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- Small-scale Forestr. **Inbox** Submission Confirmation - Dear Dr Makkarennu, We acknowledge, with thanks, receipt of the revised vers... 8/25/20
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- Small-scale Forestr. **Inbox** Submission Confirmation - Dear Dr Makkarennu, We acknowledge, with thanks, receipt of the revised vers... 5/11/20
- Small-scale, me 3 **Inbox** Major Revisions requested SSFO-D-17-00096R1 - Dear Sharif A. Mukul, PhD Associate Editor S...    5/11/20
- Small-scale Forestr. **Inbox** SSFO-D-17-00096R2 : Your PDF Has Been Buil - Dear Dr Makkarennu, The PDF for your manuscript, "An i... 5/11/20
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- Keerthana Govindara. **Inbox** Automatic reply: SSFO-D-17-00096 - keerthana.govindarajan@springernature.com www.springernature... 7/2/19
- Small-scale, me 2 **Inbox** Major Revisions requested SSFO-D-17-00096 - Dear Brett J. Butler, Ph.D. Editor in Chief Small-scale Fore... 7/1/19

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### Major Revisions requested SSFO-D-17-00096 Inbox x



**Small-scale Forestry (SSFO)** <em@editorialmanager.com>

Sat, Jun 1, 2019, 5:30 AM

to me

Dear Dr Makkarennu,

We have received the reports from our advisors on your manuscript, "Integrating Business Model Canvas, SWOT and QSPM in Strategic Planning: An Application Model for the Development of NTFPs business in the Forest Farmer Group, South Sulawesi, Indonesia", which you submitted to Small-scale Forestry.

Based on the advice received, I feel that your manuscript could be reconsidered for publication should you be prepared to incorporate major revisions. When preparing your revised manuscript, you are asked to carefully consider the reviewer comments which are below, and submit a list of responses to the comments. If one or more reviewers have uploaded files related to their reviews, these files can be found online.

In order to submit your revised manuscript, please access the Editorial Manager system.

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Submissions without editable source files will be returned for these prior to final acceptance.

Also, please be informed that your revision is due on 01 Jul 2019.

Please make sure to submit your editable source files (i. e. Word, TeX).

With kind regards,

Brett J. Butler, Ph.D.  
Editor in Chief

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Small-scale Forestry (SSFO) <em@editorialmanager.com>

Mon, Jul 1, 2019, 11:36 PM

to me

Dear Dr Makkarennu,

The PDF for your manuscript, "An integration of Business Model Canvas on prioritizing strategy: case study of small scale NTFPs enterprises in Indonesia" is ready for viewing.

In order to formally submit your manuscript to the journal, you must approve the PDF.

Please access the Editorial Manager system.

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In your main menu, you will see there is a category entitled "Submission Waiting for Author's Approval". Click on that category, view your submission and approve it. In the unlikely case of conversion issues please contact the Journal's Editorial Office by clicking the "CONTACT US" link on the journal EM home page.

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Thank you very much.

With kind regards,  
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Thank you for your approval Inbox x

**Small-scale Forestry (SSFO)** <em@editorialmanager.com> Sun, Jul 14, 2019, 11:11 AM

Dear Dr Makkarennu,

Thank you for approving the changes that we made to your submission entitled "An integration of Business Model Canvas on prioritizing strategy: case study of small scale NTFPs enterprises in Indonesia".

You will be able to check on the progress of your paper by logging on to Editorial Manager as an author. The URL is <https://www.editorialmanager.com/ssfo/>.

Thank you for submitting your work to this journal.

Kind regards,  
%EDITORS\_NAME%

Recipients of this email are registered users within the Editorial Manager database for this journal. We will keep your information on file to use in the process of submitting, evaluating and publishing a manuscript. For more information on how we use your personal details please see our privacy policy at <https://www.springernature.com/production-privacy-policy>. If you no longer wish to receive messages from this journal or you have questions regarding database management, please contact the Publication Office at the link below.

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COMMENTS FOR THE AUTHOR:

Dear Dr. Makkarennu,

First of all, my sincere apologies for our unwilling delay in handling your manuscript. Unfortunately, most of the reviewers declined our invitation to review your manuscript. We now received comments from one of our esteemed reviewers. The topic of your paper although interesting, the reviewer indicated some major issues that are currently lacking and need to be revised.

I also went through your manuscript and agree with most of the comments and/or suggestion made by the reviewer. In addition to that, I would recommend you to describe the method section in detail. The result section does not have sufficient quantitative analysis and also need major improvement. The manuscript also needs to be checked by a native English speaker or a professional editor.

Hereafter you can find the comments from the reviewer. Please revise your manuscript accordingly and submit the revised manuscript within the given timeline with a letter detailing response to reviewers specific comments.

Sincerely yours,
Dr. Sharif A. Mukul
Associate Editor
Small-scale Forestry

Reviewer #1: General Comments:

This article mainly characterize the nine important elements of Business Model Canvas approach with their strengths, weakness, opportunities and threats. The existing candlenut market in the South Sulawesi of Indonesia is the case study site. The structure of the manuscript is good, however, some contents need to be discussed for better understanding. Authors' claim of suitability of the model is not evaluated. There are many anomalies exist in English sentence making throughout the manuscript. Some abbreviation and their full form are not properly placed. The title is long and hard to follow. A short and clear title may increase readership of the article.

