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Scenario Planning for Knowledge Management Implementation in Improving Employee Performance

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Abstract

The Indonesian plastic distribution industry continues to grow, yet Indonesia's logistics performance index ranking has actually declined from 46th in 2018 to 61st in 2023, requiring plastic distribution companies such as PT. XYZ to manage their organizational knowledge more systematically in order to sustain competitiveness. This study aims to analyze the existing conditions of employee performance and knowledge management implementation, identify the factors influencing employee performance, and design an effective knowledge management implementation scenario to improve employee performance. This study employed a mixed-methods approach involving all 58 employees. Data were analyzed using descriptive statistics, SEM-PLS based on the SECI model (socialization, externalization, combination, internalization), and scenario planning using the TAIDA method. The descriptive analysis results showed that all knowledge management elements and employee performance fell into the moderate-to-high category. The SEM-PLS results showed that only Internalization had a positive effect on employee performance, while socialization, externalization, and combination did not show a significant effect. Based on these findings, the integrated knowledge management scenario is recommended as a knowledge management implementation strategy that comprehensively integrates all four SECI processes to sustainably support the improvement of employee performance.

Keywords

Employee Performance, Knowledge Management, Scenario Planning, SECI Model.

1. Introduction

The plastics industry is a strategic sector in Indonesia's economy because it supports a wide range of downstream industries, including packaging, food and beverages, automotive, construction, and consumer goods. Indonesia's plastics market was valued at approximately USD 8.3 billion in 2025 and is projected to reach USD 14.1 billion by 2034, with a compound annual growth rate of 6.04%. This growth is driven by economic expansion, urbanization, manufacturing activities, and increasing e-commerce penetration, which continue to stimulate demand for plastic products and packaging (IMARC Group, 2026). Java, particularly Jakarta, plays an important role in plastic distribution because of its relatively developed logistics and supply chain infrastructure. However, market growth also increases operational complexity, requiring distributors to coordinate suppliers, inventory, transportation, and customer demand efficiently.

Despite the growth of the plastics industry, Indonesia's logistics sector continues to face structural challenges. Indonesia's Logistics Performance Index (LPI) ranking declined from 46th in 2018 to 61st out of 139 countries in 2023, highlighting continuing challenges in logistics infrastructure, customs, tracking and tracing, and service quality (The Jakarta Post, 2023; Tempo.co, 2023). These conditions can create additional pressure for companies that depend on efficient supply chain coordination. For plastics distributors, disruptions in product availability, fluctuations in raw material prices, changes in customer demand, and delivery constraints require employees to make timely decisions and adapt to changing conditions. Therefore, employee performance is increasingly influenced not only by physical and technological resources but also by the organization's ability to manage and utilize knowledge effectively (Pelealu, 2022).

Knowledge management provides an important organizational mechanism for developing employee capabilities and supporting performance. Nonaka et al. (1996) explained that organizational knowledge is continuously created through interactions between tacit and explicit knowledge, a process represented by the Socialization, Externalization, Combination, and Internalization (SECI) model. Socialization enables employees to share tacit knowledge through direct interaction and experience, while Externalization converts tacit knowledge into explicit knowledge that can be communicated and documented. Combination integrates existing explicit knowledge, whereas Internalization allows employees to transform explicit knowledge into practical skills and experience. The SECI framework is therefore particularly relevant to organizations whose operations depend on the continuous exchange, documentation, and application of employee knowledge (Farnese et al., 2019).

Empirical research has demonstrated the relevance of knowledge management to employee and organizational outcomes. Panayotopoulou et al. (2010) and Mahmoud et al. (2018) found that knowledge management practices based on the SECI model can support employee performance and organizational development. Farnese et al. (2019) further demonstrated that SECI processes can be operationalized to examine knowledge creation and its relationship with organizational outcomes. Pelealu (2022) reported that knowledge management systems and knowledge sharing have significant positive relationships with employee performance and loyalty. In the manufacturing context, Alfa et al. (2025) and Yurizon (2026) found that innovation management and knowledge sharing contribute to competitive advantage. More recently, Shannaq et al. (2026) showed that socialization is associated with job performance through job engagement. These findings suggest that knowledge creation and sharing can play an important role in strengthening employee performance across different organizational contexts.

