



An Integration of Business Model Canvas on Prioritizing Strategy: Case Study of Small Scale Nontimber Forest Product (NTFP) Enterprises in Indonesia

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Accepted: 31 October 2020

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Abstract

Nontimber forest products (NTFPs) are one of the forest products that can provide direct benefits to communities living around forests. Some of the most used NTFPs in Indonesia are the stems, leaves and fruit of candlenut trees. Candlenut fruit is widely used in the cosmetics, pharmaceuticals, and biodiesel industries and is generally used as a cooking ingredient in Indonesia. However, only a limited number of people or community groups manage the forests to increase their income from this business. The aim of this study is to identify business models to serve as the basis for developing alternative business model organizational plans for candlenut extraction. A case study approach was adopted, with in-depth interviews used to collect data. The integration of Business Model Canvas, SWOT Analysis, Internal Factor Evaluation and External Factor Evaluation matrix were used to determine alternative strategies. The results exhibit that the value proposition is the largest barrier for the improvement of these businesses. The *Positioning Quadrant* SWOT shows that internal factors (strengths and weaknesses) are low, indicating that the candlenut business position is internally weak. However, the scores of external factors (opportunities and threats) are higher implying that there is a great opportunity in the development of candlenut. The alternative strategies to develop candlenut business are to maintain relationships with customers and partners; increasing the quantity and quality of products through technology inputs, promotion, product diversification, and partnership with the government.

Keywords Business model · Business model canvas · Candlenut · IFE-EFE · NTFPs · SWOT

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Introduction

Over the last decade, interest in managing forests for nontimber forest products (NTFPs) has grown tremendously, yet very little is known about the materials collected, the people who collect them, or the enterprises that produce and market them (Chamberlain and Predny 2003). Millions of rural and urban dwellers across the world make use of a wide diversity of forest products to fulfill livelihood requirements ranging from direct household provisioning to cash income, cultural needs and as a fall back in times of emergency or a means for income diversification (Shackleton and Ndoye 2007; Stanley et al. 2012). In recent decades, with growing concern about conservation, rural poverty and sustainable development efforts have been made to bring NTFPs to the center of discourse (Arnold and Perez 2001). NTFPs management has been receiving increasing attention in the last few years (Banjade and Paudel 2008). Forest management based on NTFP development is now commonly part of strategies to solve problems related to profitability and sustainability of natural resource management, poverty alleviation and biodiversity conservation (Michon 2005).

Indonesian government policies recognize NTFPs enterprises as a potential means to contribute to poverty reduction. One of the NTFPs that is widely used by people around the country is *Aleurites moluccana* (L.) Willd., commonly known as candlenut (English) or kemiri (Bahasa Indonesia). Candlenut is a flowering tree belonging to the Euphorbiaceae family (Subroto et al. 2017) with a wide global distribution (Mpala et al. 2017; Larrue et al. 2010). It is one of the world's great domesticated multipurpose trees (Sihombing and Hadjanto 2013). It is native to the Indo-Malaysia region and was introduced throughout the Pacific islands in ancient times. In Indonesia, it has long been grown for both subsistence and commercial purposes, sustaining people's everyday lives, especially in the eastern part of the country (Krisnawati et al. 2011). The species can be used for various purposes such as medicines, (Sihombing and Hadjanto 2013); biodiesel (Pham et al. 2018), pharmaceuticals (Quintao et al. 2011; Ubeda et al. 2017), and as a spice in Indonesian cooking.

Villagers around Indonesian forest areas have long utilized candlenut products as part of their livelihoods. It provides a cash income for subsistence farmers and the collection and sale of candlenut is a common coping mechanism for poor and food insecure households in rural areas. Although the Indonesian government has supported small and medium enterprises (SMEs) because they can play a role in job creation (Tambunan and Cant 2005), and marketing partnership expansion with established enterprises (Hadiyati 2015), the utilization of this product is still limited and is not being optimally utilized, which has an impact on the income going to the communities surrounding the forests.

One potential area that has potential for expansion of candlenut tree utilization is Maros Regency in South Sulawesi. The use of candlenut trees in this region has been carried out for generations. The largest candlenut-growing province in Indonesia is South Sulawesi, which accounts for about 40% of both cultivation area and production (Koji 2002). In addition, Koji (2002) stated that in South

Sulawesi in the 1920s and 1930s, the Dutch forestry agency recommended candlenut planting to rehabilitate abandoned fields resulting from shifting cultivation. Candlenut forests in Maros Regency cover an area of approximately 9000 ha with an average of 1.87 ha per farmer or 62% of the total land held (Alam 2007a, b). Alam (2007a, b) concluded that the candlenut forest in Maros Regency has contributed not only to ecological benefits, but also to the economic benefits for the communities and regional economic development. However, the management of candlenut trees was not intensive with candlenut tree area and production tended to decrease each year (Sihombing and Hadjanto 2013).

