
Decision Support System for Determining Marketing Strategy Using SWOT and AHP Methods

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Abstract

In the competitive global business era, determining an effective marketing strategy is crucial for companies. This research integrates SWOT (Strengths, Weaknesses, Opportunities, Threats) and Analytic Hierarchy Process (AHP) methods to develop a decision support system in this context. The objective is to identify internal and external factors that affect the performance of manufacturing and service companies, and rank strategic priorities based on the relative weight of each SWOT factor using AHP. By analyzing case studies of several companies in the manufacturing and service industries, the results show that advanced production infrastructure and efficient supply chain management dominate as major internal strengths, while raw material price fluctuations and market competition as significant external threats. The implication is that international expansion strategies and improvements in digital service capacity are key in responding to current global market dynamics. This research not only provides new strategic insights for practitioners, but also provides a theoretical foundation for the development of more advanced analytical methodologies in corporate strategic analysis.

Keywords : SWOT, Analytic Hierarchy Process (AHP), marketing strategy, manufacturing, services.

1. Introduction

An effective marketing strategy is one of the main determinants of a company's success in the modern business era. In the context of increasingly fierce competition, the ability to formulate and implement the right marketing strategy is crucial to the survival and growth of the company. Strategic marketing involves not only a deep understanding of the market and customers, but also the ability to navigate the dynamics of competition and changes in the business environment. However, the complexity of marketing decision-making often challenges companies, especially when it comes to considering various internal and external factors. Rapid developments in information technology have brought significant changes in various aspects of business, including in the decision-making process. The use of technology-based decision support systems has been shown to improve efficiency and accuracy in strategic decision-making. One widely used approach is SWOT Analysis (Strengths, Weaknesses, Opportunities, Threats), which helps companies identify internal and external factors that affect their performance. In addition, the Analytic Hierarchy Process (AHP) method offers a systematic framework for determining priorities among these various factors through pairwise comparisons. The

integration of SWOT and AHP in a decision support system can provide a more comprehensive solution in determining the optimal marketing strategy. Although these two methods have been widely applied separately, research that combines them in one analytical framework is still limited. Therefore, this research aims to develop a decision support system that integrates SWOT and AHP, to assist companies in formulating more effective and efficient marketing strategies.

In the face of ever-changing market dynamics and increasingly intense competition, companies are often faced with major challenges in determining the right marketing strategy. One of the main problems faced is the complexity of identifying and evaluating the various factors that affect marketing performance. These factors include the company's internal strengths and weaknesses, as well as external opportunities and threats that exist in the market. Conventional approaches to decision-making are often unable to handle this complexity effectively, especially when it comes to making quick, data-driven decisions. The limitations of conventional methods, such as reliance on intuition or experience alone, can result in sub-optimal and unmeasurable decisions. This is exacerbated by the lack of analytical tools capable of integrating these various factors into one coherent framework. As a result, companies may miss important opportunities or fail to anticipate threats that could affect their position in the market. In this context, there is an urgent need for better and more holistic decision support systems, which can help companies to formulate more precise and data-driven marketing strategies. This system should be able to incorporate various internal and external factors, and provide clear priorities based on systematic and measurable analysis. This research aims to answer these needs by developing a decision support system that integrates SWOT and AHP methods, so that it can provide a more comprehensive and accurate solution in determining marketing strategies.

This research aims to develop a decision support system that can assist companies in formulating optimal marketing strategies using SWOT and AHP methods. The system is expected to integrate SWOT analysis, which identifies the company's strengths, weaknesses, opportunities, and threats, with the Analytic Hierarchy Process (AHP) method, which provides a systematic framework for setting priorities based on pairwise comparisons of various factors. By combining these two approaches, the developed system will provide a more comprehensive and data-driven analysis, resulting in more accurate and informative strategy recommendations. Specifically, the main objective of this research is to create a system that can facilitate the strategic decision-making process in marketing in a more efficient and structured manner. The system will not only assist in the identification and evaluation of critical factors, but will also provide a priority ranking for each factor based on its level of importance. Thus, companies can make more informed decisions based on in-depth analysis. Through the development of this system, it is expected that the company will be able to increase effectiveness and efficiency in marketing decision-making, reduce the risk of strategic errors, and better capitalize on market opportunities. This research is also expected to make a significant contribution to the academic literature in the field of marketing and decision support systems, as well as offer practical solutions that can be implemented by various companies to improve their marketing performance.

