indicators had an outer loading above 0.70, indicating good convergent validity and the ability of the indicator to accurately represent constructs.

Table 6. Average Variance Extracted (AVE) Test Results

Variabel	AVE	Validity Results
Business Process Improvement	0,855	Valid
IT Implementation	0,845	Valid
Regulatory Compliance	0,898	Valid
SDG Commitment	0,868	Valid
Operational Quality	0,744	Valid

All constructs have an AVE > 0.50, so the convergent validity is strongly met. Discriminant Validity was tested using the Fornell-Larcker and Heterotrait-Monotrait Ratio (HTMT) methods.

Table 7. Fornell-Larcker Criterion Results

Variabel	BPI	IT	Compliance	Commitment	Quality
Business Process Improvement	0,925				
IT Implementation	0,623	0,919			
Regulatory Compliance	0,606	0,434	0,948		
SDG Commitment	0,636	0,536	0,530	0,932	
Operational Quality	0,728	0,633	0,686	0,688	0,862

The diagonal value (square root of the AVE) is higher than the correlation between variables, indicating that the discriminant validity is met.

Tabel 8. Heterotrait-Monotrait Ratio Results (HTMT)

Variabel	BPI	IT	Compliance	Commitment
Business Process Improvement				
IT Implementation	0,715			
Regulatory Compliance	0,705	0,483		
SDG Commitment	0,758	0,612	0,609	
Operational Quality	0,878	0,731	0,800	0,821

All HTMT values were below 0.90, indicating no discriminant validity issues. Reliability was tested using Cronbach's Alpha and Composite Reliability (rho_A).

Table 9. Reliability Test Results

Variabel	Cronbach's Alpha	rho_A	Results
Business Process Improvement	0,830	0,831	Reliabel
IT Implementation	0,908	0,912	Reliabel
Regulatory Compliance	0,887	0,891	Reliabel
SDG Commitment	0,848	0,848	Reliabel
Operational Quality	0,827	0,828	Reliabel

All variables had a reliability value of > 0.70, indicating good internal consistency.

Uji Inner Model

Internal model evaluation was carried out to determine the strength of the relationship between constructs and model prediction capabilities.

Table 10. R Square Test Results

Variabel	R Square	Interpretations
Business Process Improvement	0,58	Moderat
Operational Quality	0,70	Moderat

The R^2 value indicates that the model is able to explain the variance of the dependent variables quite well.

Table 11. f Square Test Results

Relationship	f^2	Interpretation
IT Implementation → BPI	0,178	Keep
Regulatory Compliance→ BPI	0,153	Keep
SDG Commitment→ BPI	0,127	Small
Implementasi IT → Operational Quality	0,083	Small
Regulatory Compliance → Operational Quality	0,192	Keep
SDG Commitment → Operational Quality	0,115	Small
BPI → Operational Quality	0,086	Small

Most of the effects are in the small to medium category, especially IT implementation and regulatory compliance for business process improvement.

Table 12. Q Square Test Results

Variabel	Q Square	Interpreation
Business Process Improvement	0,484	Strong
Operational Quality	0,504	Strong

A Q^2 value of > 0 indicates that the model has good predictive ability.

Table 13. VIF Test Results

Variabel	Indicator	VIF	Results
IT Implementation	X1_1	3,66	Collinearity-free
	X1_2	3,11	Collinearity-free
	X1_3	2,64	Collinearity-free
Regulatory Compliance	X2_1	2,73	Collinearity-free
	X2_2	2,73	Collinearity-free
SDG Commitment	X3_1	2,19	Collinearity-free
	X3_2	2,19	Bebas kolinearitas
Operational Quality	Y1	2,24	Collinearity-free
	Y2	1,73	Collinearity-free
	Y3	1,91	Collinearity-free
Business Process Improvement	Z2	2,02	Collinearity-free
	Z3	2,02	Collinearity-free

A VIF value below 5 indicates no multicollinearity problem.