Recently, the quality of candlenut forests has decreased and this has led to decreased productivity of candlenut trees (Suprayitno et al. 2011). The decreasing of the quantity and quality of candlenut trees affects the candlenut business for the people in this area. However, people in this region still collect and sell candlenuts to meet their daily needs. Business development through the formulation of an appropriate marketing strategy is needed by the community, especially for community groups, for utilizing and managing businesses from this candlenut tree.

This paper presents a business development model for candlenut using the business model canvas approach. This model provides a strategic and powerful way for organizations to understand, plan, create and capture the value of business (Osterwalder and Pigneur 2010). This approach focuses on nine topics: customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, and key partnerships to maximize broader strategic thinking while minimizing debate on operational details. SWOT analysis, Internal Factor evaluation (IFE), External Factor Evaluation matrix (EFE) are integrated with the existing business model to prioritize development strategies for candlenut businesses.

Methodology

Study Site

The research location was determined purposively on the basis of selecting villages which had the largest area of candlenut plantations in Maros Regency, South Sulawesi, Indonesia. Statistics Maros Regency (2013) states that Maros Regency is located in the western part of South Sulawesi between $40^{\circ} 45' - 50^{\circ} 07'$ south latitude and $109^{\circ} 205' - 129^{\circ} 12'$ east longitude, which borders Pangkep District to the north, Makassar and Gowa to the south, Bone to the east and Makassar Strait to the west. The total area of 1619 sq.km Maros Regency is subdivided into 14 districts and 103 villages or Kelurahan.

Candlenut is distributed across almost all of the Indonesian archipelago. Despite this wide distribution, and although the species is easy to grow, it has not been planted in large-scale plantations. It is extensively cultivated in home gardens, and in and around farms. The main candlenut cultivation areas in Indonesia are in the provinces of North Sumatra, West Sumatra, South Sumatra, Bengkulu, Lampung, West Java, West Kalimantan, South Kalimantan, East Kalimantan, Bali, South Sulawesi,

Maluku and East Nusa Tenggara. According to the 2003 agricultural census, (Ministry of Forestry and the National Statistics Agency 2004), the provinces with the highest number of candlenut trees planted by smallholders are East Nusa Tenggara and North Sumatra, with more than 2 million trees reportedly planted by households in each of these provinces (Krisnawati et al. 2011).

Candlenut forests in Maros Regency, South Sulawesi were established independently by community members individually and as family groups since the Dutch era. In this study area, candlenut has been identified as one of the major marketable commodities. The area of candlenut trees managed intensively in Maros Regency is 9350 hectares, spread mainly across three sub-districts: District of Camba covering 2086 hectares, District of Mallawa covering 4956 hectares, and District of Cenrana covering 2064 hectares.

Data Collection and Analysis

Primary data were obtained through observation and in-depth interviews. The heads of farmer groups, collecting and intermediate traders, and people involved in the marketing of candlenut were selected to assign scores to internal and external factors. The scale from Saaty (2008) was used to assign relative scores to pair-wise comparisons among factors and sub-factors (Table 1).

The identification of existing business models was done through descriptive analysis using the Business Model Canvas (BMC) approach based on nine BMC elements (Chesbrough 2002): customer segment, value proposition, channels, revenue streams, customer relationships, key activities, key resources, and key partnerships. BMC, also known as Business Model Generation, is a tool to help more accurately see the form of business that currently exist and provides evidence for future improvements. To summarize these factors one canvas sheet containing a business plan that integrates the nine key elements is created including strategy analysis for internal and external influencing factors (Osterwalder and Pigneur 2015).

