

The strategy of business model development in mushroom agroindustry

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Abstract. In general, mushroom business centers spread over the city and regency of Malang have been growing since 2010. These businesses can produce various processed products that are increasingly popular in both local and global markets. To increase business competitiveness, it needs to implement strategic management. This study aims to identify an alternative strategy used to develop the business model of the mushroom agroindustry. The objects of research are 19 mushrooms Small and Medium Enterprises (SMEs) in Malang. This study uses the Business Model Canvas (BMC) approach and Strengths, Weaknesses, Opportunities, Threats (SWOT) analysis to identify the agroindustry conditions, as well as the Analytical Hierarchy Process (AHP) method to determine alternative priorities for business development. Through the combination of SWOT-AHP, the proposed strategies of business development are (1) Weakness-Opportunity (WO) strategy (intensive product marketing through social media); (2) Strength-Opportunity (SO) strategy (development and improvement of product quality to expand the marketing area); (3) Weakness-Threat (WT) strategy (evaluation and improvement of the quality of the partnership relationship to increase partner loyalty); and (4) Strength-Threat (ST) strategy (increased promotion and development of services to face the other food product competitors). BMC development is carried out by adding SO strategy on the value propositions element, the ST and WO strategy on the channel's element, and the WT strategy on the key partnership element.

1. Introduction

Oyster mushroom is one of the agro-industrial products that is currently experiencing development in production to post-harvest processing. In Malang, the white oyster mushroom is one of the superior products with a significant increase in the amount of product. Based on horticultural statistics data, the productivity of mushroom commodities in 2015 was 62.52 tons/hectare and in 2016 increased by 87.61 tons/hectare. Meanwhile, in East Java, the increase in production was 37.48% in 2016 [1]. This also affects the growth of the mushroom processing industry in Malang. Processing oyster mushrooms into a product is an alternative to increase the selling value of mushrooms. Processed oyster mushroom products found in Malang include mushroom floss, chips, and crispy mushrooms. The mushroom agroindustry in Malang has experienced significant development since 2010. In 2020, there was ±20 mushroom agroindustry actively carrying out production activities [2]. Mushroom agroindustry in



Malang is generally dominated by SME actors producing fresh oyster mushrooms and/or processed mushroom foods.

In order to face the increasingly competitive rivalry, mushroom agroindustry players are required to implement strategic management in increasing their business competitiveness [3]. The formulation of strategies that are reviewed in accordance with the SWOT analysis of a business model will provide an alternative strategy that is suitable with the existing conditions of the mushroom agroindustry. Based on research that has been carried out before, it is known that mushroom agroindustry has internal strength in its business that is on clear consumer segmentation. The weakness is anticipating less consumers' enthusiasm toward healthy food products. The opportunity of mushroom agroindustry is optimizing the use of online market. The threat is competitors from other food products. Strategies on the basis of internal and external factors are aimed at maximizing the strengths and opportunities in order to minimize the weaknesses and threats [4]. Some alternatives of developing the business are based on hold and maintain position (were developed based on previous research) consisting of four combined strategies: developing and increasing product quality, increasing promotion and services, marketing the products by social media, and evaluating the quality of business relationship.

There are shortcomings in the previous research since the strategies developed based on the SWOT analysis have the relative importance of various factors that are not quantified and are highly subjective [5]. As a consequence, to complete the shortcomings, the SWOT analysis can be combined with the AHP method. This study aims to develop strategies for the development of the mushroom agroindustry by combining the BMC method and SWOT-AHP integration. Therefore, it is expected that it can help business actors in developing their business.

2. Material and methods

The BMC approach is used to identify and analyze the business model of the mushroom agroindustry. BMC is a visual representation tool in the form of a framework to describe a company's business processes comprehensively with only one sheet of paper [6]. BMC is an initial strategy that must be owned by entrepreneurs because it makes it easy to map and analyze their business models, so it will be known whether the business has the potential or not to run [7]. There are nine BMC building blocks, namely customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure [8]. The BMC data were collected through a list of questions, brainstorming, or conducting research on each of these elements. The data that has been collected is then placed in each relevant part of the canvas [9]. After all BMC component blocks are filled, then a SWOT analysis is carried out on each BMC element and creates a new BMC for the mushroom agroindustry.