Table 14. Model Fit Test Results (SRMR)

Model	SRMR
Saturated Model	0,047
Estimated Model	0,047

The SRMR value < 0.08 indicates a fit model with the data.

Uji Hypothesis

Hypothesis testing in this study uses the bootstrapping method, which is a resampling technique to estimate the significance of the relationship between variables in a structural model. The test criteria were a t-statistical value > 1.65 and a p-value < 0.05 at a significance level of 5% (Hair et al., 2021).

Direct Contact Test Results

Table 15. Direct Contact Test Results

Hipotesis	Direct Connection	Original Sample (O)	t Statistik	p Value	Results
H1	IT Implementation → Business Process Improvement	0,331	4,628	0,000	Accepted
H2	Regulatory Compliance → Business Process Improvement	0,305	4,209	0,000	Accepted
H3	SDG Commitment → Business Process Improvement	0,297	4,063	0,000	Accepted

Hipotesis	Direct Connection	Original Sample (O)	t Statistik	p Value	Results
H4	IT Implementation → Operational Quality	0,208	3,520	0,000	Accepted
H5	Regulatory Compliance → Operational Quality	0,311	4,266	0,000	Accepted
H6	SDG Commitment → Operational Quality	0,254	3,691	0,000	Accepted
H7	Business Process Improvement → Operational Quality	0,248	3,345	0,000	Accepted

The test results showed that the entire direct relationship between variables had a statistically significant influence. The implementation of Information Technology, Regulatory Compliance, and Commitment to the SDGs have a positive and significant effect on Business Process Improvement with a t-statistical value of > 4 and a p-value of < 0.001. These three variables also have a significant direct effect on Operational Quality. In addition, Business Process Improvement has a positive and significant influence on Operational Quality. Thus, all hypotheses related to direct relationships are accepted.

Indirect Relationship Test Results (Mediation)

Table 16. Indirect Relationship Test Results

Mediasi Hypothesis	Indirect Relationships	Original Sample (O)	t Statistik	p Value	Results	Types of Mediation
H8	IIT Implementation → BPI → Operational Quality	0,082	2,673	0,004	Accepted	Partial
H9	Regulatory Compliance → BPI → Operational Quality	0,076	2,619	0,004	Accepted	Partial
H10	SDG Commitment → BPI → Operational Quality	0,074	2,456	0,007	Accepted	Partial

The results of the indirect relationship test show that Business Process Improvement significantly mediates the influence of IT Implementation, Regulatory Compliance, and SDG Commitment on Operational Quality. The t-statistical value of all mediations above 2.4 with a p-value < 0.01, indicates significant partial mediation. This means that business process improvement is an important mechanism in strengthening the influence of the three exogenous variables on operational quality.

DISCUSSION OF RESEARCH RESULTS

The Influence of IT Implementation on Business Process Improvement

The results of the analysis showed that the Implementation of Information Technology (IT) had a positive and significant influence on Business Process Improvement (BPI), with a coefficient of 0.331 and a t-statistic of 4.628 ($p < 0.001$). The more optimal the application of IT in the institution, the higher the effectiveness of improving the business processes that are carried out.

These findings reinforce the view that IT is not just an administrative tool, but plays a role as a strategic enabler in business process transformation (Davenport & Short, 2019). In line with the Technology Acceptance Model (TAM) from Davis (1989), the perception of the ease and usability of technology increases system adoption, accelerates digitalization and simplification of workflows.

In the context of certification bodies such as PT XYZ, the implementation of ERP, online forms, and cloud-based data management increases the efficiency of processes from registration, competency tests, to reporting. This support is in accordance with DeLone & McLean (2003) who emphasized the importance of information system quality in supporting real-time control, integration between units, and reduction of manual errors.

In addition, the study of Al-Wahid et al. (2024) found that IT investments significantly improve surveillance effectiveness and operational efficiency through metadata and integrated information systems. Thus, IT encourages institutions to be more agile, digitalized, and adaptive in improving service quality.

