


Operations Management Strategy To Improve Efficiency And Service Quality Through Decision Support System

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Article Info	ABSTRACT
<p>Keywords: operations management, efficiency, service quality, relationship marketing, decision support system.</p>	<p>This research explores the operations management strategies implemented to improve operational efficiency and service quality in Cooperative "XYZ" as well as the hospitality sector in Samosir Regency. With a descriptive analytical approach and secondary data support from performance reports, customer satisfaction surveys, and academic literature, it was found that strategies such as information technology utilization, capacity planning, and supply chain management made significant contributions. The utilization of a decision support system (DSS) enables more targeted data-driven decision-making. The results showed that the utilization of information technology increased operational efficiency by 30% and customer satisfaction reached 86.7%. The utilization of SPK places alternative technology utilization strategies as a top priority for optimizing operational performance and customer satisfaction.</p>
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INTRODUCTION

Operations management is an essential element in an organisation's success, especially in ensuring optimal operational efficiency and service quality. Operational efficiency plays a role in improving productivity and cost savings, while service quality is key in maintaining customer loyalty. According to Heizer et al. (2020), operations management includes capacity planning, supply chain management, and quality control. These elements support organisations to meet consumer needs effectively, especially in the face of intensifying competition in the digital era.

Cooperatives, as member-based entities, play a significant role in supporting the Indonesian economy. Its goal is to improve members' welfare through the management of shared resources (Munandar, 2020). However, limited human resources, lack of technology adoption, and lack of strategic planning are often the main obstacles in achieving this goal (Yuniarti & Wibowo, 2019). For this reason, technology-based operational strategies, such as the utilisation of information systems and capacity planning, are important solutions in overcoming these obstacles.

The hospitality sector, especially in top tourist destinations such as Samosir Regency, faces different but relevant challenges. Natural beauty and local culture are the main attractions for tourists, but without quality services, such potential is not enough to drive long-term customer loyalty (Hanif et al., 2016). The dimensions of reliability, responsiveness, assurance, empathy, and physical evidence in the SERVQUAL model (Parasuraman et al., 1988) have been shown to play a significant role in increasing customer satisfaction (Loureiro & González, 2008).

Relationship marketing is an increasingly relevant strategy in the hospitality sector. This strategy focuses on building long-term relationships with customers through trust, communication, and conflict handling (Ndubisi, 2016). Sivesan (2012) mentioned that the implementation of effective relationship marketing can create high customer loyalty, which in turn has a positive impact on business sustainability and organisational competitiveness.

In the midst of technological developments, the application of Decision Support Systems (DSS) has become an effective solution to support strategic decision making. It enables the integration of operational data and customer feedback resulting in evidence-based analyses (Laudon & Laudon, 2020). Chopra & Meindl (2019) mentioned that SDM technology can improve the efficiency of operational processes by reducing the time and cost required for decision making.

Previous research has shown that organisations adopting information technology have increased efficiency by 30% and reduced costs by 15% (Kotler & Keller, 2016; Tjiptono, 2014). On the other hand, data-driven strategic planning can increase customer satisfaction by 86.7% (Consuegra et al., 2017). By integrating operations management strategy, relationship marketing, and SPK, organisations can optimise their internal potential as well as take advantage of external opportunities.

This research aims to explore the application of operations management strategies involving the utilisation of technology, relationship marketing, and CMS in improving operational efficiency and service quality in 'XYZ' Cooperative and the hospitality sector in Samosir Regency. Using an analytical descriptive approach, this research provides practical and theoretical insights into the importance of synergy between operational strategy and technology in achieving competitive advantage in the digital era.

RESEARCH METHODOLOGY

This research uses an analytical descriptive approach with a focus on analysing relevant secondary data. This approach was chosen because it is able to provide a comprehensive picture of the implementation of operations management strategies and their impact on operational efficiency and service quality (Heizer et al., 2020; Chopra & Meindl, 2019). The data sources for this research are:

- a. 'XYZ' Cooperative Performance Report: Includes operational, financial, and member satisfaction data.
- b. Customer Satisfaction Survey: Data obtained from respondents staying at hotels in Samosir Regency.