Specific Comments:

- Abstract lacks specifying the importance of candlenut, otherwise it is well structured.
- Introduction is very poor and needs rewriting. The reasons of the study are not clear. The selection of candlenut for this study is not justified. The description of the NTFPs is long.
- Methodology needs to be elaborated. The significance of the site selection is needed. Candlenut is not well known to all, so, it seeks a description of candlenut, which will improve the quality of the article. A short description of the nine important elements is needed. The scale of Saaty (1996) needs to be explained including weighting, rating and scoring methods. The data and information gathering methods need elaboration.
- Sketches are necessary in some cases of results, for example adding a flowchart for the distribution system of candlenut in the customer segments of Business Model

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**Nunu Makkarenu** Mon, Apr 13, 2020, 8:54 PM ☆  
 Dear Editor in Chief of Small-scale Forestry, Thank you very much for the review of our manuscript. We sincerely appreciate for valuable comments and suggestion

**Nunu Makkarenu** <nmakkarenu@gmail.com> Mon, May 11, 2020, 7:32 AM ☆ ↩  
 to Small-scale ▾

Dear Sharif A. Mukul, PhD  
 Associate Editor  
 Small-scale Forestry

First off all, we would like to thank you for editor and reviewers for the extremely helpful comment provided our paper. In the paper we have addressed all comments and we already submit our manuscript revised in the editorial manager system.

Herewith, I attached the manuscript revised and responses to reviewers.  
 Thank you and best regards,

Makkarenu  
 Faculty of Forestry, Hasanuddin University



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**Revisions Waiting for Approval by Author Makkarennu - Makkarennu, Ph.D**

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Action	Manuscript Number	Title	Date Revision Began	Date Revision Due	Status Date	Current Status
<a href="#">Action Links</a>	SSFO-D-17-00096R2	An integration of Business Model Canvas on prioritizing strategy: case study of small scale NTFFPs enterprises in Indonesia	10 May 2020	12 May 2020	10 May 2020	Revision Needs Approval

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Lastly, please be informed that your revision is due on 25 Aug 2020.

Please make sure to submit your editable source files (i. e. Word, TeX).

With kind regards,

Brett J. Butler, Ph.D.  
 Editor in Chief  
 Small-scale Forestry

COMMENTS FOR THE AUTHOR:

My apologies for how long it has taken to process this manuscript.

Please see my attached comments. Once they are addressed, the manuscript should be acceptable for publication.

I had difficulty understanding parts of the text, so please review the whole manuscript very carefully and make sure my recommendations do not change what you are trying to say.

- Brett Butler, Editor in Chief

There is additional documentation related to this decision letter. To access the file(s), please click the link below. You may also login to the system and click the 'View Attachments' link in the Action column.

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Faculty of Forestry, Hasanuddin University

Pada tanggal Min, 12 Apr 2020 pukul 05.32 Small-scale Forestry (SSFO) <em@editorialmanager.com> menulis:

Dear Dr Makkarennu,

We have received the reports from our advisors on your manuscript, "An integration of Business Model Canvas on prioritizing strategy: case study of small scale NTFPs enterprises in Indonesia", which you submitted to Small-scale Forestry.

Based on the advice received, I feel that your manuscript could be reconsidered for publication should you be prepared to incorporate major revisions. When preparing your revised manuscript, you are asked to carefully consider the reviewer comments which are below, and submit a list of responses to the comments. If one or more reviewers have uploaded files related to their reviews, these files can be found online.

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Please make sure to submit your editable source files (i. e. Word, TeX).

With kind regards,

Brett J. Butler, Ph.D.  
Editor in Chief  
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**Nunu Makkarennu** <nmakkarennu@gmail.com> Apr 13, 2020, 8:54 PM

to Small-scale

Dear Editor in Chief of Small-scale Forestry,

Thank you very much for the review of our manuscript. We sincerely appreciate for valuable comments and suggestions, which helped us to improve the quality of the article. We would like to submit our revision before the deadline.

Thank you and best regards,

Makkarennu  
Faculty of Forestry, Hasanuddin University

**Nunu Makkarennu** <nmakkarennu@gmail.com> May 11, 2020, 7:32 AM

to Small-scale

Dear Sharif A. Mukul, PhD  
Associate Editor  
Small-scale Forestry

First off all, we would like to thank you for editor and reviewers for the extremely helpful comment provided our paper. In the paper we have addressed all comments and we already submit our manuscript revised in the editorial manager system.

Herewith, I attached the manuscript revised and responses to reviewers.

Thank you and best regards,

Makkarennu  
Faculty of Forestry, Hasanuddin University

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Pada tanggal Sen, 13 Apr 2020 pukul 20.54 Nunu Makkarennu <nmakkarennu@gmail.com> menulis:

Dear Editor in Chief of Small-scale Forestry,

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Faculty of Forestry, Hasanuddin University

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with kind regards,

Brett J. Butler, Ph.D.  
Editor in Chief  
Small-scale Forestry

COMMENTS FOR THE AUTHOR:

Dear author,

Thanks very much for the revised version of your manuscript. We now received comments on your manuscript from the reviewer(s). As can see below, the reviewer suggested improvement including a strong clear theoretical context, implication and relevance with previous studies. I would, therefore, invite you to submit a revised version of your manuscript with a response to the reviewer's comments and/or suggestions.

Best regards,  
Sharif A. Mukul, PhD  
Associate Editor

Reviewer #4: Mayor comments:

This research has no clear and specific scope, if we see the whole elements BMC, it seems the existing scope is the forest candlenut management as a system, not on the market chain of fruits. Therefore, please make sure to focusing on the fruits products and possible strong related product derivation

This research is quiet interesting, however, there is no clear state of the art and theoretical background as well as previous research related to candlenut forest. There are so many research conducted by Universitas Hasanuddin and Ford Foundation about social, economic and marketing on the candlenut management in South Sulawesi particularly in Maros Regency. It is better to provide special section on theoretical framework to back up hypothesis

Results:

In Figure 1, it is weird, the figure did not contain "district trader" actor, because in previous research (Supratman et al., 2003; Alam et al., 2004) this actor have high involvement and big influence on market chains, please clarify and confirm.

In the 9 elements of CMB, you mention only candlenut fruits, however, the established research found that some important products from candlenut especially wood. Wood is the part main of small holder management accompanying fruits as also you mention in the abstract. Why your analysis only focusing on the fruits?. Loosing wood as the objective of analysis will lose the core business analysis projection.

We also found that the research lack or very weak connection between 9 elements, and no consistency explanation and arguments on how to connect one element to other elements.