Although SWOT and AHP methods have been widely used separately in various research and practical applications, their integration in a single analytical framework to



support strategic marketing decisions is still relatively rare in the literature. Previous research tends to focus on using SWOT for situational analysis and AHP for multicriteria decision making, but rarely combines these two methods comprehensively to facilitate more holistic marketing decisions. Most existing studies show that SWOT is effective in identifying internal and external factors affecting a company, while AHP provides a robust framework for prioritizing among them. However, the lack of research integrating SWOT and AHP indicates a gap in the literature that needs to be filled. The combination of these two methods has the potential to provide more in-depth analysis and more accurate prioritization, which is much needed in complex strategic decision-making processes. In addition, the practical application of SWOT and AHP integration in decision support systems for marketing strategy has also not been widely explored. Existing research is often limited to theoretical approaches or specific case studies that cannot be generalized. This creates a need for research that not only develops an integrative analytical framework, but also tests its practical application in a broader and more diverse context. This research aims to fill this gap by developing and testing a decision support system that combines SWOT and AHP, making significant contributions in both theory and practice. As such, this research will not only add to the existing literature but also offer practical solutions that can be used by companies to improve the effectiveness of their strategic decision-making.

This research stands out in terms of innovation by integrating two established analysis methods, SWOT and AHP, into one holistic and comprehensive decision support system. While SWOT is traditionally used to analyze strengths, weaknesses, opportunities, and threats, and AHP is applied to determine priorities among these factors, the combination of these two methods in the context of marketing strategy offers a new, more robust and structured approach. This innovation provides significant added value as it overcomes the limitations of each method when used separately and enables more in-depth analysis and more accurate decisions. The justification of this research is based on the real need in the business world for better analytical tools for strategic decision-making. In a dynamic and complex business environment, the right marketing decisions can be a critical success factor. However, companies often struggle to integrate various relevant data and factors to make optimal decisions. The system developed in this research not only fills the gap by providing a structured analysis framework, but also improves the efficiency and accuracy of decision-making. Furthermore, this research makes a significant contribution to the academic literature by offering a novel approach that can be adapted and implemented in various business contexts. The novel aspect of integrating SWOT and AHP in a decision support system has not been widely explored before, so this research provides valuable new insights for researchers and practitioners. By developing and testing this system, this research is expected to have a broad positive impact, both in terms of improving company performance and contributing to the development of strategic marketing theory and practice.

2. Methodology

Research Design

This research uses a quantitative research design with an analytical descriptive approach. The purpose of this research is to develop and test the effectiveness of a

decision support system that integrates SWOT and AHP methods in determining marketing strategies. This design allows the collection of quantitative data that can be analyzed statistically to identify the relationship and influence of various relevant variables.

Population and Research Sample

The population in this study are companies operating in the manufacturing and service sectors in Indonesia. The research sample was selected using purposive sampling technique, which involves selecting companies that meet certain criteria, such as having a clear organizational structure and being active in marketing activities. The total research sample consisted of 50 companies selected based on their willingness to participate and their relevance to the research objectives.

Data Collection Techniques

Data was collected through several methods, including surveys, structured interviews, and document studies. Surveys were conducted using a questionnaire designed to gather information on the internal and external factors affecting a company's marketing strategy, as well as a prioritization assessment using AHP. Structured interviews were conducted with marketing managers and company executives to gain in-depth insights into their strategic decision-making process. Document study involved analyzing annual reports, company strategy documents, and other relevant sources.

Data Analysis Technique

Data analysis was conducted through several stages. First, data from the survey was analyzed using the SWOT method to identify the strengths, weaknesses, opportunities, and threats faced by the company. Second, the AHP method was applied to determine the priorities among the identified SWOT factors. This is done by using AHP software to perform pairwise comparisons and calculate the weight of each factor. The results of the SWOT and AHP analysis were then integrated into the developed decision support system.

The effectiveness of the system was tested by applying the analysis results to the case studies of the companies included in the sample. Validity and reliability tests were conducted to ensure the accuracy and consistency of the data obtained. Descriptive and inferential statistical analysis was used to assess the performance of the decision support system in helping the company determine the optimal marketing strategy.

3. Results

Research Population and Sample

No.	Company Type	Company Type	Number of Companies
1	Manufacturing	30	Clear organizational structure, active in marketing
2	Services	20	Clear organizational structure, active in marketing
	Total Population	50	
	Research Sample	50	Purposive sampling, including companies that meet the criteria



Explanation

- The study population consists of 50 companies in the manufacturing and service sectors in Indonesia.
- The research sample was selected using purposive sampling technique based on certain criteria such as a clear organizational structure and active in marketing activities.

Application of SWOT and AHP Methods

SWOT Analysis

1. Strengths

From the survey and interviews, it was found that most manufacturing companies have sophisticated production infrastructure and a well-trained workforce. For example, Company A has automated machines that improve production efficiency. Service companies such as Company B have highly competent management teams and a good reputation in the local market.

2. Weaknesses

Some manufacturing companies experience challenges in inefficient supply chain management, which affects the delivery time of products to customers. Some service companies may face limitations in the capacity of services they can provide, especially during demand spikes.

3. Opportunities

From the market analysis, there are opportunities for expansion into international markets for manufacturing companies that already have superior products and competitive advantages. Service companies can take advantage of the digitalization trend to improve operational efficiency and increase market penetration through online platforms.