Expert respondents were determined by the purpose sampling method consisting of 19 people from SMEs and 3 experts from the Department of Cooperatives and Micro Enterprises, Batu City, Indonesia. The analytical method used in this research is descriptive qualitative, and quantitative. Descriptive-qualitative analysis was carried out by observing (direct observation without interacting with the objects or people under study); interviewing (collecting the data through face-to-face or telephone interaction between the interviewer and the respondent); and surveys on scholarly articles, books, and other sources relevant to a particular issue, area of research, or theory, providing a description, summary, and critical evaluation of these works [10]. The goals are to identify current conditions and interpret research results. Meanwhile, quantitative analysis is used to determine the priority of alternative strategies based on the AHP method. The research stages are:

- a. Establishing the AHP hierarchical level, i.e., goals/objectives, criteria (four groups of SWOT factors), sub-criteria (key factors from the SWOT matrix), and alternative strategies formulated according to elements and SWOT analysis of the mushroom agroindustry business model.
- b. Analyzing paired comparison data with *Expert Choice 11* software to obtain the alternative priority strategies.
- c. Developing the current mushroom agroindustry business model with the BMC approach based on the alternative strategies that have been prepared.

3. Results and discussion

3.1. The internal and external condition of mushroom agroindustry and improvement strategy based on SWOT analysis

The internal and external conditions of the mushroom agroindustry were previously identified using SWOT analysis based on nine BMC elements. Analysis of the internal conditions shows that the main strength of the mushroom agroindustry is clear customer segmentation (0.65), while the weakness that needs to be minimized is the lack of customer enthusiasm for healthy food products (0.5). Analysis of the external conditions of the mushroom agroindustry in terms of the greatest opportunity that can be utilized for business development is through optimization of online marketing activities (1.2). On the other hand, the external threat that needs to be handled properly comes from other food product competitors (0.525). The position of the mushroom agroindustry based on internal-external evaluation is held and maintained or with the implication of maintaining strategy. Intensive strategies can be implemented through market penetration and product development [11].

The developed strategies include (1) Strength-Opportunity (SO) strategy, i.e., the development and improvement of product quality in the context of marketing expansion, particularly through online marketing; (2) Weakness-Opportunity (WO) strategy, i.e., the product marketing (both mushroom processed products and services) which is carried out intensively through social media; (3) Strength-Threat (ST) strategy, i.e., the efforts to increase promotion and development of service products to face competition from other food product competitors (besides mushroom processed products); and (4) Weakness-Threat (WT) strategy, i.e., the efforts to evaluate and improve the quality of partnership relationship in order to increase partner loyalty.

3.2. Priority of alternative strategies with the AHP method

Alternative strategies that have been compiled using the SWOT matrix are then ranked in order of importance using the AHP method. The level of importance shows the strategies that are prioritized to overcome the occurring problems. The data collection was carried out by distributing questionnaires filled in by expert respondents, which were then analyzed with *Expert Choice 11* software. The utilized AHP structure consists of 4 levels which can be observed in Figure 1.

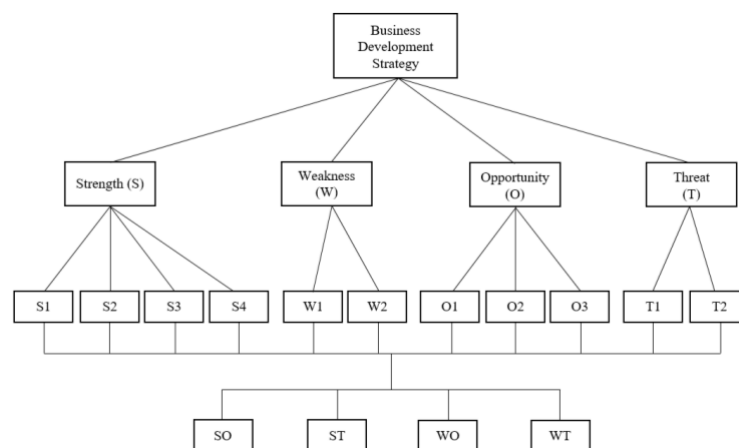


Figure 1. AHP-SWOT hierarchy of mushroom agroindustry.

The assessment of each hierarchy is based on the consistency ratio (CR) value. CR value that is less than or equal to 0.1 indicates that the results of the assessment at each hierarchy are consistent without the necessity to refill the questionnaire by respondents and produce a decision that is close to valid [9]. Analysis of the AHP method using *Expert Choice 11* software shows that the CR values of the four factors are strengths (0.00157), weaknesses (0.00), opportunities (0.10), and threats (0.00), respectively.

The CR value of each hierarchy has a value of less than 0.1. Less than 0.1 CR value indicates a hierarchy that is considered consistent and accurate in making decisions [12].

3.2.1. Weights and priorities of factors and sub-factors hierarchy level. The factor level represents the four SWOT groups. Priorities and weight values at the factor level are strengths (0.585), opportunities (0.183), weaknesses (0.175), and threats (0.057). Strength is an internal factor of the mushroom agroindustry with the highest priority level factor, the use of which can be managed and optimized in exploiting development opportunities and anticipating threats that may arise. The strength factor as the main priority followed by opportunities is supported by Xingang et al. [13] statement that the results of strategic priorities with the AHP-SWOT combination are aimed at maximizing strengths and opportunities while simultaneously minimizing weaknesses and threats.

