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STRATEGIC INFORMATION SYSTEMS PLANNING USING THE WARD AND PEPPARD METHOD (A CASE STUDY OF KOPERASI DAUH AYU)

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ABSTRACT

Koperasi Dauh Ayu requires a formally articulated IS/IT strategy to overcome fragmented, manual operations and move toward an integrated, member-centric model. This case study applies the Ward and Peppard framework to diagnose business and IS/IT conditions, using PEST, Porter's Five Forces, value chain, technology trend scanning, and SWOT with quantitative IFAS–EFAS scoring from six expert respondents. The cooperative is positioned in Quadrant I of the SWOT map with coordinates X = 0.309 and Y = 0.397, indicating an aggressive strategy space where internal strengths can be leveraged to seize external opportunities. The study produces a prioritized portfolio of fourteen applications mapped with the McFarlan Grid, alongside an IT strategy for network, hardware, and platform modernization, and an IS/IT management strategy that establishes a dedicated ICT unit and governance mechanisms. Recommended initiatives are expected to reduce cycle times and error incidence, consolidate a single source of truth for member and financial data, and elevate service quality. The contribution extends the application of Ward and Peppard to the cooperative sector in Indonesia, a context less examined than large enterprises, and shows how staged capability building can translate environmental enablers into realized digital benefits. Limitations include a single-case design without post-implementation measurement; future work should pilot priority systems and evaluate pre–post performance and cost–benefit outcomes.

Keywords: Strategic Planning, Ward and Peppard Method, SWOT Analysis, Information System, Cooperative Management

INTRODUCTION

The beginning of 2020 marked a difficult period for all levels of society due to the COVID-19 pandemic, which disrupted various aspects of life, including the economy (Anatan & Nur, 2023; Yuhertiana et al., 2022). The implementation of social distancing and physical distancing compelled business actors to change their perspectives and strategies (Theodorou et al., 2023). The MSME and cooperative sectors were among the most affected clusters (Anatan & Nur, 2023; Ssenyonga, 2021; Yuhertiana et al., 2022). During this period, the use of technology became an essential part of daily life (Hai et al., 2021). Technology supported various human activities, ranging from communication and social interaction to business operations (Purnomo et al., 2024). Businesses that had adopted information systems in their processes often gained a competitive advantage compared to those that had not (Purnomo et al., 2024). This is in line with the statement of the Minister of Cooperatives and Small and Medium Enterprises, Teten Masduki, who explained that based on surveys conducted, consumer behavior during the pandemic gradually shifted from offline to online (Adomaviciute-Sakalauske & Urbonavicius, 2024). Against this backdrop, digital capability became a key differentiator for organizational continuity and competitiveness.

Cooperatives, as a form of community-based business, operate under the principles of people's economic movement based on kinship (Yuhertiana et al., 2022). According to Law No. 20 of 1992 concerning Cooperatives, membership is voluntary and open, management is conducted democratically, profit sharing is distributed fairly in proportion to members' contributions, capital returns are limited, and independence is maintained. Koperasi Dauh Ayu is one of the savings and loan cooperatives located in Denpasar City, precisely at Jl. Pulau Moyo III No. 1. Established in 2007 with legal status No. 75/BH/DISKOP.PKM/II/2007, the cooperative currently has 70 members and serves 5,796 prospective members. Each member is required to contribute a principal savings of IDR 1,000,000. Based on data from the 2019 Government Performance Report (LKIP) of the Denpasar Office of Cooperatives, Small and Medium Enterprises, the number of cooperatives in Denpasar has shown an increasing trend over the period 2017–2019 (Table 1).

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Tabel 1. Jumlah Koperasi Kota Denpasar 2017-2019(Badan Pusat Statistik, 2020)

NO	Year	Total Cooperatives
1	2017	1.064
2	2018	1.079
3	2019	1.082

This indicates that competition among cooperatives in Denpasar City will become increasingly intense. With the rapid growth of cooperatives in Denpasar, coupled with the challenges posed by the COVID-19 pandemic, it is necessary to formulate strategies that can enhance the competitiveness of Koperasi Dauh Ayu to ensure its sustainability. In other words, the cooperative context in Denpasar requires not only adoption of digital tools but a deliberate alignment between business priorities and IS/IT capabilities. These conditions create latency in core processes (intake–recording–reconciliation) and constrain decision-making due to fragmented data.