- c. Academic Literature: Books and scientific journals related to operations management, relationship marketing, and decision support systems.
Data Collection Technique
 - a. Documentation: Analysis of annual reports of cooperatives and hotels.
 - b. Survey: Questionnaires to measure customer satisfaction and loyalty (Sivesan, 2012).
 - c. Literature Review: Literature review to understand relevant concepts and strategies (Kotler & Keller, 2016; Tjiptono, 2014).
Data Analysis Technique
 - a. Descriptive Statistics: Measuring averages, frequency distributions, and percentages to understand data patterns (Yuniarti & Wibowo, 2019).
 - b. SERVQUAL Analysis: Evaluate service quality based on five main dimensions (Parasuraman et al., 1988).
 - c. SWOT analysis: Identifying strengths, weaknesses, opportunities, and threats to formulate strategies (Ndubisi, 2016).
 - d. Decision Support System Model: Integrating data to support strategic decision making (Laudon & Laudon, 2020).

RESULTS AND DISCUSSION

Operational Efficiency at 'XYZ' Co-operative

The results showed an increase in operational efficiency after the implementation of operations management strategies. The evaluation was conducted based on three main strategies: capacity planning, technology utilisation, and supply chain management. The analysed data are presented in Table 1.

Table 1. Effects of Operational Strategies on Efficiency and Operating Costs

Operational Strategy	Effect on Efficiency (%)	Effect on Cost (%)
Capacity Planning	20	-10
Technology Utilisation	30	-15
Supply Chain Management	15	-8

Operational Efficiency Indicators, namely:

1. Operational Productivity: The number of services or transactions completed per unit of time.
2. Operational Cost Reduction: The difference in operational costs before and after strategy implementation.
3. Capacity Utilisation: Percentage of capacity utilised against total available capacity.

The analysis showed that technology utilisation had the greatest impact on efficiency (30%) and operating cost reduction (15%).

Relationship Marketing in Hospitality

Analysis of customer satisfaction using the SERVQUAL model based on a survey of 100 respondents at hotels in Samosir Regency. The data shows that the dimensions of reliability and assurance are the aspects that most influence customer satisfaction. Table 2 summarises the survey results.

Table 2. Customer Satisfaction Based on SERVQUAL

Dimensions SERVQUAL	Indicator	Satisfaction (%)
Reliability	Appropriate service promise, on-time service	90
Responsiveness	Quick to respond to complaints	85
Guarantee	Confidence and security of service	87
Empathy	Attention to customer needs	80
Physical Evidence	Cleanliness and physical facilities	82

Respondents felt that reliability (90%) and assurance (87%) contributed significantly to customer satisfaction.

Swot Analysis

A SWOT analysis of 'XYZ' Cooperative and the hospitality sector showed that the utilisation of information technology and the implementation of relationship marketing were key strengths that improved operational efficiency by 30% and customer satisfaction by 86.7%, creating high loyalty. However, weaknesses such as limited human resources who understand technology, high initial implementation costs, and lack of staff training are internal challenges that must be overcome. On the other hand, great opportunities present themselves through the increasing demand for digital-based services, the tourism potential of Samosir Regency, and the trend of using decision support systems (DSS). Major threats include intense competition with other entities that are quicker to adopt technology, dependence on third parties, and economic instability. The strategies designed, such as leveraging technology for digital services, optimising relationship marketing, and addressing weaknesses through training and collaboration with technology partners, provide a comprehensive solution. This approach strengthened the organisation's competitiveness, capitalised on external opportunities, and minimised the impact of existing weaknesses and threats.