The Effect of Regulatory Compliance on Business Process Improvement

Compliance with regulations had a significant effect on BPI with a coefficient of 0.305 and a t-statistic of 4.209 ($p < 0.001$). This shows that compliance with quality regulations—internal audits, periodic training, and certification standards—contributes directly to the effectiveness of business process improvement.

These findings affirm the compliance-driven quality improvement approach (Parker & Nielsen, 2011). Regulations such as ISO 9001:2015 and the Minister of Energy and Mineral Resources Regulation No. 6 of 2021 are not just administrative guidelines, but a framework for documented, measurable, and continuous improvement-oriented processes.

Regulations provide a formal structure in the form of audits, documentation, and quality control that encourages systematic evaluation (Tajuddin et al., 2020). Compliant organizations tend to redesign processes according to regulatory rules, improving process alignment and structural efficiency.

The support of the study Gunawan et al. (2021) confirms that adaptive regulation and discipline accelerate the adoption of process improvement practices. At PT XYZ, the gap between regulation and real practice triggers a thorough evaluation, making regulatory compliance the main trigger for BPI.

The Influence of SDG Commitment on Business Process Improvement

Commitment to the Sustainable Development Goals (SDG) had a significant positive effect on BPI (coefficient of 0.297, t-statistic 4.063, $p < 0.001$). This supports the framework of the Triple Bottom Line (Elkington, 1997), that organizations that pay attention to economic, social, and environmental aspects are encouraged to carry out internal reforms for the sake of long-term sustainability.

The integration of SDG principles into strategies encourages organizations to redesign processes to be inclusive, transparent, and efficient (Lozano et al., 2019). The implementation of the SDGs encourages the use of environmentally friendly technology, digitization of services, and performance evaluation based on sustainability indicators.

At PT XYZ, the digitalization of customer surveys and external quality reporting initiatives reflect the SDG commitments. These findings are consistent with Moldavska & Welo (2019), which suggests organizations with a high sustainability commitment are more likely to implement systemically innovative and efficient processes.

Thus, the integration of SDG values strengthens the implementation of BPI in realizing adaptive and long-term oriented business processes.

The Influence of IT Implementation on Operational Quality

IT implementation has a significant positive effect on operational quality (coefficient 0.208, t-statistic 3.520, $p < 0.001$). These findings support the Information System Success Model DeLone & McLean (2003), which states that information system quality and user satisfaction are key to improving operational performance.

At PT XYZ, ERP, cloud storage, and digital forms reduce processing time, reduce manual errors, and improve service speed and accuracy.

IT acts as a catalyst for work system improvement through data integration, automation, and real-time monitoring, in line with the findings of Toni et al. (2020) and Tian et al. (2021). A good IT infrastructure allows for the elimination of redundant processes and the creation of lean operations, improving service quality.

The Effect of Regulatory Compliance on Operational Quality

Compliance with regulations had a significant positive effect on operational quality (coefficient 0.311, t-statistic 4.266, $p < 0.001$). This strengthens the regulatory compliance framework as a driver of organizational quality systems (OECD, 2020; Parker & Nielsen, 2011).

Regulations such as ISO 9001:2015 and the Minister of Energy and Mineral Resources Regulation No. 6 of 2021 are structural references for standard, documented, and measurable work processes. Risk-based internal audits, document controls, and training strengthen operational consistency and service quality (Abdelrahim & Al-Malkawi, 2022).

At PT XYZ, improving compliance through ISO audits and digitization of quality documents improves service quality on an ongoing basis. Tajuddin et al.

(2020) affirm that strategic compliance reduces operational errors and increases efficiency.

The Influence of SDG Commitment on Operational Quality

SDG commitment has a significant positive effect on operational quality (coefficient of 0.254, t-statistic 3.691, $p < 0.001$). This is in line with the Triple Bottom Line principle (Elkington, 1997) that organizations that balance economic, social, and environmental aspects create efficient, accountable, and sustainable work processes.

The SDG commitment encourages process digitalization, energy efficiency, stakeholder participation, and transparent reporting. The studies of Lozano (2019) and Moldavska & Welo (2019) show that the adoption of sustainability principles improves service performance and organizational responsiveness.