Nevertheless, a research gap remains regarding the application of knowledge management in plastics distribution companies, particularly in Indonesia. Previous studies have largely examined knowledge management in public-sector, general organizational, or manufacturing settings, while giving limited attention to distribution companies that connect raw material producers with manufacturing customers. In addition, previous research has largely focused on identifying relationships between knowledge management and performance, rather than translating empirical findings into a practical implementation scenario. This gap is relevant to PT. XYZ, a plastics distribution company in East Jakarta whose employees must continuously manage operational information, supplier conditions, inventory, customer requirements, pricing, and delivery processes. A systematic assessment of the SECI dimensions can therefore help identify which knowledge creation processes are most relevant to employee performance and require managerial attention (Pelealu, 2022; Alfa et al., 2025). This study aims to assess the current condition of knowledge management and employee performance at PT. XYZ, examine the associations between the four SECI dimensions socialization, externalization, combination, and internalization and employee performance, and identify the dimensions that significantly contribute to employee performance.

2. Literature Review and Hypothesis Development

2.1. Knowledge Management

Knowledge management is a systematic process of creating, sharing, using, and managing knowledge within an organization to support performance and competitiveness. The SECI model describes knowledge creation through the continuous interaction between tacit and explicit knowledge. Its four processes are socialization, externalization, combination, and internalization, which facilitate the transformation and development of organizational knowledge (Lee, 2022; Rukmana & Widhianto, 2023). Socialization is the process of transferring tacit knowledge through shared experiences, direct interaction, observation, and informal learning. Through this process, individuals acquire knowledge from others through experience rather than written materials. Sial et al. (2023) emphasized the role of employee interaction and technology in facilitating socialization and tacit knowledge sharing, while Hamid et al. (2023) highlighted knowledge creation through interactions among managers and supervisors.

Externalization refers to transforming tacit knowledge into explicit knowledge, allowing experiences and expertise to be documented, shared, and reused. Combination involves transforming and integrating existing explicit knowledge into a more systematic and complex form, thereby facilitating the dissemination and utilization of organizational information (Lee, 2022; Sudrajat & Andhika, 2025). Internalization is the process of transforming explicit knowledge into tacit knowledge through learning and practical application. Once internalized, knowledge becomes part of an individual's understanding, skills, and work practices. Satriawan and Kurniawaty (2024) and Kaur and Kaur (2025) demonstrate the relevance of the SECI processes in supporting knowledge creation and application across organizational and academic contexts. The SECI knowledge conversion model illustrates the continuous transformation between tacit and explicit knowledge through four processes: socialization, externalization, combination, and internalization, as shown in Figure 1.

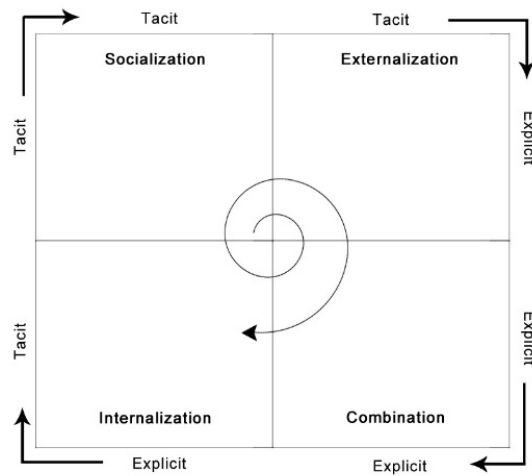


Figure 1. SECI Model

2.2. Socialization and Externalization on Employee Performance

Socialization refers to the process of transferring tacit knowledge through shared experiences, direct interaction, observation, mentoring, and learning among employees. Within the SECI framework, socialization enables employees to acquire experiential knowledge and develop shared understanding. Sial et al. (2023) found that mobile technology can facilitate employee socialization and tacit knowledge sharing, while Hamid et al. (2023) emphasized interaction and knowledge creation among managers and supervisors. In relation to employee performance, socialization can help employees learn from colleagues, solve work-related problems, and adapt to organizational practices. Hasibuan et al. (2024) specifically examined socialization in relation to employee performance, supporting its relevance as an organizational factor. Therefore, regular interaction and knowledge exchange are expected to strengthen employees' capabilities and improve performance.