Sub factors are the strategic keys of each SWOT factor group, namely: strengths (S1, S2, S3, S4), weaknesses (W1, W2), opportunities (O1, O2), and threats (T1, T2). The strength subfactor with the highest weight (0.319) is the existence of a partnership relationship between the mushroom agroindustry and partners (suppliers and sellers) (S4). The advantage of this partnership relationship is the company's ability to rely on other companies in carrying out its marketing activities. In addition, the buyer-supplier relationship gives the company the ability to supplement the resources that it does not have through collaboration with other companies [14]. Collaboration with sales partners makes it easier for the customers to reach and obtain the products [15]. The weakness subfactor with the highest weight (0.875) is indirect marketing channel constraints (W1). Indirect marketing channels are carried out through the collaboration of the mushroom agroindustry with its sales partners such as retailers and gift shops. The disadvantage of a partnership relationship is that partnerships can create a sense of dependence on the company to its partners [16].

The opportunity factor is the second priority after the strength factor. The opportunity subfactor with the highest weight (0.715) is online marketing optimization (O1). This is also in accordance with the efforts of the mushroom agroindustry in utilizing social media (Instagram, YouTube) to increase their product promotion. Online marketing, including through social media, can be employed to expand the reach of the marketing area, facilitate communication with customers, increase branding, increase the customer awareness of a brand, and minimize the marketing costs [17]. The threat subfactor with the highest weight (0.875) is other food product competitors. Other food products have become the competitors of the mushroom agroindustry because the processed mushroom products are not widely known and realized by customers. Moreover, the focus of the mushroom agroindustry on healthy food products also becomes a challenge in the promotion and sales of processed mushroom products. Ashakiran's [18] stated that people still do not care much about health factors in food selection since they tend to choose foods that are delicious, instant, and cheap. The customer need for healthy food products is low, and this affects their purchasing decisions.

3.2.2. Weights and priorities of alternative strategy hierarchy level. The highest weight value at the alternative strategy level indicates the priority of the agroindustry main strategy for business development. The results of the weight level analysis of alternative strategies can be observed in Table 1.

Table 1. Weight level value of alternative strategies.

No.	Factor	Alternative strategy	Weight	Priority
1.	Strength - Opportunity	SO Development and improvement of product quality to expand the marketing area	0.277	2
2.	Strength - Threat	ST Increased promotion and development of services to face the other food product competitors	0.144	4
3.	Weakness - Opportunity	WO Intensive marketing (both products and services) through social media	0.325	1
4.	Weakness - Threat	WT Evaluation and improvement of the quality of the partnership relationship to increase partner loyalty	0.253	3

The main priority for business development strategy is WO factors, i.e., product marketing which is carried out more intensively through social media (online). Product marketing through social media has been carried out by the mushroom agroindustry, one of which is through Instagram. Based on the AHP analysis, it is recommended that the mushroom agroindustry increase the intensity of promotion through social media. Social media for online marketing can increase the competitiveness of SMEs in the globalization era because it allows SMEs to introduce, makes customers aware (awareness), and market their products with lower promotional costs [19].

3.3. Mushroom agroindustry business model development

The current business model of the mushroom agroindustry is described using the Business Model Canvas (BMC). Each element identified in the current BMC is then evaluated using SWOT analysis, and the results are compiled in a new BMC by modifying the elements relevant based on the results of the SWOT-AHP combination analysis. New BMC development is performed through the addition of SO strategy on the value propositions element, ST and WO strategy on channels element, and WT strategy on key partnerships element. This means that the development of BMC based on the SWOT-AHP analysis has the most influence on value propositions, channels, and key partnerships elements. The mapping of mushroom agroindustry BMC development can be viewed in Figure 2.