Table 1 Scale of part-wise comparisons (Saaty 2008)

Rated importance	Defenition	Explanation
1	Equal importance	Two activities contribute equally to the objective
2	Weak or slight	
3	Moderate importance	Experience and judgmetn slightly favour one over the other
4	Moderate plus	
5	Strong importance	Experience and judget slightly favour one over the other
6	Strong plus	
7	Very strong or demonstrated importance	An activity is favoured very strongly over the other, its dominance demonstrated in practice
8	Very, very Strong	
9	Extreme importance	The evidence favouring one activity over another is of the highest possible order of affirmation

Following is a brief explanation of the nine block elements of the BMC. Customer segment or market segmentation forces organisations to reflect on what they are particularly good at compared to competitors, and make an effort to gain insights into what customers want (Dolnicar et al. 2018). The value proposition focuses on how to create value for customers through the product offered and compare this offers to those of competitors (Osterwalder and Pigneur 2010; Osterwalder and Pigneur 2015). According to Szopa and Pekal (2012), a distribution channel is a group of dependent organizational units, which are taking part in the process of delivery of products or services. A revenue stream is the income received by the company from the consumer and is the core of the business sustainability (Makkarrennu and Mahbub 2019). Standard relationships with customers are personal assistance, which is based on human interactions. Customer communicates directly with the sales people during the whole sales process. Key resources include tangible resources (production facilities, buildings, vehicles, and equipment) and intangible resources (brand, knowledge, patents, copyrights, partnerships, customer databases and human resources—staff and managers). Key activities are the most important activities involved in creating value to facilitate delivery of the product (Stefan and Richard 2014) and key partners are people or companies needed to carry out your activities and reach customers (Osterwalder and Pigneur 2010).

The business development model and the marketing strategy of the candlenut business were formulated through integration of the BMC (Osterwalder and Pigneur 2015), the Internal Factor Evaluation (IFE), External Factor Evaluation (EFE) and SWOT analysis (Gurel and Merba 2017). Phase identification of internal and external factors using SWOT, summarized internal and external strategic factors within the IFE and EFE matrices were matched to the IFE matrix. Alternative strategies were formulated using SWOT analysis. The last step was to weigh factor identified in the SWOT analysis using BMC (customer segment, value proposition, channels, customer relationship, revenue streams, key resources, key activity, key partnership, and cost structure to selection of the main strategy.

Results

Existing Business Model for Candlenut

Customer Segments (CS)

The customer is key factor to keep the business running. The Customer segmentation of Candlenut Business (CB) as a producer uses mass-marketing and segmented markets. The CB sells the product to intermediary traders/collectors at the village and sub-district level. These intermediary traders sell it to merchants at the provincial level. In addition, CBs may sell their products to retailers who will distribute it to end consumers at the village level. The CBs also use an open market system where the farmers allow customers to directly access their products. Customers (intermediary traders) mostly use a prepaid system when they order candlenut

because the traders face the difficulties getting sufficient candlenut. CBs can also sell their product directly in local market, but the quantities are relatively low.

Value Proposition (VP)

Central to the business model is the value proposition. On the supply side, it should be clear what is required to produce the offering, which activities are undertaken and what resources they require. On the buyers' side, it should be cleared what the customers want, what their needs are and how the relationship is established and maintained with. The value offered by candlenuts to its customers is accessibility. Customers can easily access the product in term of quantity and time of harvesting. In addition to access to the products, access to information is also simple to obtain especially in terms of time of receiving the products that have been ordered in advance. There is a trust relationship established between the CB and the customer, including in terms of the transaction and the mode of payment. Sometimes the customer keeps their money (prepaid) before the product is ready to be marketed. This happens because there are times when the quantity produced are relatively small and hence scarce.

Channels (CH)

This element describes the delivery of products to customers. As explained in the customer segments (CS), the process of transactions is conducted using direct and indirect marketing. In direct marketing, the entrepreneur sells their product to at the nearest market or the customer comes to the place of production, while they use the intermediaries delivery the products in larger quantities. There are some trading institutions involved in the marketing of candlenut to end consumers: village/sub-district collectors, provincial collectors (wholesalers) and retailers. Village/sub-district collecting traders buy candlenut by visiting farmers', then sell to subdistrict or provincial collectors (wholesaler). Wholesalers sell in bulk to exporters or industries and retailers then sell to final customers. The market chain for a CB can be seen in Fig. 1.

Customer Relationship (CR)

Customer relationships are established between producers and consumers to run a business that is mutually beneficial. The customer relations applied to the customer segment is personal assistance where consumers communicate directly with the sellers. To obtain the desired product, the customer may contact the farmer directly and visit the place of production. Conversely, farmers also contact the customers directly either by phone or through personal communications that consider individual persons familiar with each customer, especially if the products ordered by the customers are readily to transportable. Farmers have not provided other services to access their products in addition to personal assistance such as online marketing.