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Your Submission SSFO-D-17-00096R2



Small-scale Forestry (SSFO) <em@editorialmanager.com>

Sun, Jul 26, 2020, 2:21 AM

to me

Dear Dr Makkarenu,

We have received the reports from our advisors on your manuscript, "An integration of Business Model Canvas on prioritizing strategy: case study of small scale NTFPs enterprises in Indonesia", submitted to Small-scale Forestry

Based on the advice received, I have decided that your manuscript can be accepted for publication after you have carried out the corrections as suggested by the reviewer(s). Below, find the reviewers' comments for your perusal.

If one or more reviewers have uploaded files related to their reviews, these files can be found online.

Please submit your revised manuscript by accessing the Editorial Manager.

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Lastly, please be informed that your revision is due on 25 Aug 2020.

Please make sure to submit your editable source files (i. e. Word, TeX).

With kind regards,

Brett J. Butler, Ph.D.

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Editor in Chief  
Small-scale Forestry

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Editor in Chief  
Small-scale Forestry

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Your Submission SSFO-D-17-00096R2 Inbox x

**Small-scale Forestry (SSFO)** Sun, Jul 26, 2020, 2:21 AM  
 Dear Dr Makkarennu, We have received the reports from our advisors on your manuscript, "An integration of Business Model Canvas on prioritizing strategy: case s

**Nunu Makkarennu** <nmakkarennu@gmail.com> Mon, Aug 3, 2020, 7:04 AM ★ ↩  
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Makkarennu  
Faculty of Forestry, Hasanuddin University

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Submission Confirmation



Small-scale Forestry (SSFO) <em@editorialmanager.com>

Tue, Aug 25, 2020, 9:46 PM

to me

Dear Dr Makkarennu,

We acknowledge, with thanks, receipt of the revised version of your manuscript, "An integration of Business Model Canvas on prioritizing strategy: case study of small scale NTFPs enterprises in Indonesia", submitted to Small-scale Forestry

The manuscript number is SSFO-D-17-00096R3.

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Your Submission SSFO-D-17-00096R3



Small-scale Forestry (SSFO) <em@editorialmanager.com>

Sat, Oct 31, 2020, 6:29 AM

to me

Dear Dr Makkarennu,

We are pleased to inform you that your manuscript, "An integration of Business Model Canvas on prioritizing strategy: case study of small scale NTFPs enterprises in Indonesia", has been accepted for publication in Small-scale Forestry.

You will receive an e-mail from Springer in due course with regards to the following items:

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With best regards,  
Brett J. Butler, Ph.D.  
Editor in Chief

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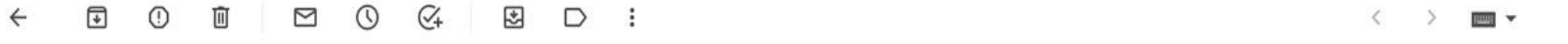
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COMMENTS FOR THE AUTHOR:

Dear author,

Thanks very much for the revised version of your manuscript. We now received comments on your manuscript from the reviewer(s). As can see below, the reviewer suggested improvement including a strong clear theoretical context, implication and relevance with previous studies. I would, therefore, invite you to submit a revised version of your manuscript with a response to the reviewer's comments and/or suggestions.

Best regards,  
Sharif A. Mukul, PhD  
Associate Editor

Reviewer #4: Mayor comments:

This research has no clear and specific scope, if we see the whole elements BMC, it seems the existing scope is the forest candlenut management as a system, not on the market chain of fruits. Therefore, please make sure to focusing on the fruits products and possible strong related product derivation

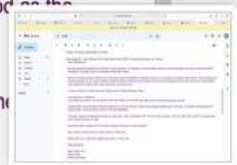
This research is quiet interesting, however, there is no clear state of the art and theoretical background as well as previous research related to candlenut forest. There are so many research conducted by Universitas Hasanuddin and Ford Foundation about social, economic and marketing on the candlenut management in South Sulawesi particularly in Maros Regency. It is better to provide special section on theoretical framework to back up hypothesis

Results:

In Figure 1, it is weird, the figure did not contain "district trader" actor, because in previous research (Supratman et al., 2003; Alam et al., 2004) this actor have high involvement and big influence on market chains, please clarify and confirm.

In the 9 elements of CMB, you mention only candlenut fruits, however, the established research found that some important products from candlenut especially wood. Wood is the part main of small holder management accompanying fruits as also you mention in the abstract. Why your analysis only focusing on the fruits?. Loosing wood on the objective of analysis will lose the core business analysis projection.

We also found that the research lack or very weak connection between 9 elements, and no consistency explanation and arguments on how to connect one element elements.



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<a href="#">Action Links</a>	SSFO-D-17-00096R1	An integration of Business Model Canvas on prioritizing strategy: case study of small scale NTFPs enterprises in Indonesia	13 Jul 2019	13 Jul 2019	Revision Submitted

Page: 1 of 1 (1 total revisions being processed)

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Dear Reviewers

First, we would like to thank you for your reviewers for the extremely helpful comment provided for our paper. In the paper we have addressed all comment.

Reviewer #1: General comments:

This article mainly characterize the nine important elements of Business Model Canvas approach with their strengths, weakness, opportunities and threats. The existing candlenut market in the South Sulawesi of Indonesia is the case study site. The structure of the manuscript is good, however, some contents need to be discussed for better understanding. Authors' claim of suitability of the model is not evaluated. There are many anomalies exist in English sentence making throughout the manuscript. Some abbreviation and their full form are not properly placed. The title is long and hard to follow. A short and clear title may increase readership of the article.

Thank you for the helpful comment.