Externalization involves converting tacit knowledge into explicit forms, including documents, procedures, guidelines, and organizational knowledge. Rukmana and Widhianto (2023) demonstrated the implementation of knowledge management systems through the SECI model, emphasizing systematic knowledge management. Satriawan and Kurniawaty (2024) showed that knowledge creation can occur through SECI processes, including the articulation of tacit knowledge. Sudrajat and Andhika (2025) further highlighted SECI-based knowledge management in supporting organizational innovation. Through externalization, employees can document, share, and reuse their experiences and expertise, reducing dependence on individual knowledge. Consequently, effective externalization is expected to improve access to organizational knowledge and support better employee performance.

H1: Socialization has a significant effect on employee performance.

H2: Externalization has a significant effect on employee performance.

2.3. Combination and Internalization on Employee Performance

Combination refers to the process of integrating and reorganizing explicit knowledge to produce useful knowledge. Within the SECI model, combination enables the collection, organization, and dissemination of information from different sources to support organizational activities. Lee (2022) emphasized the relevance of SECI in understanding knowledge transfer and utilization across multinational contexts. Rukmana and Widhianto (2023) also demonstrated the importance of knowledge management systems in systematically organizing knowledge through

the SECI framework. Similarly, Sudrajat and Andhika (2025) showed that SECI-based knowledge management can support innovation through knowledge integration. When employees integrate explicit knowledge, they can access the information needed to perform their tasks. Therefore, this combination is expected to strengthen employee performance by facilitating access to useful and applicable knowledge.

Internalization is the process by which employees absorb, understand, and transform explicit knowledge into tacit knowledge through learning and practical application. This process matters for employee performance because knowledge becomes valuable when employees can apply it in daily work. Kaur and Kaur (2025) explain that SECI involves continuous knowledge transformation and application within organizational contexts. Hamid et al. (2023) demonstrated the importance of knowledge creation among managers and supervisors in developing capabilities. Satriawan and Kurniawaty (2024) similarly showed that SECI-based knowledge creation supports knowledge development and application. Wu et al. (2024) further highlighted knowledge transformation through the SECI framework. Accordingly, employees who successfully internalize knowledge are expected to develop stronger competencies and improve their performance.

H3: Combination has a significant effect on employee performance.

H4: Internalization has a significant effect on employee performance.

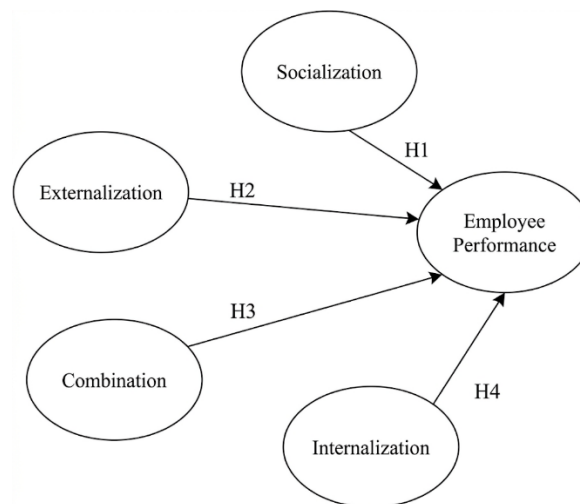


Figure 2. Conceptual Framework

Figure 2 illustrates the conceptual framework of the study, which examines the relationship between the four SECI knowledge management processes and employee performance. The framework proposes that socialization (H1), externalization (H2), combination (H3), and internalization (H4) are each associated with employee performance, as indicated by the directional arrows from each process toward the employee performance variable. This framework shows that the creation, transformation, and utilization of organizational knowledge through the SECI processes are expected to contribute to improved employee performance.