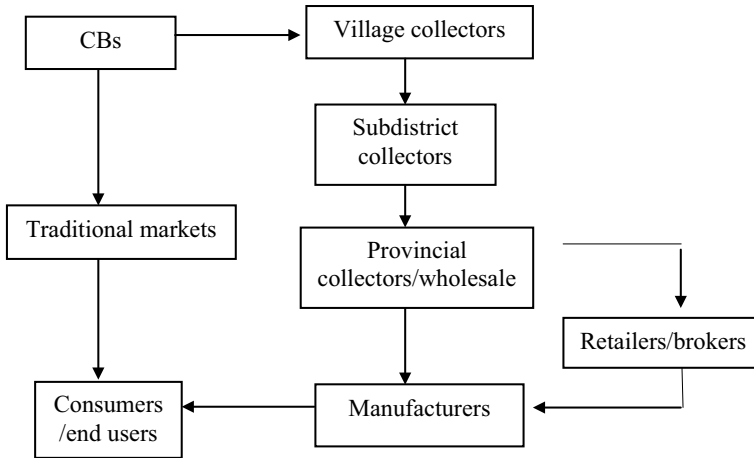


Fig. 1 Market chain of candlenut Business

Revenue Streams (RS)

The revenue stream is the money received from the sale of candlenut. The price mechanism is fixed menu pricing, where the price is set based on the quantity and quality of the product. The prices remained relatively unchanged since a few years ago and are in the range of IDR 12.000 (0,82 USD) a liter (roughly 0.8 kg) for whole peeled candlenuts and IDR 10,000 for mixed candlenuts (low grade). Farmers package their products using 25 kg and 50 kg sacks.

Key Resources (KR)

The main resource is human resources and access to trees. This business still relies on human labor for peeling the candlenuts (*maddepa* in local terms) by using simple equipment made of woven rattan. The quality of the candlenut produced varies greatly depending on the skill of the workers so that the product still needs to be sorted. Other resources used are simple equipment such as tarps which are used to dry candlenuts after stripping.

Key Activities (KA)

Key activities undertaken by the CBs include the harvesting or picking of candlenuts, drying, stripping, sorting and packaging. The results of these activities produce candlenuts that are ready to be processed and sold to consumers. For the landowner, the activity of collecting seeds of candlenuts is done with family members and by involving other people and then profit sharing system. The next step is drying the candlenut before peeling it and then naturally drying it in the sun for two to three days. The next activity is the stripping process (*maddepa*). Other equipment used

is a slightly flat stone used as a place to break the candlenuts. After finished and peeled, the resulting product is then sorted according to the level of wholeness (broken or not). The last activity is packaging using 25 kg or 50 kg sacks.

Key Partnerships (KP)

To do business well, partnerships are crucial. The main partners in this business are raw material suppliers, namely cundelnut seed farmers, and intermediary traders. The kind of relationships that are in accordance with the theory of Osterwalder and Pigneur (2010) include non-competitive strategic alliances in which the cooperations gain their respective benefits through activities undertaken without feeling rivaled. In establishing cooperation among partners, the motivation that underlies the relationships are optimization and economies of scale, which are the most common factors underlying the establishment of cooperation between companies and other parties. This is because is hard for a company to do all of the necessary its activities alone. They need others to support their own business and objectives. In addition to the smoothness of this partnership, this relationship can also reduce costs incurred. Although there are some farmers who directly process this product, most sell it in the form of unhulled candelnuts. The achievement of business goals for the CB is also highly dependent on intermediary traders or collectors. This partner plays an active role in channeling these business products into the hands of consumers. The relationship of mutual trust and mutual benefit between the candlenut and the intermediary traders is the basis of this partnership.

Cost Structure (CC)

The cost structure is all expenses incurred by the business of CB. The cost structure incurred by this business is low because the tools used are very traditional and do not require electricity. The power used is human power to peel the candlenut and to dry the seeds via the sun.

Based on the BMC approach, the business model of CB (Fig. 2) is relatively simple when the the nine BMC elements are analyzed, the CB still maintains the same market segmentation as long ago without any effort to get new customers. Continuity of production is also not guaranteed, so there is no target marketing. They only produce in accordance with the wishes and opportunities that exist.

Internal and External Factor Analysis (IFE and EFE)

The identification of several internal and external factors is needed to identify the strengths, weaknesses, opportunities and threats (SWOT) that these business groups have in term of various BMC elements. After identifying some internal and external factors, strengths, weaknesses, opportunities and challenges encountered are discussed.