- Several explanations and discussions have been added and improved both in the method and in the results section
- Some writing in English has repaired and some abbreviation has adjusted (in section Internal and external factor analysis)
- The title changes to: **An integration of Business Model Canvas on prioritizing strategy: case study of small scale NTFPs enterprises in Indonesia.**

Specific comment:

1. Abstract lacks specifying the importance of candlenut, otherwise it is well structured.
  - The abstract has improved by adding a little introduction and the importance of candlenut
2. Introduction is very poor and needs rewriting. The reasons of the study are not clear. The selection of candlenut for this study is not justified. The description of the NTFPs is long.
  - The introduction has been rewritten by reducing the portion of NTFS and explaining the reasons for choosing candlenut as one of the non-timber forest products
3. Methodology needs to be elaborated. The significance of the site selection is needed. Candlenut is not well known to all, so, it seeks a description of candlenut, which will improve the quality of the article. A short description of the nine important elements is needed. The scale of Saaty (1996) needs to be explained including weighting, rating and scoring methods. The data and information gathering methods need elaboration.
  - The methodology has revised by adding the study site and short description about candlenut in Maros Regency as a study site in this research. A brief

explanation of nine element of BMS also added this section. The scale of Saaty was explained in Table 1 including weighting, rating and scoring in Table 2.

4. Sketches are necessary in some cases of results, for example adding a flowchart for the distribution system of candlenut in the customer segments of Business Model Canvas may increase the beauty of the manuscript. The price of what is Rp 12.000/litre in Revenue streams sub-section not clear. But kg used as quantity unit in Key activity sub-section. Both kg and litre units are confusing and failed to explain. SP, PN, SL, HP, AP, SU, AK, KU, SB of Table 1 & Table 2 have used without introducing them before. Internal and external factors analysis have used some description which are suitable in Methodology section. Minus (-) sign has used for the strength and opportunity options, while plus (+) sign has used for weakness and threats options in page 8, both are wrong. Fig. 1 has not cited in the text. Table 4 has shown mistakenly in page 8.

- The sketches of distribution system of cundlenut in the customer segment already added on the channels (CH) part as in figure 1 to explained the market chain of this product.
- The price of cundlenut in revenue streams as IDR 12.000/liter. In general, in the village, they used liter as a unit to sell cundlenut. 1 liter roughly 0.8kg.
- Abbreviation on table has replaced and adjusted to the previous explanation. Minus
- (-) and plus (+) sign have been changed for weakness and threats option. Fig. 1 already cited in the text.

5. The text in the conclusion mismatch with the results claimed before

- The conclusion has adjusted with the result

#### Reviewer #3

- 1) Please seek English language editing.
- 2) I do understand the potential of NTFP for improving local livelihood have not been realized in many cases, but I am not convinced developing a business model alone would improve the situation. For example, lack of infrastructure that limited the market access cannot be solved by communities alone.
- 3) It is described that researchers collected qualitative data, using PAR then analyzed the data using the framework of Business Model Canvas (BMC) approach. I am not sure how BMC can be applied here. Would the only customers that this farmer's group have directly dealing with be the middle-men? Who exactly are the customers that farmers' group can call? How can they differentiate their products If middle-men collect from multiple sources to supply the next in the supply chain?

- 4) It is unclear how IFE, EFE and SWOT, QSPM are applied in data analysis. For example, what qualitative data were collected for the purpose of these analyses need to be described clearly.
- 5) What does each strategy alternative mean for the farmers' group? Since this is not explained, it is hard to know what business model the authors are proposing to the group (which was the purpose of the study).

Thank you for the helpful comment and some suggestion has been rewriting.

1. English language in this paper has been rewrite
2. NTFPs have the potential that can be developed by communities around the forest. Some of NTFPs have been sold by several community groups, but it has not provided maximum results because of the existing business model that carried out still ingenuous. I agree that the government's attention is still needed in developing the business
3. To analyze of BMC using the qualitative and quantitative data. BMC is a tool to help see more accurately the form of business that is being or will be lived. Turning complex business concepts into simple ones is displayed on one canvas sheet containing a business plan with nine key elements that are well integrated and which include strategy analysis internally and externally.
4. The qualitative data were collected to explain internal and external factors on nine elements of BMC
5. Some of strategy alternative has been explained on the result and on the conclusion of this paper.

Sincerely,

Makkarennu

## An integration of Business Model Canvas on prioritizing strategy: case study of small scale NTFPs enterprises in Indonesia.

Makkarennu<sup>1\*</sup>, Asar Said Mahbub<sup>1</sup>, Ridwan<sup>1</sup>

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**Abstract** NTFPs are one of the forest products that can provide direct benefits to communities living around the forest. One of the most used NTFP products is candlenut trees because they have many benefits from the stem, leaves and fruit. Candlenut fruit is widely used in the cosmetics, pharmaceuticals, biodiesel industries and is generally used as a mixture of cooking ingredients in Indonesia. However, only a few people or community groups around the forest managed to increase their income from this business. The aim of this study is to identify business models, which serves as the basis to develop alternative business model organizational plan for candlenut business in the Forest area. A case study was adopted, and a qualitative research and in depth interview method were used to collect the fundamental data. The integration of Business Model Canvas (BMC), SWOT Analysis, Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrix to determine alternative strategies for development of candlenut business. The results exhibit that from 9 blocks of BMC, value proposition is the most challenging for the improvement this business. The *Positioning Quadrant* SWOT shows that the score values of internal factors (strengths and weaknesses) lower than 2.5, i.e. 2.45 and 1.54, respectively. This fact indicates that the candlenut business position is internally weak. However, the scores of external factors (opportunities and threats) higher than 2.5, (3.0), which means that externally have a great opportunity in the development of candlenut. The alternative strategies to develop candlenut business are 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, BMC, candlenut, IFE-EFE, NTFPs, SWOT

### Introduction

Over the last decade, interest in managing forests for Non-Timber Forest Products (NTFPs) has growing 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 several livelihood requirements from direct household provisioning to cash income, cultural needs and as a fall back in times of emergency or a means to income diversification (Shackleton, et al., 2011; Stanley, D., et al, 2012). In recent decades, with growing concern about conservation, together with rural poverty and sustainable development made efforts to brings NTFPs at the center of discourse (Arnold and Perez, 2001). NTFPs management has been receiving increasing attention in the last few years (Banjade and Paudel, 2008).