At present, the use of technology and information systems at Koperasi Dauh Ayu remains suboptimal. In their daily operations, employees only utilize basic applications such as Microsoft Word and Excel to support their work. Daily savings transaction data are still recorded manually on physical cards, resulting in slower transaction processes compared to computerized systems. In addition, cooperative data are poorly organized. In 2010, Koperasi Dauh Ayu adopted a savings and loan transaction information system purchased from a vendor. However, this system was not developed based on an analysis of the cooperative's business processes, making it less effective in supporting operational needs.

As a cooperative engaged in savings and loan activities, Koperasi Dauh Ayu faces several problems, including a lack of skilled human resources in the field of IS/IT and limited technological literacy among its employees. These conditions highlight the need to shift from manual to computerized processes, a transformation that requires significant investment. Therefore, a strategic information systems (IS/IT) plan is essential. Strategic IS/IT planning refers to the use of information technology to support or implement a company's competitive strategy, thereby enhancing its competitiveness (Owusu, 2024; Yang et al., 2020)**.** One of the most critical aspects of strategic IS/IT planning is the methodology applied in its process. This study employs the Ward and Peppard method as the framework for strategic information systems planning (Ardiansyah & Wahyudi, 2024; Faizal & Chernovita, 2022). Prior to selecting this method, a literature review was conducted to compare various approaches to strategic planning (Giri Prawiyogi & Solahudin Anwar, 2021). However, the literature offers limited evidence of implementable, governance-anchored SISP specifically for micro-sector cooperatives in Bali using the Ward & Peppard framework—constituting a clear research gap and the novelty of this study. Accordingly, this paper aims to (1) diagnose the business and IS/IT conditions of Koperasi Dauh Ayu, (2) design an integrated IS/IT strategy using Ward & Peppard, (3) prioritize applications with the McFarlan strategic grid, and (4) specify governance, change-management, and performance indicators to guide execution.

METHOD

This strategic information systems planning study at Koperasi Dauh Ayu adopts the Ward and Peppard framework (Ardiansyah & Wahyudi, 2024; Pelengkahu & Manuputty, 2023). The Ward and Peppard method is structured into three major phases: (1) internal and external diagnosis from both the business environment and the IS/IT environment, (2) design of the IS/IT strategy, and (3) elaboration and implementation roadmap of the IS/IT strategy (Peppard & Ward, 2016). Ward & Peppard was selected over alternative strategy tools because it (i) explicitly separates business and IS/IT environment analyses before integrating them, reducing the risk of "technology-first" solutions; (ii) provides a clear line of sight from situational diagnosis (SWOT, PEST, Five Forces, value chain) to an actionable application portfolio; and (iii) has been shown in prior Indonesian organizational contexts to yield pragmatic, staged IS/IT roadmaps for resource-constrained institutions (Pelengkahu & Manuputty, 2023; Ardiansyah & Wahyudi, 2024; Peppard & Ward, 2016). This end-to-end traceability was deemed more suitable than, for example, single-lens approaches that lack an embedded translation step into IS/IT governance, management, and application portfolios.

Prior to the Ward & Peppard analysis, problem identification was carried out through field observations and a literature study supported by interviews and questionnaires (Khairunnisah, 2021; Peppard & Ward, 2016).

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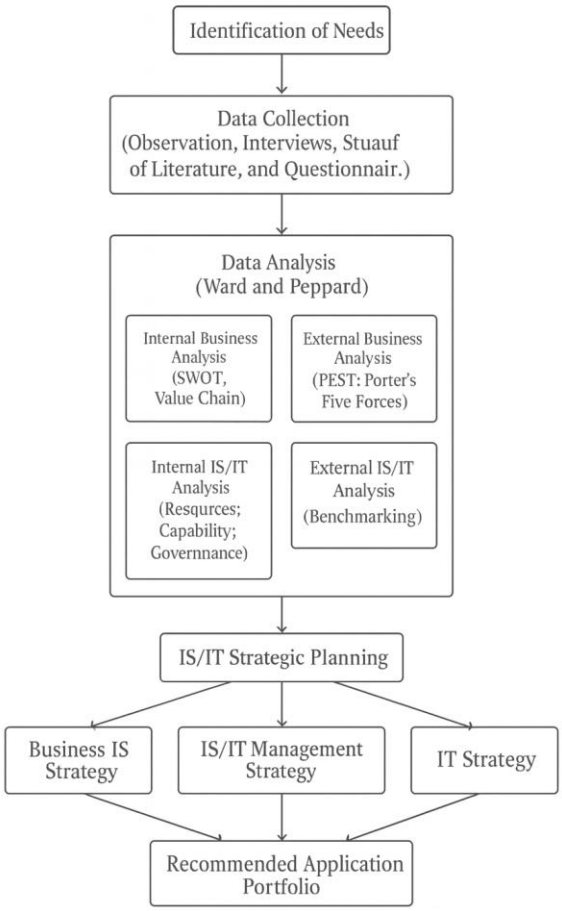