The steps in compiling the Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) are: determining the factors that become the Strength

Key partners (KP)	Key activities (KA)	Value proposition (VP)	Customer relationship (CR)	Customer segment (CS)
Farmers Middleman	Production process	Easy to access information and product (accessibility);	Good relationship with customer	Segmented market; Mass market:
	Key resources Human resources		Channels (CH) Direct marketing; intermediary of collectors and retailers	
Cost Structure (CC) Cost Driven			Revenue streams (RS) Low revenue contribution to overall revenue Low willingness or ability to pay	

Fig. 2 Existing business model of CB

and Weakness giving weights for scoring to each factor on a scale from 0.0 (not important) to 1.0 (very important) where all of the combined weights sum to 1.00. Weight determination is obtained by using the paired comparison method. To determine the score of each internal and external factor, the next step is rating the value which refers to condition of the CBs with the scale from 1 (below average) to 4 (excellent). After entering the data into the IFE and EFE matrices and assigning the weightings and rating for each element, the next step is to calculate the value of the scores obtained from the two matrices, which is meant to describe the positioning of a company.

Table 2 shows that the scores for internal (strengths and weaknesses) are below 2.5, at 2.45 and 1.54 respectively. This indicates that the position of CBs are internally weak, especially in terms of the value proposition (VP/S2) and key activities (KA/S7). Most of the factors have low weakness scores, including value, channel, customer relationship, main revenue stream and resources (VP/W2, CH/W3, CR/W4, RS/W5, KR/W6, KA/W7).

Table 3 shows the sub total score for opportunity factors is 3.0 which means there is a substantial externally opportunity in the development candlenut businesses especially in terms of channel (CH/O3). The development of technology to access information and promote and market products online. In addition, the development of essential oil industry and other industries that use raw candlenuts can be a motivation to capture this opportunity. On the other hand, the main threats faced is the low productivity of candlenut trees (VP/T2) that has the potential to threaten the sustainability of the production process so that it may affect revenue (RS/T5). In addition, partners have the potential to switch to temporary business (KP/T8) impacts the continuity of production and revenue.

The calculated results in the IFE and EFE matrices show that the difference between strength (2.49) and weakness in internal factors (1.54) is 0.95 and the difference between opportunities (3.00) and challenges (1.2) on external factors is 1.08. This shows that the quadrant of this business position is in quadrant I of the SWOT (Fig. 3), which means the companies are strong condition and have a chance

Table 2 Scoring of internal factor of CB

Internal Factor	Weight	Rating	Score
<i>Strenght (S)</i>			
Customer segment/S1	0.12	4.00	0.47
Value proposition/S2	0.15	1.00	0.15
Channels/S3	0.11	3.00	0.33
Customer relationship/S4	0.14	2.00	0.28
Revenue streams/S5	0.07	4.00	0.28
Key resources/S6	0.07	4.00	0.28
Key activities/S7	0.13	1.00	0.13
Key partnerships/S8	0.15	2.00	0.29
Cost structure /S9	0.07	4.00	0.28
Sub Total	1.00		2.49
<i>Weaknesses (W)</i>			
Customer segment/W1	0.17	3.00	0.50
Value proposition/W2	0.09	1.00	0.09
Channels/W3	0.14	1.00	0.14
Customer relationship/W4	0.10	1.00	0.10
Revenue streams/W5	0.10	1.00	0.10
Key resources/W6	0.10	1.00	0.10
Key activities/W7	0.10	1.00	0.10
Key partnerships/W8	0.12	2.00	0.24
Cost structure/W9	0.09	2.00	0.18
Sub total			1.54

to improve. This implies a strategy that is progressive or aggressive, the company is likely to continue to expand, and needs to increase growth to achieve maximum progress.

Strategy Alternative Based on SWOT Analysis and BMC

Strategy S-T (Strengths-Threats)

This strategy uses the power it has to overcome existing threats. The first recommendation is to maintain customer satisfaction and loyalty. As a result of uncertain production, customers still have the potential to switch to similar businesses, so it takes effort to maximize customer loyalty.