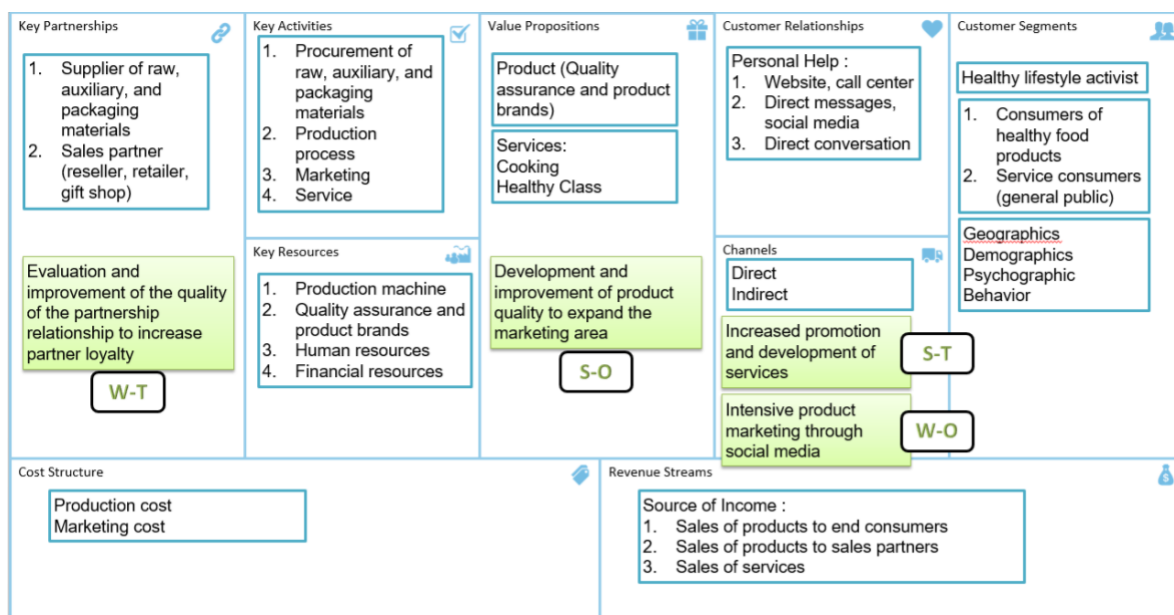


Figure 2. Mushroom agroindustry BMC development.

BMC development begins with adding SO strategy to the value propositions element. The value proposition is the unity of the various benefits that the company offers to customers for solving problems or fulfilling the customer needs [20]. The strategy of developing and improving product quality to expand the marketing area is relevant to the value propositions element because the focus of the strategy is on product development in the form of both goods (mushroom processed products) and services. Both products are included in the value propositions owned by the mushroom agroindustry in carrying out its business model. Product development aims to improve the quality so that the yielded products can always meet the customer's needs and expectations. Good product quality also allows it to be shipped in the broader market area. In terms of service products, the development is carried out in order to meet customer expectations. The suitability of quality with the price offered is one indicator of product

quality. Quality improvement aims to realize customer satisfaction with a product or service purchased. Consequently, it can influence the customers to make repeat purchases [21].

BMC development in the channel's element is performed through the addition of a combination of ST and WO strategies. Channels are the touchpoints that let customers connect with the company. Channels play a role in raising awareness of the product and service among customers and delivering the value propositions to them. Channels can also be used to allow customers the avenue to buy products or services and offer post-purchase support [20]. ST strategy is carried out by increasing promotion and service development, and WO strategy is done by intensively marketing the products through social media. Promotion is one of the important keys to increasing the sales volume of a product. Thus, an increase in promotional activities is expected to increase the number of products sold. A promotion strategy is carried out to introduce products to potential customers [22]. One of the ways in which customer loyalty can be obtained is through the provision of the best service so that the opportunity for customers to do the next transactions can be increased [23]. WO strategy is carried out through intensive product marketing via social media. Social media is online media that helps SMEs in developing their business through a wider market coverage, tends to be independent of time and place and allows potential customers to find information about the products to purchase. As a promotional tool, social media plays a role in minimizing promotional costs, helping companies run their business operations reliably, having a significant impact on business because of the large number of social media users, and being applicable as a medium for interaction with customers [17].

BMC development through modification of key partnerships element is carried out by adding a WT strategy, i.e., evaluating and improving the quality of partnership relationships especially suppliers to increase a loyalty. The key partnerships element describes the partnership relationship between the company and its suppliers and partners [20] Partners are one of the important keys for the mushroom agroindustry in running its business. Supplier Relationship Management is a strategy to build a close relationship between the company and its strategic suppliers so that the availability of materials or products needed by customers can be guaranteed [24]. Simple activities in SRM include: (1) paying bills on time, (2) providing clear and precise information on needs that must be supplied, (3) communicating all problems in a good way, (4) not being forced to give discounts, (5) provide positive reviews, and (6) show good intentions to build relationships by visiting suppliers or providing suggestions and input for improving product and/or service quality.

4. Conclusions

Through the combination of SWOT-AHP, the proposed strategies of business development are: (1) WO strategy (intensive product marketing through social media); (2) SO strategy (development and improvement of product quality to expand the marketing area); (3) WT strategy (evaluation and improvement of the quality of the partnership relationship to increase partner loyalty); and (4) ST strategy (increased promotion and development of services to face the other food product competitors). BMC development is carried out through the addition of SO strategy on the value propositions element, the ST and WO strategy on the channel's element, and the WT strategy on the key partnership element.

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