3. Methods

This study employed a mixed-methods research design to analyze knowledge management and employee performance at PT. XYZ, a plastics distribution company located in East Jakarta. The research was conducted from March to June

2026. The quantitative stage was conducted first to assess the existing conditions of knowledge management and employee performance and to examine the associations between the SECI dimensions and employee performance. The quantitative findings then served as the basis for the qualitative scenario-planning stage using the Tracking, Analyzing, Imaging, Deciding, and Acting (TAIDA) framework (Lindgren & Bandhold, 2003).

The study population consisted of all 58 employees of PT. XYZ across its branches. Because the population was relatively small and accessible, the study used a total population sampling technique, in which all 58 employees were included as respondents. Quantitative data were collected through questionnaires distributed online using Google Forms through WhatsApp groups containing employees from each branch and through offline distribution at the company locations. Primary data were also obtained through direct observation and documentation, while secondary data were collected from literature, reports from the Central Statistics Agency (*Badan Pusat Statistik/BPS*), industry reports, and other relevant sources. The questionnaire used a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The questionnaire measured five latent variables: socialization, externalization, combination, internalization, and employee performance. Each SECI construct was measured with three reflective indicators, while employee performance was measured with six indicators, for a total in 18 measurement items. Socialization covered informal experience sharing, direct discussions, and observational learning. Externalization assessed work-experience documentation, communication through formal forums, and organizational facilitation of Standard Operating Procedures (SOPs) or work guides. Combination measured the integration and use of information from written sources, data, and reports. Internalization assessed the application of training outcomes, hands-on learning, and experience-based improvements of work processes. Employee Performance covered work quantity, timeliness, accuracy, thoroughness, timely task completion, and work prioritization. All indicators were measured using a five-point Likert scale and operationalized as reflective measures based on the SECI model and employee performance concepts (Nonaka et al., 1996; Farnese et al., 2019).

Data analysis involved descriptive statistics, SEM-PLS, and TAIDA. Descriptive analysis summarized respondents' perceptions using mean and standard deviation values for each indicator and construct to assess the conditions of knowledge management and employee performance (Ghozali, 2016). SEM-PLS was conducted using SmartPLS 4.0, with socialization, externalization, combination, and internalization as exogenous constructs and employee performance as the endogenous construct. The measurement model was assessed using indicator loadings, convergent validity ($AVE \geq 0.50$), discriminant validity via cross-loadings, and construct reliability (Cronbach's Alpha and Composite Reliability ≥ 0.70), with loadings ≥ 0.70 considered acceptable (Ghozali, 2014). The structural model was evaluated using R^2 and bootstrapping, with t-statistics > 1.96 and p-values < 0.05 indicating significance at the 5% level. TAIDA was applied to identify strategic issues, analyze their causes, formulate alternative scenarios, and develop a knowledge management implementation plan for PT. XYZ (Lindgren & Bandhold, 2003).

4. Results

The respondents in this study were 58 employees at PT. XYZ. The majority of respondents were male, with a predominance of ages between 20 and 25. Furthermore, most respondents had worked for 1 to 3 years, and most were high school graduates.

Table 1. Respondents' Perceptions of Knowledge Management and Employee Performance

Construct	Item	Mean
Socialization	S1	3.552
	S2	3.845
	S3	4.207
Average Socialization		3.868
Externalization	E1	3.517
	E2	3.534
	E3	3.586
Average Externalization		3.546
Combination	C1	3.665
	C2	3.828
	C3	3.585
Average Combination		3.692
Internalization	I1	4.103
	I2	4.069
	I3	3.810
Average Internalization		3.994
Employee Performance	EP1	3.845
	EP2	3.828
	EP3	3.948
	EP4	3.770
	EP5	3.707
	EP6	3.862
Average Employee Performance		3.770