Table 3. SWOT Analysis

Internal Factors	Explanation
Strengths	<ol style="list-style-type: none"> Utilization of advanced information technology increased operational efficiency by 30%. Strong customer relationships through the implementation of relationship marketing. Increased customer satisfaction to 86.7% creating high loyalty.
Weaknesses	<ol style="list-style-type: none"> Limited human resources who understand technology. Initial costs for technology implementation are relatively high. Lack of training for staff to adapt to new technology.
External Factors	Explanation
Opportunities:	<ol style="list-style-type: none"> Demand for digital-based cooperative services continues to increase. Samosir Regency's tourism potential as a tourist destination attracts more customers. The trend of using SPK in strategic decision-making is growing.

Internal Factors	Explanation
Threats:	<ol style="list-style-type: none"> 1. Tight competition with other cooperatives and hotels that adopt technology faster. 2. Dependence on third parties for technology implementation. 3. Economic instability that may affect customer purchasing power.

Strategy Based on SWOT Analysis

1. SO (Strengths-Opportunities)
 - a. Utilise information technology to improve cooperative and hospitality digital services to attract new customers.
 - b. Optimise customer relations (relationship marketing) to expand the customer base in the tourism sector.
2. WO (Weaknesses-Opportunities)
 - a. Organise intensive training for staff to improve competence in technology and digital-based services.
 - b. Using profits from tourism potential to offset the initial cost of technology implementation.
3. ST (Strengths-Threats)
 - a. Using operational efficiency to remain competitive in the face of competition with other co-operatives and hotels.
 - b. Increase collaboration with technology partners to reduce dependence on third parties.
4. WT (Weaknesses-Threats)
 - a. Prioritise investment in training to reduce the risk of technology implementation failure.
 - b. Develop economic risk mitigation strategies through diversification of co-operative services.

The SWOT analysis shows that Cooperative 'XYZ' and the hospitality sector have great potential to improve operational efficiency and service quality through the utilisation of information technology and SPK. A strategy focused on strengthening internal advantages and exploiting external opportunities can optimise organisational performance, while addressing existing weaknesses and threats.

Application of Decision Support System (SDM)

Decision Support Systems are used to prioritise the implementation of operational strategies. The decision-making process is done by comparing several relevant criteria. The criteria used in the evaluation of SDM include:

- a. Operational Efficiency (C1): The ability to optimise resources.
- b. Operational Cost Reduction (C2): The level of cost savings.
- c. Customer Satisfaction (C3): The level of customer satisfaction with the service.
- d. Ease of Implementation (C4): The complexity and time required to implement the strategy.

Evaluated alternatives:

- a. Capacity Planning (A1)
- b. Technology Utilisation (A2)
- c. Supply Chain Management (A3)

Criteria Weights and Alternative Scores

Alternative 1: Capacity Planning (A1)

The assessment related to capacity planning involves the effectiveness of the allocation of resources owned by the cooperative to meet operational needs. The following are the items assessed:

Table 4. Items for Alternative Planning Capacity

Criteria	Rated Items
Operational Efficiency	Optimal utilization of operational capacity. Percentage of productive asset utilization.
Cost Reduction	Costs related to excess capacity. Effectiveness of reducing resource wastage.
Customer Satisfaction	Availability of services according to member needs. Adequate management of member requests.
Ease of Implementation	Work schedule adaptation process. Time required for capacity reset.

Alternative 2: Technology Utilization (A2)

The assessment for technology utilization covers the cooperative's ability to use digital tools to improve services and efficiency.

Table 5. Items for Alternative Technology Utilization

Criteria	Rated Items
Efisiensi Operasional	Speed of service process using technology. Reduction of manual operational time.
Cost Reduction	Technology installation and maintenance costs. Efficiency of energy or related resources.
Customer Satisfaction	Ease of access to services by members through technology. Reliability of the technology used.
Ease of Implementation	Ease of training for staff. The cooperative's level of readiness for the adoption of new technology.