Strategy W-O (Weaknesses-Opportunities)

This strategy can be applied by taking advantage of opportunities for minimizing existing weaknesses. Strategies that can be used are utilizing information technology to conduct a media campaign to have more direct access to customers so the businesses not depend as heavily on trader intermediaries/collectors. The CBs

Table 3 Scoring of external factor (opportunities and threats) of CB

External factor	Weight	Rating	Score
<i>Opportunities (O)</i>			
Customer segment/O1	0.08	4.00	0.33
Value proposition/O2	0.13	3.00	0.38
Channels/O3	0.13	3.00	0.40
Customer relationship /O4	0.15	2.00	0.31
Revenue streams/O5	0.07	4.00	0.28
Key resources/O6	0.11	3.00	0.33
Key activities/O7	0.11	3.00	0.33
Key partnerships/O8	0.12	3.00	0.35
Cost structure/O9	0.10	3.00	0.29
Sub total	1.00		3.00
<i>Threats (T)</i>			
Customer segment/T1	0.14	3.00	0.42
Value proposition/T2	0.09	1.00	0.09
Channels/T3	0.13	3.00	0.40
Customer relationship/T4	0.13	2.00	0.26
Revenue streams/T5	0.09	1.00	0.09
Key resources/T6	0.15	2.00	0.29
Key activities /T7	0.09	1.00	0.09
Key partnerships/T8	0.08	1.00	0.08
Cost structure/T9	0.10	2.00	0.19
Sub total	1.00		1.92

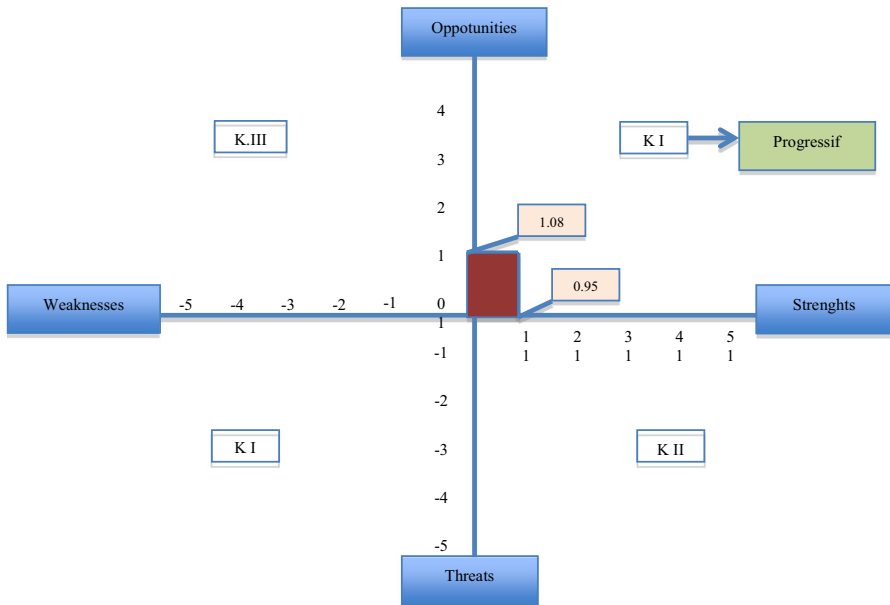


Fig. 3 Positioning quadrant or strategic position for candlenut businesses

need access wider markets. Another strategy is to diversify the product so that the CBs not only sell candelnuts, but also can process candlenuts into essential oil.

Strategy W-T (Weaknesses-Threats)

This strategy is a defensive one that seeks to minimize existing weaknesses and avoid threats. The strategy that can be accomplished by using partnership opportunities with the government and NGOs to gain access to technology, information, capital and to facilitate the planting or enrichment of candlenut trees as a source of raw material. In addition, in order to retain customers, expand market access, increase bargaining positions, CBs must take advantage of today's emerging technologies, so they not only rely on direct promotion, but also utilize other promotional media, such as online marketing and brochures. However, Cunningham et al. (2017) states that the potential supply of an NTFP must be compared with other product's potential markets; a product that has commercial viability at one scale in one market may not be viable at another scale in a broader market.

Conclusion

In this paper, we have determined significant strategic factors to enhance NTFPs contributions to rural livelihoods (candlenut business) by combining BMC, SWOT and IFE-EFE techniques. The findings show that companies are which means the company is in a strong condition and have a chance for expansion. The suggested strategy is aggressive marketing strategy, where the CB is very likely to continue to expand and increase growth in order to achieve maximum progress. The alternative strategies to develop candlenut businesses are maintaining relationships with customers and partners, increasing the quantity and quality of products through technological inputs, promotion, product diversification and partnership with the government. Thus this candlenut business can improve the welfare of the community by increasing income in Maros Regency but also areas outside the study area.

Acknowledgements The authors thank the financial support of the Directorate General for the Research and Community Service Institution of Hasanuddin University

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