Figure 1. Research Method

As shown in Figure 1 above, the stages can be described as follows

a. Problem Identification

An initial survey was conducted at Koperasi Dauh Ayu to map key business processes and pain points. Several operational and informational problems were then delineated.

b. Data Collection

Data were obtained through literature study, field observation, interviews, and questionnaires. Interviews involved the management, supervisory board, and employees; questionnaires were distributed to management, supervisory board, employees, and customers of Koperasi Dauh Ayu. EFAS/IFAS participants. To derive EFAS and IFAS weights, expert judgment was elicited from six (6) participants comprising the management (2), supervisory board (2), and senior operational staff (2). These six experts scored factors using pairwise weighting/likert scaling and consensus averaging to finalize the matrices.

c. Data Analysis

Analysis was divided into two parts: business environment and IS/IT environment.

1. Internal and External Analysis of the Business Environment
   The internal analysis examined value-adding activities and bottlenecks using SWOT and Value Chain. The external analysis mapped macro and industry forces with PEST (Political, Economic, Social, Technological) and Porter's Five Forces to identify opportunities/threats that materially affect cooperative operations.
2. Internal and External Analysis of the IS/IT Environment

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The internal IS/IT analysis inventoried current applications, infrastructure, data, and IT governance capabilities. The external IS/IT analysis scanned recent IS/IT trends and peer practices among comparable cooperatives/SMEs to calibrate feasible adoption paths.

d. IS/IT Strategic Planning

Outputs include a business IS strategy, IS/IT management strategy, and IT strategy, culminating in a prioritized application portfolio compiled using the McFarlan Strategic Grid. The portfolio lists short-, medium-, and long-term applications deemed necessary for Koperasi Dauh Ayu.

RESULT

1. PEST Analysis Results

To understand the current external business conditions that can directly affect Koperasi Dauh Ayu, a PEST analysis (Political, Economic, Social, Technological) was conducted. The results serve as a reference for determining business strategies to achieve strategic objectives. The PEST analysis results for Koperasi Dauh Ayu are presented in Table 2 below.

Table 2. PEST Analysis Results

Political	1. Government Regulation (PP) No. 7 of 2021 2. Presidential Regulation No. 96 of 2020 concerning the Ministry of Cooperatives and Small and Medium Enterprises 3. Law No. 25 of 1992 on Cooperatives (State Gazette of the Republic of Indonesia)
Economic	Geographically located in the city center, close to markets and downtown.
Social	Cooperative members come from diverse ethnic, religious, and cultural backgrounds.
Technological	Very rapid technological development.

2. Value Chain Analysis Results

The value chain analysis aims to identify and group the activities occurring in Koperasi Dauh Ayu into two parts: primary activities and support activities. Overall business activities at Koperasi Dauh Ayu based on the value chain analysis can be seen below.



Figure 2. Value Chain Analysis Results

3. SWOT Analysis Results

SWOT analysis examines the organization's internal and external conditions and serves as the basis for designing future strategies. The internal analysis covers Strengths and Weaknesses, while the external analysis covers

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Opportunities and Threats. The SWOT identification for Koperasi Dauh Ayu consists of internal factors (strengths and weaknesses) and external factors (opportunities and threats). These factors were agreed upon based on a Focus Group Discussion (FGD) involving stakeholders appointed by the management of Koperasi Dauh Ayu. The identified internal factors of the SWOT analysis for Koperasi Dauh Ayu—based on internal environmental and IS/IT analysis—are presented in Table 3 as follows.

Table 3. SWOT Analysis Results

Strengths
1. Commitment of the board, supervisory body, and management to develop, utilize, and manage information system technology as the main means of running business processes until all are integrated online (in real time) 2. Several systems are already standardized with good service standards for members as well as for internal management systems 3. Operations already use computers on a regular basis 4. Complete facilities 5. Accepts members from various economic backgrounds
Weaknesses
1. Absence of a roadmap for information system technology development at Koperasi Dauh Ayu to serve as a reference for future development and implementation in a continuous and well-structured manner 2. The current quality and skills in IT are still considered inadequate 3. Hardware and software specifications are still low 4. Application program development has not been carried out optimally 5. Manual reporting slows performance and wastes considerable time
Opportunities
1. Very rapid advances in information system technology 2. Development of information system technology can enhance the brand image of Koperasi Dauh Ayu in the community 3. Low adoption of information system technology in the surrounding environment 4. Information system technology can directly or indirectly improve the competitiveness and quality of services for members and prospective members 5. Support from local and central government through the Ministry of Cooperatives and SMEs and the Ministry of Communication and Information
Threats
1. The presence of online cooperatives and online lending platforms that have begun developing similar information system technologies toward integrated systems 2. The accelerating development of information and communication technology, which can quickly render an implemented technology obsolete 3. Increasingly intense competition in the development and utilization of information and communication technology 4. Poor-quality data/information provision will degrade Koperasi Dauh Ayu's business process performance 5. Demand for faster service for Koperasi Dauh Ayu members