Based on Table 1, respondents' perceptions of the four SECI elements were generally high. Socialization recorded a mean of 3.868, with S3 highest (4.207) and S1 lowest (3.552). Externalization had the lowest mean (3.546), with E3 highest (3.586) and E1 lowest (3.517). Combination averaged 3.692, with C2 highest (3.828) and C3 lowest (3.585). Internalization obtained the highest mean (3.994), with I1 highest (4.103) and I3 lowest (3.810). Employee performance was also perceived as high, with an average of 3.770. EP3 recorded the highest mean (3.948), while EP5 was the lowest (3.707).

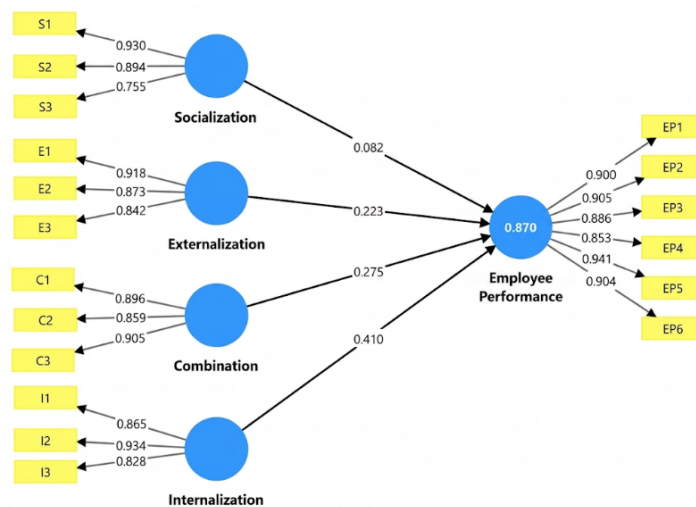


Figure 3. SEM Model Analysis

Figure 3 shows the measurement and structural model involving five latent constructs: four elements of the SECI model and one outcome construct, employee performance. Indicator reliability was assessed through factor loading analysis,

which reflects the strength of the relationship between each indicator and its respective construct. Indicators with loading factor values of ≥ 0.7 are considered acceptable. As shown in Figure 3, all indicators met this criterion, with loading factors ranging from 0.755 to 0.941. For socialization, the loading factors were S1 (0.930), S2 (0.894), and S3 (0.755); for externalization, E1 (0.918), E2 (0.873), and E3 (0.842); for combination, C1 (0.896), C2 (0.859), and C3 (0.905); and for internalization, I1 (0.865), I2 (0.934), and I3 (0.828). Meanwhile, the loading factors for employee performance were EP1 (0.900), EP2 (0.905), EP3 (0.886), EP4 (0.853), EP5 (0.941), and EP6 (0.904). These results indicate that all indicators satisfy the minimum loading factor criterion of 0.7.

Table 2. Validity and Reliability Test

Variable	AVE	Cronbach's Alpha	Composite Reliability
Socialization	0.745	0.828	0.897
Externalization	0.771	0.851	0.910
Combination	0.787	0.864	0.917
Internalization	0.769	0.849	0.909
Employee Performance	0.808	0.952	0.962

Table 2 presents the results of the validity and reliability tests for the five constructs. The Average Variance Extracted (AVE) values range from 0.745 to 0.808, exceeding the recommended threshold of 0.50, indicating adequate convergent validity. Cronbach's Alpha values range from 0.828 to 0.952, while Composite Reliability values range from 0.897 to 0.962, with all values exceeding the recommended threshold of 0.70. Socialization has an AVE of 0.745, Cronbach's Alpha of 0.828, and Composite Reliability of 0.897. Externalization has values of 0.771, 0.851, and 0.910, and combination has values of 0.787, 0.864, and 0.917. Internalization has values of 0.769, 0.849, and 0.909. Employee performance has values of 0.808, 0.952, and 0.962. These results confirm that all constructs demonstrate satisfactory convergent validity and internal consistency reliability.