At PT XYZ, digital surveys and cloud-based forms strengthen the traceability and speed of services, supported by a study by Guarini et al. (2022) that emphasizes the role of SDGs in efficient and accountable public management.

The Effect of Business Process Improvement on Operational Quality

Business Process Improvement (BPI) had a significant positive effect on operational quality (coefficient of 0.248, t-statistic of 3.345, $p < 0.001$). This is consistent with Slack & Lewis' (2008) process-based quality management theory, that operational quality is the output of efficient and consistent internal processes.

BPI includes bottleneck identification, procedure simplification, technology integration, and performance evaluation, which are relevant to address the problems of audit delays, documentation errors, and reporting inefficiencies at PT XYZ. Hananta & Susyanti (2024) show that BPI improves punctuality, yield accuracy, and user satisfaction.

The Effect of Business Process Improvement Mediation on the Relationship between IT Implementation and Operational Quality

BPI mediated the influence of IT Implementation on operational quality significantly (indirect effect 0.082, t-statistic 2.673, p 0.004), indicating partial mediation. IT has a direct impact on service quality and also strengthens its influence through business process improvement.

This is in accordance with the literature that IT is optimal when supported by BPI (Davenport & Short, 2019; Zhu et al., 2021). BPI remaps workflows, eliminates redundancy, and aligns IT with efficient process needs.

The study by Al-Wahid et al. (2024) emphasizes the optimal integration of information systems when accompanied by strengthening business processes. At PT XYZ, technologies such as ERP and cloud storage improve accuracy and efficiency, reinforced by BPI which ensures the use of structured and consistent technology.

The Effect of Business Process Improvement Mediation on the Relationship between Regulatory Compliance and Operational Quality

BPI mediated the effect of regulatory compliance on operational quality significantly (indirect effect 0.076, t-statistic 2.619, p 0.004), strengthening the effect of regulation through efficient and integrated work processes.

Regulations such as ISO 9001:2015 and the Minister of Energy and Mineral Resources Regulation No. 6 of 2021 provide a documentation and audit framework that encourages SOPs and strengthens accountability (Abdelrahim & Al-Malkawi, 2022). Compliance directly impacts service quality, and BPI optimizes it through digitization of SOPs, elimination of duplicate processes, and technology-based quality systems (Parker & Nielsen, 2011).

The study of Alshahrani & Husain (2023) and Bakhtiar et al. (2023) confirms that consistent ISO procedures and a strong quality culture improve operational quality and efficiency.

The Effect of Business Process Improvement Mediation on the Relationship between SDG Commitment and Operational Quality

BPI mediated the influence of SDG Commitments on operational quality significantly (indirect effect 0.074, t-statistic 2.456, p 0.007). Organizations with a strong commitment to the SDGs transform business processes that improve service quality.

The SDG commitment promotes energy efficiency, transparency, and accountable governance, which directly improves operational quality. Through BPI, sustainability values translate into more streamlined and digitized processes, such as digitization of forms and participatory quality evaluation.

The study by Guarini et al. (2022) supports the finding that SDG integration strengthens the legitimacy, accountability, and efficiency of public services. Thus, BPI becomes a strategic instrument that actualizes the SDG value in real and measurable operational excellence

CONCLUSION

This study reveals that the application of information technology, regulatory compliance, and commitment to the Sustainable Development Goals (SDG) significantly affect the improvement of business processes and operational quality in certification bodies. The application of digital technology not only increases efficiency and accuracy, but also becomes a key driver in the adaptive and sustainable transformation of business processes. Regulatory compliance provides a robust framework for maintaining quality standards and operational consistency. Meanwhile, the orientation towards sustainability through the SDGs encourages institutions to carry out internal reforms that are more responsible and transparent. Business process improvement plays an important role as a link between these factors and improving operational quality, confirming that systematic and continuous improvement is the key to the success of the organization in the face of increasingly high demands for service quality.