Indonesian government policies recognize NTFPs enterprises as one of the potential means to contribute to poverty reduction. One of the NTFPs that are widely used by people around the forest is *Aleurites moluccana* (L.) Willd., or 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 et al., 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; biodiesel (Pham, et al. 2018), pharmaceuticals (Quintao et al., 2011; Ubada 2017), and most candlenut is used as a spice in Indonesian cooking.

Villagers around the forest area have long been utilizing candlenut products as their livelihood. It provides a cash income for subsistence farmers in forest area 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 & Cant 2009), and marketing partnership expansion with established enterprises (Hadiyati 2015), however, the utilization of this product is still limited and has not been utilized optimally, which has an impact on the income of the community around the forest. In addition, the trade and marketing of these products is still largely hidden and lack access to market information, so it does not provide a large marketing margin for the villagers. Therefore, business development through the formulation of the right marketing strategy is needed by the community, especially for community groups in utilizing and managing candlenut tree products and other NTFP products. Thus, the potential of NTFPs can be utilized sustainably and can contribute significantly to increasing the income of rural communities around the forest area. This paper is an integration of Business Model Canvas (BMC), Strengths, Weaknesses, Opportunities, and Threats (SWOT) and Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrix to determine alternative strategies for NTFPS development specifically for candlenut business.

## **Methodology**

### **Study Site**

Research location was determined purposively on the basis of selecting villages which had the largest area of *Aleurites moluccana* 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 4°45' - 5°07' South Latitude and 109°205' - 129°12' East longitude, which borders northern Pangkep District, Makassar and Gowa south, eastward of Bone and Makassar Strait next to the West. The total area of 1619.12 km Maros regency that the administration of its government into 14 district and 103 Villages/ Kelurahan.

*Aleurites moluccana* is distributed across almost all islands in 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 *A. moluccana* 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, as reported by the Ministry of Forestry and the National Statistics Agency (2004), the provinces with the highest number of *A. moluccana* trees planted by smallholders are East Nusa Tenggara and North Sumatra, with more than 2 million *A. moluccana* trees reportedly planted by households in each of these provinces (Krisnawati, 2011).

Candlenut forests in Maros Regency, South Sulawesi were built independently by community members both individually and as a family group community since the Dutch era. In this study area, candlenut has been identified as one of the major important marketable commodity. The area of candlenut trees managed intensively in Maros Regency is 9,350 hectares, spread mainly in three sub-districts with details, District of Camba covering 2,086 hectares, District of Mallawa covering 4,956 hectares, and District of Cenrana covering 2,064 hectares where the focus of this research is in Mallawa.

### Data Analysis

Primary data were obtained through observation and in-depth interviews. In-depth interviews method was select to assign each comparison using the scale. The heads of farmer groups, collecting and intermediate traders, and people involved in the marketing of candlenut were select to to assign score of internal and external factor evaluation. A scale from Saaty (2008) was employed to assign relative score to pair-wise comparison among the factor and sub factor (see Table 1). Other relevant information was collected from the field to evaluate the aspect and criteria.

**Table 1** The Saaty's fundamental scale

Rate of 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 another
4	Moderate plus	
5	Strong importance	Experience and judget slightly favour one over another
6	Strong plus	
7	Very strong or demonstrated importance	An activity is favoured very strongly over another, its dominance demonstrated in practice
8	Veri, very Strong	
9	Extreme importance	The evidence favouring one activity over another is of the highest possible order of affirmation
Reciprocals of above	If activity I has one of the above non-zero assigned to it when compared with activity j, the j has the reciprocal value when compared with i	

The identification of existing candlenut business model is done through descriptive analysis with Business Model Canvas (BMC) approach on 9 (Nine) important elements of BMC (Chesbrough and Rosenbloom, 2002) such as customer segment, value proposition, channels, revenue streams, customer relationships, key activities, key resources, and key partnerships. BMC or also known as Business Model Generation is a tool to help see more accurately the form of business that is being or will be lived. Turning complex business concepts into simple ones is displayed on one canvas sheet containing a business plan with nine key elements that are well integrated and which include strategy analysis internally and externally (Osterwalder and Pigneur, 2015).

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 customers want (Dolnicar et al, 2018). The Value Proposition Canvas focuses on how to create value to customers through the product offered by different companies in the BMC of competitors (Osterwalder & Pigneur, 2010; Osterwalder and Pigneur, 2015). According to Szopa and Pekal (2012), a distribution channel is a group of depend on each other organisation units, which are taking part in process delivery of products or services from company to customer. A revenue streams is income received by the company from the consumer that is the core of the business for their sustainability (Makkarennu et al., 2019). Standard relationship with customers is personal assistance, which is based on human interaction. Customer communicates directly with the salesman during the whole sale 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 describe the most important activities involved in value creating to delivery of product (Stefan and Richard, 2014) and key partners are section lists those people or company you need to work with to carry out your activities and reach your customers (Osterwalder & Pigneur, 2010)

The business development model and the marketing strategy of the candlenut business are formulated through integrating of BMC, analysis of Internal Factor Evaluation (IFE), External Factor Evaluation (EFE) matrix and SWOT analysis. Phase identification of SWOT, summarized in internal and external strategic factors within the IFE and EFE matrix are then matched to the IE matrix. Alternative strategy formulated by using SWOT analysis. The next step is to weight and factor against SWOT strategy alternatives using Quantitative BMC to selection of the main strategy (Table 2).