Table 3. Outer Model

Variable	Item	C	E	I	EP	S
Combination (C)	C1	0.896	0.937	0.751	0.831	0.819
	C2	0.859	0.655	0.758	0.760	0.682
	C3	0.905	0.716	0.860	0.824	0.881
Externalization (E)	E1	0.883	0.918	0.769	0.801	0.881
	E2	0.797	0.873	0.664	0.694	0.755
	E3	0.593	0.842	0.424	0.663	0.550
Internalization (I)	I1	0.764	0.620	0.865	0.746	0.823
	I2	0.808	0.611	0.934	0.857	0.777
	I3	0.772	0.658	0.828	0.727	0.751
Employee Performance (EP)	EP1	0.793	0.709	0.790	0.900	0.772
	EP2	0.806	0.689	0.798	0.905	0.799
	EP3	0.782	0.790	0.788	0.886	0.786
	EP4	0.795	0.833	0.723	0.853	0.775
	EP5	0.855	0.738	0.814	0.941	0.796
	6	0.865	0.679	0.871	0.904	0.794
Socialization (S)	S1	0.924	0.862	0.813	0.855	0.930
	S2	0.766	0.693	0.793	0.811	0.894
	S3	0.596	0.489	0.703	0.558	0.755

Table 3 presents the results of the outer model evaluation, showing that the indicator loadings for each construct generally meet the recommended threshold of 0.70. The indicators for combination (C1–C3), externalization (E1–E3),

internalization (I1–I3), employee performance (EP1–EP6), and socialization (S1–S3) demonstrate relatively strong loadings on their respective constructs, with the highest loading observed for I2 (0.934), while the lowest loading is found for S3 (0.755). Although several cross-loadings are also observed, each indicator has the highest loading on its intended construct, indicating adequate discriminant validity at the indicator level. These results indicate that the measurement indicators adequately represent their respective constructs and can therefore be retained for further analysis.

Table 4. R-Square value

Variable	Value
R-Square	0.870
Percentage	87%

According to Table 4, the R-square value for employee performance is 0.870. This result indicates that 87% of the variance in employee performance can be explained by the predictor variables included in the model, namely combination, externalization, internalization, and socialization. Factors outside the research model explain the remaining 13%. The R-square value of 0.870 indicates that the model has strong explanatory power in predicting employee performance.

Table 5. Hypothesis Testing

Variable Effect			Original Sample	t-statistics	p-values	Remarks
Socialization	->	Employee Performance	0.082	0.297	0.767	Rejected
Externalization	->	Employee Performance	0.223	1.193	0.233	Rejected
Combination	->	Employee Performance	0.275	1.667	0.096	Rejected
Internalization	->	Employee Performance	0.410	2.142	0.032	Accepted

Table 5 presents the results of hypothesis testing examining the effects of socialization, externalization, combination, and internalization on employee performance. The results show that socialization has a positive but insignificant effect on employee performance ($\beta = 0.082$; $t = 0.297$; $p = 0.767$), while externalization also has a positive but insignificant effect ($\beta = 0.223$; $t = 1.193$; $p = 0.233$). Similarly, combination has a positive but insignificant effect on employee performance ($\beta = 0.275$; $t = 1.667$; $p = 0.096$). Therefore, the hypotheses for socialization, externalization, and combination are rejected. In contrast, internalization has a positive and significant effect on employee performance ($\beta = 0.410$; $t = 2.142$; $p = 0.032$), indicating that greater internalization is associated with better employee performance. Thus, the internalization hypothesis is accepted.

As a follow-up to SEM-PLS structural model testing, scenario planning using the TAIDA method was conducted to formulate strategies for effective knowledge management at PT. XYZ. In the tracking stage, the hypothesis-testing results identified strategic issues. Knowledge sharing, knowledge documentation, and information integration did not directly improve employee performance, whereas knowledge application in daily work contributed positively. Thus, the main strategic issue is the suboptimal implementation of knowledge management, particularly in the socialization, externalization, and combination stages. In the analysis stage, the SECI model was used to examine the causes. The insignificant socialization effect indicates that knowledge sharing is not yet structured or consistently practiced. The insignificant externalization effect suggests that SOPs, lessons learned, and best

practices are not optimally utilized. The insignificant combination effect indicates limited integration and dissemination of organizational knowledge. Conversely, significant internalization confirms that applying knowledge in daily work strengthens competencies and improves employee performance.