ACKNOWLEDGMENT

The author would like to express his deepest gratitude to all parties who have helped and supported this research. Special appreciation was conveyed to Mrs. Dr. Tukhas Shilul Imaroh, MM, as the Supervisor who has provided very meaningful guidance, direction, and scientific support.

Thank you also to the institution or sponsor party who has provided financial support so that this research can be carried out properly. The author also thanks the leadership and staff at the PT XYZ Certification Body for providing permission, time, and access for data collection. Not to forget, thanks are extended to the proofreading team and typists who helped in the refinement of the manuscript as well as friends who provided moral and technical support during the research process. Lastly, the author really appreciates the support and prayers of his beloved family who always give him endless encouragement. Hopefully all this help and support will get the best reply from God Almighty.

REFERENCES

Abdelrahim, A., & Al-Malkawi, H.-A. N. (2022). The influential factors of internal audit effectiveness: A conceptual model. *International Journal of Financial Studies, 10*(3), Article 71. https://doi.org/10.3390/ijfs10030071

Alshahrani, M. A., & Husain, K. S. (2023). The effectiveness of the implementation of ISO 9001 on SMEs performance: the case of an emerging economy. International Journal of Quality & Reliability Management, 41(1), 84–106. https://doi.org/10.1108/IJQRM-08-2022-0233

Al-Wahid, S. A., Mohammad, N., Islam, R., Faisal, M. H., & Rana, M. S. (2024). Evaluation of information technology implementation for business goal improvement under process functionality in economic development. Journal of Data Analysis and Information Processing, 12(2), Article 17. https://doi.org/10.4236/jdaip.2024.122017

Bakhtiar, A., Nugraha, A., Suliantoro, H., & Pujotomo, D. (2023). The effect of quality management system (ISO 9001) on operational performance of various organizations in Indonesia. Cogent Business & Management, 10(2), 2203304. https://doi.org/10.1080/23311975.2023.2203304

Elkington, J. (1997). Cannibals with forks: The triple bottom line of twenty-first century business. Capstone.

Gunawan, A., Syahputra, E., & Pramono, B. (2021). Regulatory flexibility and operational quality in government institutions.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). A primer on partial least squares structural equation modeling (PLS-SEM) (3rd ed.). SAGE Publications.

Lozano, R. (2019). Sustainable business models: Providing a more holistic perspective. Business Strategy and the Environment, 27(8), 1159–1166. https://doi.org/10.1002/bse.2059

Moldavska, A., & Welo, T. (2019). A holistic approach to corporate sustainability assessment: Incorporating sustainable development goals into sustainable manufacturing performance evaluation. Journal of Manufacturing Systems, 50, 53–68. https://doi.org/10.1016/j.jmsy.2018.11.004.

Parker, C., & Nielsen, V. L. (2011). *Deterrence and the impact of calculative thinking on business compliance with competition and consumer regulation*. *The Antitrust Bulletin, 56*(2), 377–426. https://doi.org/10.1177/0003603X1105600207

Slack, N., & Lewis, M. (2008). *Operations Strategy* (2nd ed.). Harlow, UK: Financial Times Prentice Hall.

Tarigan, Z. J. H., Siagian, H., & Sebayang, P. (2020). The impact of implementing enterprise resources planning (ERP) project on firm performance and organizational citizenship behavior as a moderating. Journal of Project Management, 5, 227–236. https://doi.org/10.5267/j.jpm.2020.8.001

Tian, M., Chen, Y., Tian, G., Huang, W., & Hu, C. (2023). The role of digital transformation practices in the operations improvement in manufacturing firms: A practice-based view. *International Journal of Production Economics, 262*, 108776. https://doi.org/10.1016/j.ijpe.2023.108776

Toni, A. A., Husain, K. S. M., & Yaqub, M. Z. (2025). *The effect of Information Technology Implementation on retail manufacturer's operational performance: A moderated serial mediation model*. Journal of Information Systems Engineering and Management, 10(12s), Article 1853.https://doi.org/10.52783/jisem.v10i12s.1853.