**Table 2** Scoring of internal and external factors in nine block elements of BMC

Internal/external factors in 9 key elements of BMC	Weight	Rating	Score
Strengths, Weaknesses, Opportunities and Threats			
1. Customer segment (CS)			
2. Value proposition (VP)			
3. Channels (CH)			
4. Customer relationship (CR)			
5. Revenue streams (RS)			
6. Key resources (KR)			
7. Key activity (KA)			
8. Key partnership (KP)			
9. Cost structure (CC)			
Total			

## Results

### Existing Business Model of Cundlenut Business (CB) with BMC

#### Customer segments (CS)

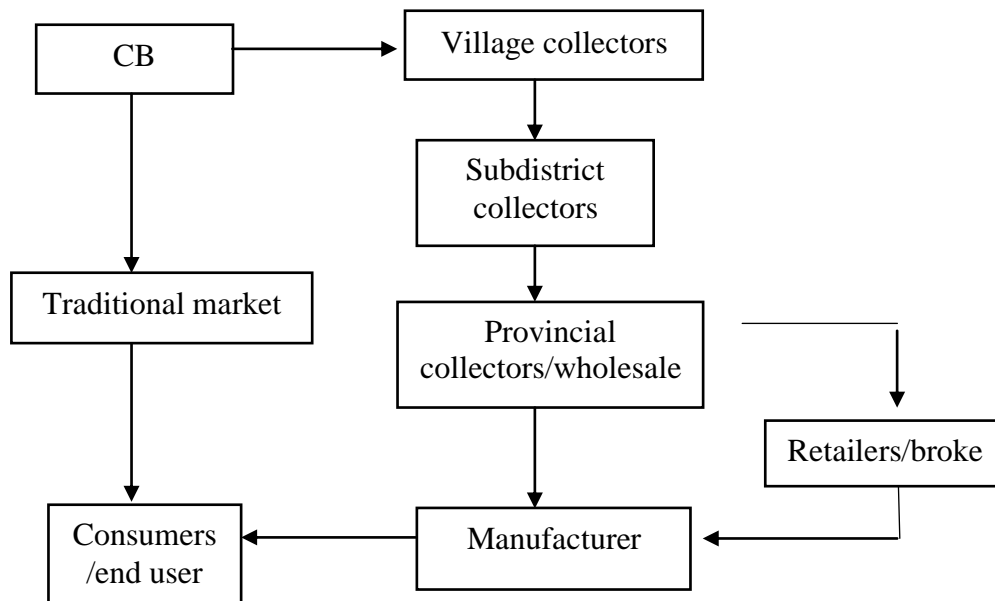
Customer is one of the key factors to keep the business running. The Customer segmentation of CB are mass-market system and segmented market. CB sells the product to intermediary traders/collectors both in village level and sub-district level. This intermediary trader then sells it back to the collector merchant at the provincial level. In addition, farmers also sell their products to retailers who will distribute it to end consumers in village level. In market segmentation, farmers also use an open market system where the farmers allow their customers to access their products. Customers (intermediary traders) are mostly make the prepaid system when they order the candlenut because of the collecting traders facing the difficulties to get candlenut in sufficiently. Farmers can also sell the product directly to the nearest market, although in relatively few quantities.

#### Value proposition (VP)

Central to the business model is the value proposition. The value proposition linked with the supplier and the customer. On the supply side should be cleared which are required to realize the offering, which activities they undertake and what resources they require. On the buyers' side it must be cleared what the customers want, what their needs are and how the relationship is established and maintained with them. The value offered by candlenuts to its customers is accessibility. Customers can easily access the product both in quantity and time of harvesting of the desired candle. In addition to access the products, access to information is also simple to obtain especially in terms of time of taking the products that have been ordered in advance. There is a trust relationship established between the farmer and the customer, including in terms of the transaction and the mode of payment. Sometimes the customer keeps his money (prepaid) before the product is ready to be marketed. This happens because of there are times when the quantity produced are relatively small, depending on the raw material.

## Channels (CH)

This element describes how the delivery of products to customers. The process of transactions conducted by using direct marketing and indirect marketing. In direct marketing method, the entrepreneur sells their product to the nearest market or the customer coming to the place of production, while they using the intermediary do the delivery of the product in relatively more quantity. In addition, farmers sell the product to the village/sub-district collecting traders. 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' houses from one village to another, then sold to subdistrict collector a provincial collector (wholesaler). Wholesalers sell in bulk to exporters or industries and retailers then to final customers. The market chain of CB can be seen in Fig.1



**Fig. 1** Market chain of CB

## Customer relationship (CR)

Customer relationship is a kind of relationship to be established between employers and consumers to work together to run a business that is mutually beneficial. Customer relations applied by CB is personal assistance where consumer communicates directly with the seller. To obtain the desired product, the customer may contact the farmer either directly by visiting the place of production. Conversely, farmer can also contact the customer directly either by phone or through personal communication that considers individual persons familiar with its customers, especially if product ordered by the customer is ready to transport. Farmers have not provided other services to access its products in addition to personal assistance.

### Revenue streams (RS)

The revenue stream is the revenue received from the sale of candlenut. The price mechanism used is a fixed menu pricing, where the price is set based on the quantity of the product. The prices of product have remained relatively unchanged since a few years ago that are in the range of IDR12.000 a liter (roughly 0.8 kg).

### Key resources (KR)

The main resource that is owned is human resources. In running the business, this business still relies on human labor in peeling the candlenut (*maddepa* in local terms) by using a simple equipment made of rattan woven. The quality of the candlenut produced varies greatly depending on the skills of the workers so that it still needs to be sorted. Other resources used are simple equipment such as tarps which are used to dry candlenuts from the results of stripping.