At the imaging stage, ideal conditions were formulated based on the preceding analysis. The desired condition is an integrated knowledge management system that supports the entire knowledge creation process, in which knowledge sharing is conducted routinely, organizational knowledge is properly documented, information is integrated into a single and accessible system, and employees consistently apply knowledge. Achieving these conditions is expected to enable knowledge management not only to generate and preserve organizational knowledge but also to strengthen employee competencies, accelerate organizational learning, and support continuous improvements in employee performance. Based on the existing conditions and the desired future state, three alternative scenarios were developed, as presented in Table 6.

Table 6. Knowledge Management Development Scenarios

Scenario	Condition	Advantages	Disadvantages
Scenario 1 (Business as usual)	Maintaining the system without changes to socialization, externalization, and combination; performance still depends on individual experience	Requires no cost or major organizational change	Knowledge-sharing problems persist, high risk of knowledge loss, relatively slow performance improvement
Scenario 2 (Knowledge sharing improvement)	Enhancing knowledge sharing, mentoring, and knowledge documentation	Strengthens the knowledge-sharing culture, reduces dependence on specific individuals	Knowledge management remains unintegrated, so the benefits are not yet optimal
Scenario 3 (Integrated knowledge management)	Integrating all SECI processes through a measurable system	Supports organizational learning, improves work efficiency, and strengthens employee performance sustainably	Knowledge management remains unintegrated, so the benefits are not yet optimal

Table 6 shows that the integrated knowledge management scenario for PT. XYZ because it addresses the limitations identified in the SEM-PLS results by strengthening socialization, externalization, and combination while supporting internalization, which significantly improves employee performance. By integrating the SECI process, the organization can systematically share, document, integrate, and apply knowledge in daily work. At the action stage, implementation involves strengthening knowledge-sharing and mentoring activities, improving documentation through lessons learned and a centralized knowledge repository, integrating SOPs and organizational information into an accessible system, and enhancing training, coaching, and on-the-job training. These initiatives are expected to optimize knowledge management, strengthen organizational learning, and sustainably improve employee performance.

5. Discussion

The finding that only internalization significantly influences employee performance, while socialization, externalization, and combination do not, provides

a more critical interpretation of the SECI model. Nonaka (1994) described knowledge creation as a continuous interaction between tacit and explicit knowledge, while Nonaka and Toyama (2003) emphasized the interconnected and dynamic nature of these processes. Del Giudice and Cillo (2022) and Duong and Nakamoto (2026) further support this perspective by highlighting the evolving application of SECI across organizational contexts. Thus, the findings do not contradict the SECI framework but indicate that PT. XYZ. Employees successfully internalize and apply knowledge, whereas collective experience, documentation, and information integration remain relatively weak. This is consistent with the descriptive finding that externalization recorded the lowest mean score, suggesting that the main weakness lies in converting tacit knowledge into explicit knowledge that can be documented, shared, and reused.

This pattern also makes a direct comparison with previous studies more nuanced. Phuong and Ha (2022) proposed that knowledge management contributes to employee satisfaction, loyalty, and job performance, while Biranvand et al. (2024) found that knowledge management systems and knowledge sharing support employee performance and loyalty. Kurniawan et al. (2025) likewise demonstrated the importance of organizational culture in strengthening knowledge management and organizational outcomes. While these studies indicate the broader importance of knowledge management and knowledge sharing, the present finding suggests that their effects may not necessarily appear as direct effects of every SECI dimension on performance. At PT. XYZ, knowledge sharing and documentation may need to reach a certain level of consistency before their contribution to employee performance becomes statistically detectable. This interpretation aligns with the view of knowledge creation as an interconnected process in which the effectiveness of one conversion mode relates to the functioning of other modes (Nonaka & Toyama, 2003; Del Giudice & Cillo, 2022).