A quantitative SWOT analysis was conducted to evaluate the internal factors constituting the company's strengths and weaknesses, which are identified in the Internal Factor Analysis Summary (IFAS) matrix. Meanwhile, external factors constituting opportunities and threats are identified using the External Factor Analysis Summary (EFAS) matrix. The combined results of these two matrices produce a SWOT diagram that reflects the company's position. This position determines the business strategic planning for Koperasi Dauh Ayu based on the SWOT matrix. The data used in this analysis were obtained from questionnaires distributed during the focus group discussion (FGD) held at Koperasi Dauh Ayu. The weights and ratings in the IFAS analysis were determined by respondents based on the predefined points as follows.

1. Provisions for Weights and Ratings of Strength Factors
   The weight scale ranges from 0.0 (not important) to 1.0 (very important), and the total assigned weight may

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not exceed 1. The rating scale is defined as 1 = minor strength, 2 = moderate strength, 3 = major strength, and 4 = very major strength.

2. Provisions for Weights and Ratings of Weakness Factors

The weight scale ranges from 0.0 (not important) to 1.0 (very important), and the total assigned weight may not exceed 1. The rating scale is defined as 1 = very major weakness, 2 = major weakness, 3 = moderate weakness, and 4 = minor weakness.

The tabulation of IFAS factor data processing is presented in Appendix 4: Tabulation of IFAS Weight and Rating Calculations from the Questionnaire. The results of the Internal Strategic Factor (IFAS) analysis are shown in Table 4. below.

Tabel 4. Internal Factor Analysis Summary

Strengths				
Factor	**Code**	**Weight**	**Rating**	**Weight × Rating**
Commitment of the board, supervisory board, and management to develop, utilize, and manage information systems technology as the primary means of running business processes until everything is integrated online (real time)	S1	0.10560	3.4	0.359026977
Several systems are already standardized with good service standards for members as well as internal management systems	S2	0.10489	3.3	0.346122679
Operations already use computers on a regular basis	S3	0.10492	3.4	0.356711816
Complete facilities	S4	0.10494	3.4	0.356781264
Acceptance of members from various economic backgrounds	S5	0.10426	3.6	0.375330552
Total Strengths		0,52459122		1.793973287
Weaknesses				
Factor	**Code**	**Weight**	**Rating**	**Weight × Rating**
No clear direction yet for information systems technology development at Koperasi Dauh Ayu that can serve as a reference for future development and implementation in a continuous and organized manner	W1	0.09613092	3.4	0.326845119
Current IT quality and skills are still perceived as inadequate	W2	0.09932372	3.3	0.327768277
Hardware and software specifications are still low	W3	0.09381996	3.0	0.281459875
Application program development has not been carried out optimally	W4	0.09905798	2.9	0.287268144
Manual reporting makes performance sluggish and wastes time	W5	0.08707620	3.0	0.261228603
Total Weaknesses		0.47540878		1.484570018

The IFAS calculation is used to determine the x-axis coordinate on the SWOT quadrant diagram by subtracting the total weaknesses score from the total strengths score, as follows.

X (internal) = total strengths − total weaknesses
= 1.793973287 − 1.484570018
= 0.309403269

Based on the above calculation, the x-axis position for Koperasi Dauh Ayu is 0.309403269. After the x-axis is determined from the IFAS analysis, the y-axis is then determined based on the results of the EFAS analysis.

The determination of weights and ratings in the EFAS analysis was made by respondents according to the following provisions (Saragih & Suwardi, 2015).

1. Provisions for Weights and Ratings of Opportunity Factors

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The weight scale ranges from 0.0 (not important) to 1.0 (very important), and the total assigned weight may not exceed 1. The rating scale is defined as 1 = small opportunity, 2 = moderate opportunity, 3 = large opportunity, and 4 = very large opportunity.

2. Provisions for Weights and Ratings of Threat Factors
   The weight scale ranges from 0.0 (not important) to 1.0 (very important), and the total assigned weight may not exceed 1. The rating scale is defined as 1 = very major threat, 2 = major threat, 3 = moderate threat, and 4 = minor threat.