### Key activity (KA)

Key activities are the main activities undertaken by the company so that the business model that runs in accordance with the plan. Key activities undertaken by the candlenut farmer group include harvesting or picking of candlenut, drying, stripping, sorting and packaging. The results of these activities produce the candlenut that are ready to be processed and sold to consumers. For the landowner, the activity of collecting seeds of candlenut is done together with family members and also done by involving other people with profit sharing system. The next step is drying the candlenut before peeling it with natural drying in the sun for two or three days. This drying greatly affects the quality of the candlenut produced. The next activity is the stripping process (*maddepa*) by using a simple tool made from woven rattan. Other equipment used is a slightly flat stone as a place to break the candlenut. After finished peeled, the resulting of product then sorted according to the level of wholeness (broken or not). The last activity is packaging by using sack with size 25 kg and 50 kg

### Key partnerships (KP)

To do business well, partnership is crucial for business actors. The main partners in this business are raw material suppliers, namely candlenut seed farmers and intermediary traders. The kind of relationship that is woven in accordance with the theory of Osterwalder and Pigneur (2010), is a non-competitive strategic alliance in which the cooperation is to gain their respective benefits through activities undertaken without feeling unrivaled. The type of this activity it does is also different. In establishing cooperation with partners, the type of motivation that underlies the relationship is the type of optimization and economies of scale, which is the most common type underlying the establishment of cooperation between companies and other parties. This is based because the company is hard to do all its activities alone. They need others to support their own business and objectives. In addition to the smoothness of this partnership business this relationship can also reduce costs incurred. Although there are some farmers who directly process for this product, but most of them sell it in the form of round candlenut. On the other hand, this business is highly dependent on the supply of raw materials of round of candlenut. The achievement of business goals for the CB is also highly dependent on intermediary traders or collectors. This partner who plays an active role in channeling these business products to be up to 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 from the business of CB to run the business model. For the cost structure incurred by this business is low because the tools used are very traditional and do not require power. The power used is the human power to peel the candlenut and to dry the seeds of candlenut using the source of the sun. Based on the BMC approach, the business model of CB (Fig. 2) is still relatively simple, where in the nine elements analyzed, CB still maintains the same market segmentation long ago without any effort to get new customers. Continuity of production is also not guaranteed so there is no target market is done. They only produce in accordance with the wishes and opportunities that exist.

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

**Fig. 2** Existing business model of CB

**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 that these business groups have of various BMC elements that include customer segments, the proportion of values, channels, customer relationships, revenue streams, key activities, partnerships and cost structures. After identifying some internal and external factors, then the formulated of strengths, weaknesses, opportunities and challenges are encountered.

The steps in compiling the Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) table by determining the factors that become the Strength and Weakness of CB, then give the weight of each factor from a scale ranging from 0.0 (not important) to 1.0 (very important) where all of these weights do not exceed the total score of 1.00. Weight determination is obtained by using paired comparison method. To determine the score value of each internal and external factor, then do the rating, which refers to the condition of the CB with a value of 1 to 4 for each factor by providing a scale ranging from 1 (below average) to 4 (excellent). After entering the data into the IFE Matrix and EFE Matrix and performing the weighting and rating for each point, the next step is to calculate the number of scores obtained from the two matrices, which is meant to know the positioning of a company. Positioning is meant here is the position of a company is in what kind of situation when viewed from internal factors and external factors faced, so that can be determined formulation of appropriate strategy based on quadrant SWOT positioning. IFE and EFE factor score values can be seen in Table 3 and Table 4.

**Table 3** Scoring of internal factor of CB

Internal Factor	Weight	Rating	Score
<b>Strenght (S)</b>			
CS/S1	0.12	4.00	0.47
VP/S2	0.15	1.00	0.15
CH/S3	0.11	3.00	0.33
CR/S4	0.14	2.00	0.28
RS/S5	0.07	4.00	0.28
KR/S6	0.07	4.00	0.28
KA/S7	0.13	1.00	0.13
KP/S8	0.15	2.00	0.29
CC/S9	0.07	4.00	0.28
<b>Sub Total</b>	<b>1.00</b>		<b>2.49</b>
<b>Weaknesses (W)</b>			
CS/W1	0.17	3.00	0.50
VP/W2	0.09	1.00	0.09
CH/W3	0.14	1.00	0.14
CR/W4	0.10	1.00	0.10
RS/W5	0.10	1.00	0.10
KR/W6	0.10	1.00	0.10
KA/W7	0.10	1.00	0.10
KP/W8	0.12	2.00	0.24
CC/W9	0.09	2.00	0.18
<b>Sub Total</b>			<b>1.54</b>

Table 3 shows the scores for internal factors (strengths and weaknesses) below 2.5, respectively at 2.45 and 1.54. This indicates that the margin of exploitation positions are internally weak especially in the proportion of offered value (VP/S2), key activities (KA/S7) for strength and most weak for weakness or weakness factor such as value, channel, customer relationship, main revenue stream and resources (VP/W2, CH/W3, CR/W4, RS/W5, KR/W6, KA/W7).

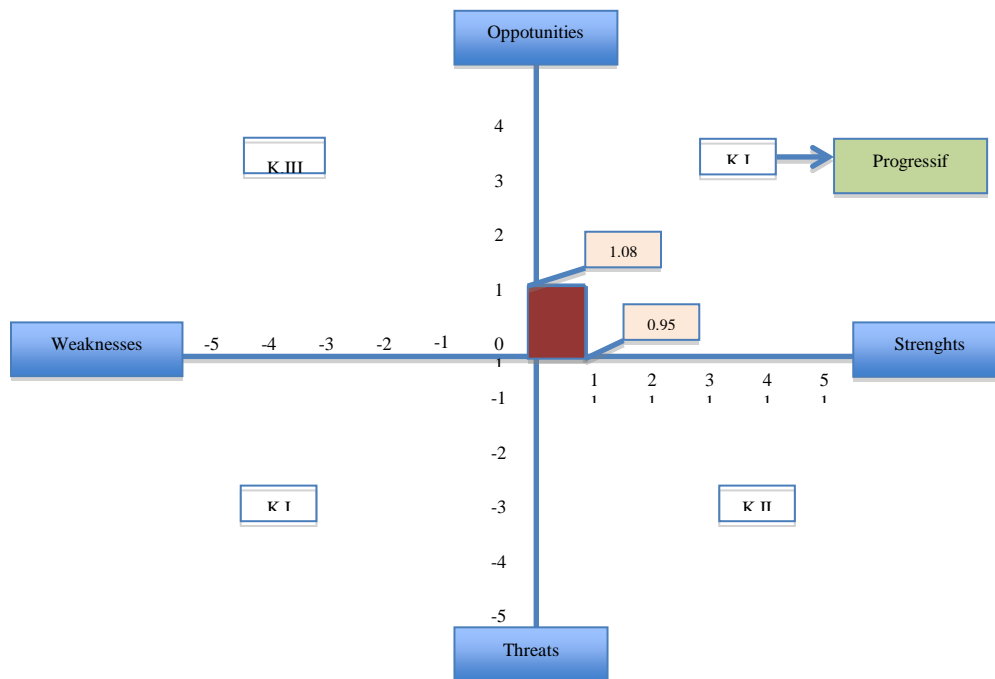
**Table 4** Scoring of external factor (opportunities and threats) of CB