The significant effect of internalization indicates that knowledge that has been understood and applied in daily work activities can strengthen individual competencies and subsequently improve employee performance. This suggests that employees can currently translate available knowledge into practical work behavior, even though the organizational mechanisms supporting earlier stages of knowledge creation remain relatively weak. Duong and Nakamoto (2026) highlight that the SECI model continues to evolve across organizational contexts, suggesting that its application should consider differences in organizational conditions and knowledge infrastructures. In this context, reliance on direct application and practical learning may currently play a more immediate role in performance at PT. XYZ than formal mechanisms of knowledge sharing, documentation, and information integration. The role of combination also deserves attention because the integration and coordination of organizational information are important for organizational performance. However, their contribution may depend on how effectively the organization subsequently uses integrated information (Xinyu, 2023).

The high R^2 value of 0.870 confirms that the four SECI dimensions collectively explain a significant portion of the variance in employee performance, although three of the four paths are individually insignificant. This pattern suggests that the dimensions may not operate as equally direct predictors of performance. From the SECI perspective, socialization, externalization, and combination may provide supporting conditions for internalization rather than producing immediate performance outcomes on their own (Nonaka, 1994; Nonaka & Toyama, 2003). Therefore, the possibility that externalization and combination influence performance through internalization represents an important direction for future research, although such relationships would need to be empirically tested through mediation or interaction analysis. The evolving SECI literature also suggests that

further research should examine how the four processes interact across different organizational and methodological contexts (Duong & Nakamoto, 2026).

These results suggest broader implications for knowledge management in growing logistics and distribution companies. Socialization, externalization, and combination should not be viewed as ends in themselves, but as supporting processes whose value may be realized when knowledge is successfully transformed into internalized and applied competencies. This interpretation does not diminish the importance of strengthening these three processes; instead, it strengthens the rationale for the integrated knowledge management scenario recommended in this study. Strengthening knowledge sharing, systematic documentation, information integration, and practical knowledge application simultaneously can improve the continuity of the knowledge creation process and potentially broaden the contribution of internalization to employee performance.

6. Conclusion

This study concludes that the four SECI dimensions demonstrate different relationships with employee performance at PT. XYZ. The results show that socialization, externalization, and combination have positive but insignificant effects on employee performance, whereas internalization has a positive and significant effect ($\beta = 0.410$; $p = 0.032$). The R-square value of 0.870 indicates that the four SECI dimensions collectively explain 87% of the variance in employee performance. These findings imply that the immediate performance contribution of knowledge management at PT. XYZ is primarily realized when employees understand and apply knowledge in daily work. Nevertheless, the nonsignificant effects of socialization, externalization, and combination do not imply that these processes are unimportant. Instead, they indicate weaknesses in knowledge sharing, documentation, and information integration that may limit the continuity of the SECI knowledge spiral. Therefore, the integrated knowledge management scenario is recommended, emphasizing structured knowledge sharing, mentoring, knowledge documentation, information integration, and training to strengthen the overall knowledge creation process.

This study has several limitations. First, the analysis focuses on PT. XYZ, which limits the generalizability of the findings to other organizations with different characteristics and knowledge management maturity levels. Second, the study examines the direct effects of the SECI dimensions on employee performance and does not test possible mediation or interaction relationships among the dimensions. Third, the quantitative findings provide limited insight into the organizational mechanisms underlying the nonsignificant relationships. Future research should therefore examine larger and more diverse organizational samples and employ longitudinal or mixed-method approaches to capture changes in knowledge management practices over time. Further studies could also test whether socialization, externalization, and combination influence employee performance indirectly through internalization, and examine organizational culture, knowledge management infrastructure, leadership, and technological readiness as potential contextual factors shaping the effectiveness of the SECI process.

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