To obtain the final (normalized) weights and final ratings, the respondents' data were processed using the same procedure as for the IFAS analysis. The tabulation of EFAS data processing is presented in Appendix 5: Tabulation of EFAS Weight and Rating Calculations from the Questionnaire, and the results of the External Strategic Factor (EFAS) analysis are shown in Table 5.

Table 5. External Factor Analysis Summary

Opportunities				
Factor	**Code**	**Weight**	**Rating**	**Weight × Rating**
Rapid advances in information systems technology	O1	0.10770	3.4	0.366166240
Developing IS/IT can enhance Koperasi Dauh Ayu's brand image in the community	O2	0.10647	3.7	0.393940667
Low utilization of IS/IT in the surrounding environment	O3	0.10458	3.7	0.386955204
IS/IT, directly or indirectly, can improve the competitiveness and quality of services for members and prospective members	O4	0.10231	3.5	0.358090075
Support from local and central government through the Ministry of Cooperatives & SMEs and the Ministry of Communication and Informatics	O5	0.10017	3.6	0.360621942
Total Opportunities		0.52123310		1.865774129
Threats				
Factor	**Code**	**Weight**	**Rating**	**Weight × Rating**
Presence of online cooperatives and fintech lenders developing similar IS toward integration systems	T1	0.09811476	3.1	0.304155763
Very fast ICT developments shorten the lifecycle of any implemented technology	T2	0.09901922	3.5	0.346567264
Increasingly intense competition in IS/IT development and utilization	T3	0.09401487	2.8	0.263241634
Poor-quality data/information degrades Koperasi Dauh Ayu's business process performance	T4	0.09867031	3.1	0.305877953
Heightened demands for faster service to cooperative members	T5	0.08894774	2.8	0.249053670
Total Weaknesses		0.47876690		1.468896285

The EFAS calculation is used to determine the y-axis coordinate on the SWOT quadrant diagram by subtracting the total threats score from the total opportunities score, as follows:

Y (external) = Total Opportunities − Total Threats
= 1.865774129 − 1.468896285
= 0.396877844.

Based on this calculation, the y-axis position for Koperasi Dauh Ayu is 0.396877844. Once both the x and y coordinates are obtained, the current position of Koperasi Dauh Ayu can be plotted on the SWOT quadrant diagram, as shown in Figure 3. below.

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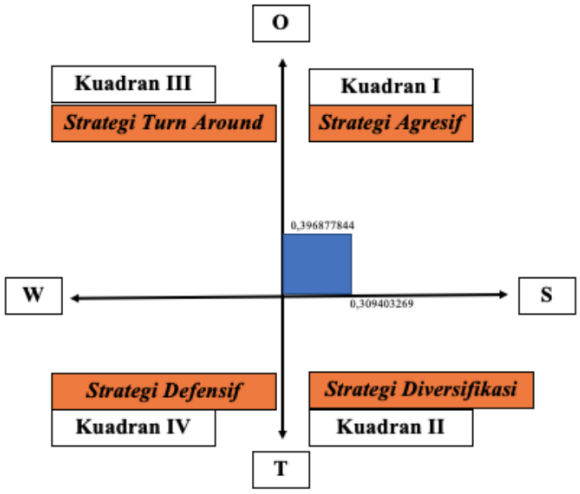


Figure 3. SWOT Quadrant Diagram

4. IS/IT Strategy Formulation Results

Based on the analyses conducted using several tools—such as PEST analysis, Porter's Five Forces, Value Chain, Critical Success Factors, current technology trend analysis, internal IS/IT environment analysis, SWOT analysis, and the McFarlan Strategic Grid—an IS/IT strategy was formulated that includes a Business IS Strategy, an IT Strategy, an IS/IT Management Strategy, a Future Application Portfolio, and an Implementation Plan. A more detailed explanation is presented below.

a. Results of IS Business Strategy Formulation

The objective of the IS business strategy recommendations is to ensure that each work unit at Koperasi Dauh Ayu can leverage information systems to achieve business goals. Following the identification of needs and the IS and IT solution options, several potential information systems were identified for implementation at Koperasi Dauh Ayu. The overview of information system needs and their user units is presented below.