4. Threats

Fluctuations in global raw material prices pose a threat to manufacturing companies that rely heavily on raw material imports. Increased competition in local and global markets poses a threat to service companies that have to compete with aggressive new competitors.

Use of AHP Method

After identifying the SWOT factors, the Analytic Hierarchy Process (AHP) method is used to determine the priority and relative weight of each factor in each SWOT category. For example:

1. Strength Priority

Production infrastructure (0.4)

Trained labor (0.3)

Competent management (0.3)

Company A which has a sophisticated production infrastructure gets a higher priority weight.

2. Weakness Priority

Supply chain management (0.5)

Service capacity (0.5)

Manufacturing companies that face challenges in supply chain management get a higher priority.

3. Prioritization of Opportunities

International expansion (0.6)

Service digitization (0.4)

Priority is given to international expansion opportunities for manufacturing companies.

4. Prioritization of Threats

Raw material price fluctuations (0.7)

Market competition (0.3)

Threats from raw material price fluctuations are given higher priority in strategic planning.

Results of SWOT and AHP Analysis in Determining Marketing Strategy

SWOT analysis and the use of the Analytic Hierarchy Process (AHP) have provided deep and strategic insights in determining marketing strategies for the companies in this research sample. The following are the results and a comprehensive discussion of the analysis:

1. SWOT Analysis Results

Strengths

From the survey and interviews, it was identified that most manufacturing companies have sophisticated production infrastructure and a well-trained workforce. This provides a significant competitive advantage in improving operational efficiency and product quality. For example, Company A has successfully utilized automated machinery to increase their production, which directly affects their competitiveness in the market.

Weaknesses

However, some companies face challenges in inefficient supply chain management, which impacts the delivery time of products to customers. Service companies also experience limitations in the capacity of services they can provide, especially when there is a surge in demand. These weaknesses indicate potential areas for improvement in operational management and capacity building strategies.

Opportunities

In terms of opportunities, the market analysis shows that there is potential for expansion into international markets for manufacturing companies that already have superior products. Meanwhile, service companies can take advantage of the digitalization trend to improve their operational efficiency and expand market share through online platforms. These opportunities provide a strong strategic foundation for the company's long-term growth.



Threats

Fluctuations in global raw material prices pose a significant threat to manufacturing companies that rely heavily on raw material imports. Intensifying competition in local and global markets is also a threat that needs to be considered, especially for service companies that must compete with aggressive new competitors for the market.

2. Use of AHP Method

The AHP method is used to determine the priority and relative weight of each factor in the SWOT category, assisting in the determination of a more focused and effective marketing strategy.

Strategic Prioritization

Based on the AHP results, strategic priority was given to the identified key factors: Production Infrastructure (Strength): Has the highest weight as it directly contributes to operational efficiency and product quality. Supply Chain Management (Weakness): Indicates the need for improvement in operational management to address delivery time challenges. International Expansion (Opportunity): Given high priority for manufacturing companies as a long-term growth strategy. Raw Material Price Fluctuation (Threat): Has the highest weight for risk mitigation against raw material price fluctuations that could potentially harm the company's profitability.

3. Strategic Implications and Recommendations

Based on this SWOT and AHP analysis, several strategic implications can be identified: Strengthening Infrastructure and Operational Management: The company can prioritize investment in more advanced production technologies and improvements in supply chain management to increase efficiency and responsiveness to market demand. International Expansion: Manufacturing companies should consider international expansion strategies to diversify risks and increase their global market share. Adaptation to Market Challenges: Companies need to develop adaptation strategies that are responsive to fluctuating raw material prices and intensifying competition, with a focus on product innovation and operational efficiency.

4. Conclusion

This study integrates SWOT and Analytic Hierarchy Process (AHP) methods to develop a decision support system for determining marketing strategies for manufacturing and service companies. The SWOT analysis successfully identified significant internal strengths, weaknesses, opportunities and threats for each company in the research sample. The AHP method was then used to rank strategic priorities based on the relative weight of each SWOT factor, providing clear guidance in formulating effective marketing strategies. The results show the importance of advanced production infrastructure and efficient supply chain management as crucial factors in improving competitiveness and operational performance. In the face of an increasingly dynamic business environment, it is recommended that companies in the manufacturing and service industries continue to develop their capabilities in technology and operational management. [...] Investments

in modern production infrastructure and improvements in supply chain management will help improve efficiency and responsiveness to changing market demands. In addition, firms should also consider international expansion strategies to diversify risks and expand their global market share. Further research in the development of more advanced analytical methodologies can make a significant contribution in strengthening this strategic analysis framework, so that it can be more timely and relevant in dealing with the challenges faced by the industry today. As such, this research not only provides new theoretical insights, but also strong practical implications for strategic decision-making at the firm level.

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