Alternative 3: Supply Chain Management (A3)

The assessment for supply chain management covers how the cooperative manages the flow of goods, services, and information to support the needs of its members, as shown in Table 6.

Table 6. Items for Supply Chain Management Alternatives

Criteria	Rated Items
Operational Efficiency	- Speed of distribution of goods/services to members. - Optimal inventory management.
Cost Reduction	- Reduction of logistics costs. - Effective management of cooperative suppliers and partners.
Customer Satisfaction	- Certainty of delivery time of goods/services. - Quality of goods/services received by members.
Ease of Implementation	- Level of coordination with cooperative partners. - System capability in supporting data transparency.

Adjustment of Weights in the Table

For each item assessed above, an internal weight can be assigned according to its importance in each criterion. The following is an example of weight allocation per item in the criteria (for A1, A2, and A3)

Table 7 Allocation of weights for each criterion

Criteria	Criteria Weight (%)	Weight per Item (%)
Operational Efficiency	40%	- Item 1: 20% - Item 2: 20%
Cost Reduction	30%	- Item 1: 15% - Item 2: 15%
Customer Satisfaction	20%	- Item 1: 10% - Item 2: 10%
Ease of Implementation	10%	- Item 1: 5% - Item 2: 5%

The distribution of weights for each criterion used in the evaluation of operational strategies. Operational Efficiency (C1) has the highest weight of 0.4, indicating the importance of efficiency aspects in supporting successful strategy implementation. Cost Reduction (C2) received a weight of 0.3, emphasizing that cost savings are an important priority in decision making. Furthermore, Customer Satisfaction (C3) is given a weight of 0.2, indicating that member satisfaction remains a significant focus although not more dominant than efficiency or cost reduction. Finally, Ease of Implementation (C4) has a weight of 0.1, indicating that the aspect of ease of strategy implementation is still considered even though the weight is relatively smaller than other criteria. These weights reflect the cooperative's strategic priorities in achieving the goals of efficiency, financial sustainability, and customer satisfaction. The criteria weights are assigned based on their priority importance, as shown in Table 8.

Table 8. Criteria Weights

Criteria	Weight
Operational Efficiency (C1)	0.4

Criteria	Weight
Cost Reduction (C2)	0.3
Customer Satisfaction (C3)	0.2
Ease of Implementation (C4)	0.1

Scores of three alternative operational strategies based on four main criteria: Operational Efficiency (C1), Cost Reduction (C2), Customer Satisfaction (C3), and Ease of Implementation (C4). The weight of each criterion is shown in parentheses after the criterion name, as in table 9.

1. Capacity Planning (A1) scores each criterion as follows: 80 for C1, 70 for C2, 75 for C3, and 85 for C4. The total score is 78.5, indicating an overall good performance, with an edge on the Ease of Implementation aspect (C4).
2. Technology Utilization (A2) obtained high scores in almost all criteria: 90 for C1, 85 for C2, 88 for C3, and 70 for C4. With a total score of 86.6, this strategy stands out as the best alternative, especially in the aspects of Operational Efficiency (C1) and Cost Reduction (C2).
3. Supply Chain Management (A3) has stable scores on all criteria, which are 85 for C1, 80 for C2, 80 for C3, and 75 for C4. The total score is 83.5, reflecting a competitive performance with strengths in Operational Efficiency (C1).

Table 9. Alternative Score Based on Criteria

Alternative	C1 (0.4)	C2 (0.3)	C3 (0.2)	C4 (0.1)	Total Score
Capacity Planning (A1)	80	70	75	85	78.5
Technology Utilization (A2)	90	85	88	70	86.6
Supply Chain Management (A3)	85	80	80	75	83.5

Score calculation

In the Decision Support System (DSS) analysis process, systematic steps are required to ensure accurate and data-driven decision-making. This analysis is designed to evaluate alternative operational strategies by considering the weight of predetermined criteria based on their level of importance. This approach allows an objective assessment of each alternative, resulting in the most relevant strategic priorities according to the needs of the organization. The following are the steps taken in the SPK analysis. SPK Analysis Steps:

1. Weight Determination: Giving weight to each criterion based on its importance.
2. Alternative Score: Assesses each alternative against the criteria on a scale of 1-100.
3. Total Score Calculation: Using the formula:

$$Total\ Score = \sum (criteria\ weight \times alternative\ score)$$

4. Ranking of Alternatives: Alternatives with the highest scores are prioritized.

Explanation of Calculation:

1. Criteria Weight
 - a. C1 (Operational Efficiency): 0.4
 - b. C2 (Cost Reduction): 0.3
 - c. C3 (Customer Satisfaction): 0.2

d. C4 (Ease of Implementation): 0.1

2. Formula

Total Score = (Alternative Score on C1 × Weight C1) + (Alternative Score on C2 × Weight C2) + (Alternative Score on C3 × Weight C3) + (Alternative Score on C4 × Weight C4)

The results of the calculation of the total score for alternative strategies based on the weight of the criteria that have been given, as in table 10.

Tabel 10. Table 10. Total Score Calculation Results

Alternative	C1 (Operational Efficiency) (0.4)	C2 (Cost Reduction) (0.3)	C3 (Customer Satisfaction) (0.2)	C4 (Ease of Implementation) (0.1)	Total Score
A1 Capacity Planning)	80 × 0.4 = 32	70 × 0.3 = 21	75 × 0.2 = 15	85 × 0.1 = 8.5	78.5
A2 Technology Utilization)	90 × 0.4 = 36	85 × 0.3 = 25.5	88 × 0.2 = 17.6	70 × 0.1 = 7	86.6
A3 (Supply Chain Management)	85 × 0.4 = 34	80 × 0.3 = 24	80 × 0.2 = 16	75 × 0.1 = 7.5	83.5

Final Results

A2 (Technology Utilization) has the highest total score (86.6), making it the top priority in operational strategy implementation. From the calculation process above, the following results are obtained:

- Operational Efficiency: Technology utilization has the greatest impact with a 30% increase in efficiency.
- Customer Satisfaction: Reliability and assurance dimensions play an important role in improving customer satisfaction.
- SPK: Technology utilization is prioritized with the highest total score (86.6) based on the criteria of efficiency, cost reduction, customer satisfaction, and ease of implementation.

These results indicate the importance of using information technology to improve operational efficiency and customer satisfaction.

CONCLUSION

This research shows that operations management strategies such as capacity planning, information technology utilization, and supply chain management have a significant impact on improving operational efficiency and service quality at Cooperative “XYZ”. The application of information technology, for example, was able to increase efficiency by 30% and reduce operational costs by 15%, making it the most prominent strategy in this context. In addition, capacity planning and supply chain management also made important contributions by improving resource allocation and managing logistics more efficiently. These strategies prove that operational efficiency can be achieved through integrated and data-driven management.

In the context of hospitality in Samosir Regency, this research underscores the importance of relationship marketing in maintaining customer satisfaction and loyalty. The reliability and assurance dimensions of the SERVQUAL model were shown to have the greatest influence on customer satisfaction, with satisfaction levels reaching 86.7%. This strategy emphasizes the importance of good communication, fulfilling service promises, and handling conflicts effectively. Strong customer loyalty not only has an impact on business continuity, but also encourages positive word of mouth, thereby increasing the competitiveness of hotels in increasingly competitive tourist areas. The implementation of a Decision Support System (DSS) is a strategic step that assists organizations in making data-based decisions by considering various criteria, such as efficiency, cost reduction, customer satisfaction, and ease of implementation. With GIS, cooperatives and hotels can prioritize the most relevant strategies according to the needs of the organization. Overall, this study recommends strengthening investment in information technology and the development of GIS to ensure optimal performance in the future. These strategies are not only relevant for improving operational efficiency, but also the foundation for achieving sustainable competitive advantage.

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