Table 6. Results of IS Business Strategy Formulation

No	Application Name	Application Function	Users
1	SIK — Cooperative Information System	Supports core cooperative operations including savings, loans, bookkeeping, and cashiering	Manager; General Affairs; Savings Collector; Loans Unit; Bookkeeping; Cashier
2	SIP — Management Information System	Provides information services and dashboards for supervisory and executive boards	Supervisory Board; Executive Board
3	SPKK — Credit Decision Support System	Assists credit assessment and decision making	Manager; Loans Unit
4	SIPENAB — New Member Admission Information System	Manages new member intake and eligibility verification	Manager; General Affairs; Loans Unit
5	SIHUMAS — External Collaboration Information System	Manages cooperation and partnerships with external parties	General Affairs; Executive Board
6	E-Schedule	Scheduling and calendar application	General Affairs
7	SISar — Facilities and Asset Management	Registers, tracks, and maintains cooperative assets and facilities	General Affairs; Supervisory Board
8	E-Credit	Online credit application submission and tracking	Loans Unit

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9	SIMEDSOS — Social Media Promotion Information System	Plans, publishes, and analyzes social media promotions	General Affairs
10	E-Letter — Correspondence Information System	Manages incoming and outgoing letters and memos	General Affairs
11	SIDOKU — Member Funds Management Information System	Handles member fund management across bookkeeping and cashiering	General Affairs; Bookkeeping; Cashier
12	SIBAJA — Goods and Services Ordering Information System	Manages internal orders for goods and services	General Affairs; Cashier
13	SIREPOT — Consolidated Reporting Information System	Generates cross-application reports for the board and management	Executive Board; Manager; Bookkeeping
14	Website — Cooperative Public Site	Public information and publication portal for the cooperative	General Affairs

5. Mc. Farland Grid Analysis

Based on the previously conducted identification of IS/IT solutions, all proposed information system applications were placed into the Mc. Farland portfolio matrix to show the contribution of each application to Koperasi Dauh Ayu now and in the future. The mapping of applications into the Mc. Farland matrix is shown below.

Tabel 7. *Mc. Farland Grid*

Strategic	High Potential
SIK (*new*) SPKK (*new*) SIBAJA (*new*)	SIP (*new*) SIDOKU (*new*)
E-CREDIT (*new*) SIMEDSOS (*new*) SIPENAB (*new*) SISAR (*new*)	SIHUMAS (*new*) E-SCHEDULE (*new*) E-LETTER (*new*) SIREPOT (*new*) WEBSTE (*new*)
Key Operasional	Support

The findings are consistent with Pelengkahu & Manuputty (2023), who report that combining SWOT/PEST/Five Forces within the Ward & Peppard pathway helps smaller organizations translate diffuse pressures into a focused set of IS/IT priorities and governance improvements. Our staged portfolio and emphasis on aligning IS initiatives with core value-chain activities mirror the practical, resource-aware trajectories documented there. At the same time, our EFAS/IFAS weighting shows context-specific differences relative to Ardiansyah & Wahyudi (2024). Whereas prior work emphasized external forces as the dominant trigger for IS/IT change, our expert panel's EFAS/IFAS balances external opportunities with internal process digitalization and data quality as near-term levers. This divergence is academically plausible given variations in organizational scale, digital maturity, and regulatory exposure—factors Peppard & Ward (2016) highlight as drivers of differential prioritization across settings.

DISCUSSIONS

This study set out to craft a strategic IS/IT plan for Koperasi Dauh Ayu using the Ward and Peppard framework. The baseline condition shows operations that remain largely manual, with savings recorded on physical cards, scattered data, and reliance on basic productivity tools, despite intensifying competition and a policy environment favorable to digitalization. The modeled outcome, an application portfolio mapped to the McFarlan Grid, translates these needs into an integrated roadmap that spans strategic, high potential, key operational, and support systems. The

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central implication is that current performance bottlenecks arise less from a lack of technology than from the absence of an integrated, capability-building IS strategy. Findings are mutually reinforcing across PEST, value chain, and SWOT. Supportive regulation and rapid technological advancement, together with the cooperative's urban catchment and diverse membership, create favorable conditions. The value chain exposes latency and error risks from paper-based steps in core services. SWOT consolidates these insights into strengths such as leadership commitment and basic computerization, weaknesses such as the absence of an IS roadmap, limited skills, low specifications, and manual reporting, opportunities such as government support and low peer adoption, and threats such as online lenders, fast technology cycles, and rising expectations. The McFarlan portfolio signals a deliberate shift from basic digitization toward service and business model innovation while balancing run the business reliability with change the business differentiation. The plan addresses pain points directly. Transactional systems and automated reporting should reduce cycle times and error rates. Governed and centralized data will provide a single source of truth for member, savings, and credit information. Member-facing capabilities can raise service accessibility and perceived quality. Strategic systems furnish a platform for iterative product innovation that strengthens resilience against fintech competitors. In a market where many peers show low digital maturity, even foundational systems can yield outsized competitive gains when paired with visible service improvements. Methodologically, Ward and Peppard's dual diagnosis suits low maturity contexts, surfacing capability gaps in skills, standards, and roadmapping and sequencing initiatives to close them progressively. Execution risks remain material, so success depends on careful phasing and capability building. Stabilize core transactions and reporting first, harden governance next, and scale innovations last. Treat change management, role-based training, SOP institutionalization, and performance dashboards as primary workstreams. Select vendors for interoperability and total cost of ownership to mitigate obsolescence risks noted in the SWOT. Overall, the diagnosis guided by Ward and Peppard and the portfolio mapped to McFarlan offer a credible path from manual and fragmented operations to an integrated and member-centric cooperative. The plan is realistic if delivered in phases with strong data governance and human capital development, strategically sound given regulatory tailwinds and digital competition, and practically useful as a template that other cooperatives can adapt when progressing from basic tools to enterprise-level information systems.

In practical terms for cooperatives, these results imply adopting a phased roadmap that begins with core transactions and automated reporting, establishing data governance early to reduce rework and accelerate analytics, investing in change-ready capability through super-user networks and structured training, and using the McFarlan Grid to communicate funding priorities to boards and regulators by linking investments to service outcomes and risk reduction. In theoretical terms for IS and IT development, the case reinforces fit and alignment arguments. Separating business and IS or IT diagnoses before integration improves portfolio relevance in low maturity settings. The results also suggest that capability gaps in skills, governance, and data quality mediate the path from environmental enablers to realized digital benefits, extending the applicability of Ward and Peppard to cooperative and SME contexts and showing how foundational systems can become differentiators in markets with asymmetric digital maturity. These contributions should be read alongside limitations. The single case design constrains external validity. No implementation test was conducted, so efficiency and service gains remain ex ante. Expert inputs used for EFAS and IFAS weighting may carry consensus or authority bias. Future work should therefore include multi-site comparative studies across heterogeneous cooperatives, pilot implementations with pre and post metrics such as cycle time, error rates, adoption, and member NPS combined with cost-benefit analyses, mixed-methods triangulation using surveys, usage logs, and service outcomes to mitigate FGD bias, and modeling of capability-building pathways such as skills to data governance to analytics value to formalize the mechanisms observed here.

CONCLUSION

This case study concludes that Koperasi Dauh Ayu needs a formally articulated IS and IT strategy, developed with the Ward and Peppard method, to remediate fragmented manual operations and enable an integrated member-centric model. The diagnosis yields an internal score of 1.793973 for strengths and 1.484570 for weaknesses, an external score of 1.865774 for opportunities and 1.468896 for threats, and a coordinate of X equals 0.309403 and Y equals 0.396878 on the SWOT quadrant. This places the cooperative in the Strengths–Opportunities quadrant, which indicates an aggressive posture where capability building can convert external opportunities into concrete service improvements. The agenda comprises three reinforcing strands: an IS strategy that upgrades current applications and introduces systems for savings and credit processing, an IT strategy that strengthens networks and modernizes hardware and software so the IS roadmap can run reliably, and an IS and IT management strategy that establishes a dedicated ICT unit for governance, troubleshooting, and continuous evaluation. These measures are expected to cut cycle time and error incidence, consolidate a single source of truth for member and financial data, raise compliance

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and transparency, and improve member experience. The quantitative evidence from EFAS and IFAS, supported by inputs from six expert respondents, indicates that opportunities and strengths are the dominant SWOT categories for this cooperative.

This research contributes to the academic literature by extending the application of Ward and Peppard to the cooperative sector in Indonesia, a context that is often underrepresented compared with large private firms. The study shows that separating business and IS or IT diagnoses, then integrating them through a portfolio mapped with the McFarlan Grid, is effective in low-maturity environments where processes and governance are still evolving. The findings suggest that capability gaps in skills, data quality, and governance mediate how environmental enablers translate into realized digital benefits, which refines theory on staged digital transformation for SMEs and cooperatives.

The study has limitations. It uses a single case and remains at the planning stage, so there is no outcome measurement yet. Focus group discussions can introduce consensus or authority bias into EFAS and IFAS weighting. Future work should pilot the prioritized systems with pre and post indicators such as cycle time, error rates, user adoption, member satisfaction, and financial impacts, should run cost–benefit and payback analyses, should compare alternative strategic IS planning frameworks, and should assess IT governance maturity along with cybersecurity and interoperability risks. Practically, phased execution is recommended. Stabilize core transactions and reporting first, institute data governance, access control, backup and recovery, and auditability, then scale member-facing innovations with structured change management, targeted capability development, interoperable vendor selection based on total cost of ownership, alignment with public digitalization programs, and clear KPIs and authority for the ICT unit.

REFERENCES

Adomaviciute-Sakalauske, K., & Urbonavicius, S. (2024). Understanding online purchasing behaviour after COVID-19: an extended technology acceptance model with motivations learnt from the pandemic. *Cogent Business & Management*, *11*(1). https://doi.org/10.1080/23311975.2024.2433169

Anatan, L., & Nur. (2023). Micro, Small, and Medium Enterprises' Readiness for Digital Transformation in Indonesia. *Economies*, *11*(6), 156. https://doi.org/10.3390/economies11060156

Ardiansyah, M., & Wahyudi, A. (2024). Strategic Information Systems Planning Analysis Using the Ward and Peppard Method: A Case Study. *Journal of Information Systems and Informatics*, *6*(4), 2745–2760. https://doi.org/10.51519/journalisi.v6i4.922

Badan Pusat Statistik. (2020). *Statistik Koperasi Simpan Pinjam 2019*.

Faizal, M. Y., & Chernovita, H. P. (2022). Strategic Planning of Information Systems with Ward and Peppard Method Case Study of Salatiga City Youth and Sports Office. *Journal of Information Systems and Informatics*, *4*(3), 795–804. https://doi.org/10.51519/journalisi.v4i3.281

Giri Prawiyogi, A., & Solahudin Anwar, A. (2021). Stages of Using Ward and Peppard Methods in Information System Strategic Planning. *ADI Journal on Recent Innovation (AJRI)*, *3*(1), 78–86. https://doi.org/10.34306/ajri.v3i1.535

Hai, T. N., Van, Q. N., & Thi Tuyet, M. N. (2021). Digital Transformation: Opportunities and Challenges for Leaders in the Emerging Countries in Response to Covid-19 Pandemic. *Emerging Science Journal*, *5*, 21–36. https://doi.org/10.28991/esj-2021-SPER-03

Khairunnisah, K. (2021). Perencanaan Strategis TI dalam Pengembangan SI Pelayanan Publik (Studi Kasus : Kejati Sumsel). *JATISI (Jurnal Teknik Informatika Dan Sistem Informasi)*, *8*(4), 2277–2290. https://doi.org/10.35957/jatisi.v8i4.938

Owusu, A. (2024). Assessing the Implementation Success of Strategic Information Systems Planning (SISP) in Ghanaian Organizations. *Sage Open*, *14*(3). https://doi.org/10.1177/21582440241275957

Pelengkahu, P. A., & Manuputty, A. D. (2023). PERENCANAAN STRATEGIS SISTEM INFORMASI DENGAN METODE WARD AND PEPPARD PADA UD. ANEKA JAYA. *Sebatik*, *27*(2). https://doi.org/10.46984/sebatik.v27i2.2308

Peppard, Joe., & Ward, John. (2016). *The strategic management of information systems : building a digital strategy*. Wiley.

Purnomo, S., Nurmalitasari, N., & Nurchim, N. (2024). Digital transformation of MSMEs in Indonesia: A systematic literature review. *Journal of Management and Digital Business*, *4*(2), 301–312. https://doi.org/10.53088/jmdb.v4i2.1121

Ssenyonga, M. (2021). Imperatives for post COVID-19 recovery of Indonesia's education, labor, and SME sectors. *Cogent Economics & Finance*, *9*(1). https://doi.org/10.1080/23322039.2021.1911439

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Theodorou, A., Hatzithomas, L., Fotiadis, T., Diamantidis, A., & Gasteratos, A. (2023). The Impact of the COVID-19 Pandemic on Online Consumer Behavior: Applying the Theory of Planned Behavior. *Sustainability*, *15*(3), 2545. https://doi.org/10.3390/su15032545

Yang, J., Leung, N. K. Y., & Young, B. (2020). The Relationship Between Strategic Information Systems Planning (SISP) and Facilitators to Achieve Successful Business Outcomes in South Korean Organizations. *Electronic Journal of Information Systems Evaluation*, *23*(1). https://doi.org/10.34190/EJISE.20.23.1.009

Yuhertiana, I., Zakaria, M., Suhartini, D., & Sukiswo, H. W. (2022). Cooperative Resilience during the Pandemic: Indonesia and Malaysia Evidence. *Sustainability*, *14*(10), 5839. https://doi.org/10.3390/su14105839

* Corresponding author

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