External factor	weight	rating	score
<b>Opportunities (O)</b>			
CS/O1	0.08	4.00	0.33
VP/O2	0.13	3.00	0.38
CH/O3	0.13	3.00	0.40
CR/O4	0.15	2.00	0.31
RS/O5	0.07	4.00	0.28
KR/O6	0.11	3.00	0.33
KA/O7	0.11	3.00	0.33
KP/O8	0.12	3.00	0.35
CC/O9	0.10	3.00	0.29
<b>Sub total</b>	<b>1.00</b>		<b>3.00</b>
<b>Threats (T)</b>			
CS/T1	0.14	3.00	0.42
VP/T2	0.09	1.00	0.09
CH/T3	0.13	3.00	0.40
CR/T4	0.13	2.00	0.26
RS/T5	0.09	1.00	0.09
KR/T6	0.15	2.00	0.29
KA/T7	0.09	1.00	0.09
KP/T8	0.08	1.00	0.08
CC/T9	0.10	2.00	0.19
<b>Sub Total</b>	<b>1.00</b>		<b>1.92</b>

Table 4 shows the scores for opportunity factors above 2.5 ie 3.0 which means externally have a great opportunity in the development of candlenut especially on channel element (CH/O3) ie the development of technology so that can access information needed and can promote and market their products online. In addition, the development of essential oil industry and other industries that use raw materials of candlenut can be a motivation to capture this opportunity. On the other hand, the main threat faced by this effort is the low productivity of the candlenut tree (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 who in this case farmers and pickers of round candlenut as a source of raw materials of the product have the potential to switch to the business insidental (KP/T8) which also resulted in the continuity of production and revenue revenue.

The calculation results in the IFE - EFE matrix shows that the difference between strength (2.49) and weakness in internal factors (1.54) is 0.95 while 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 (Fig.3), which means the company is in a strong condition and has a chance. Then the suggested strategy is Progressive or aggressive, which means that the company is very likely to continue to expand, increase growth and achieve maximum progress.



**Fig. 3** Positioning quadrant or strategic position for Cundlenut business

### Strategy alternative based on SWOT analysis and BMC

#### Strategy S-T (*Strengths-Threats*)

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

#### Strategy W-O (*Weaknesses-Opportunities*)

This strategy is applied by taking advantage of opportunities by minimizing existing weaknesses. Strategies that can be used are utilizing information technology as a media campaign for the resulting product so it does not depend on the trader intermediary/collector. CB needs to access a wider market. The next strategy is to diversify the product so that it not only sells the candlenut but also can process itself candlenut into essential oil.

#### Strategy W-T (*Weaknesses-Threats*)

This strategy is a defensive strategy that seeks to minimize existing weaknesses and avoid threats. The strategy that can be done is to utilize partnership opportunities with the government to gain access to technology, information and capital. In addition, in order to retain customers, expand market access, increase bargaining position, employers must take advantage of today's emerging technologies, so they not only for direct promotion but also utilize other promotional media, such as online marketing, and make brochures. However, Cunningham (2017) states that the potential supply of an NTFP product must be compared with another 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 NTFPs (candlenut business) by combining BMC, SWOT and IFE-EFE techniques. The finding shows that the quadrant of this business position is in quadrant I, which means the company is in a strong condition and has a chance. Then the suggested strategy is aggressive, where the CB is very likely to continue to expand, increase growth and achieve maximum progress. The alternative strategies to develop candlenut business are maintain relationships with customers and partners, increasing the quantity and quality of products through technology inputs, promotion, product diversification and partnership with the government.

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## An integration of Business Model Canvas on prioritizing strategy: case study of small scale NTFPs enterprises in Indonesia.

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**Abstract** NTFPs are one of the forest products that can provide direct benefits to communities living around the forest. One of the most used NTFP products is candlenut trees because they have many benefits from the stem, leaves and fruit. Candlenut fruit is widely used in the cosmetics, pharmaceuticals, biodiesel industries and is generally used as a mixture of cooking ingredients in Indonesia. However, only a few people or community groups around the forest managed to increase their income from this business. The aim of this study is to identify business models, which serves as the basis to develop alternative business model organizational plan for candlenut business in the Forest area. A case study was adopted, and a qualitative research and in depth interview method were used to collect the fundamental data. The integration of Business Model Canvas (BMC), SWOT Analysis, Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrix to determine alternative strategies for development of candlenut business. The results exhibit that from 9 blocks of BMC, value proposition is the most challenging for the improvement this business. The *Positioning Quadrant* SWOT shows that the score values of internal factors (strengths and weaknesses) lower than 2.5, i.e. 2.45 and 1.54, respectively. This fact indicates that the candlenut business position is internally weak. However, the scores of external factors (opportunities and threats) higher than 2.5, (3.0), which means that externally have a great opportunity in the development of candlenut. The alternative strategies to develop candlenut business are 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, BMC, candlenut, IFE-EFE, NTFPs, SWOT

### Introduction

Over the last decade, interest in managing forests for Non-Timber Forest Products (NTFPs) has growing 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 several livelihood requirements from direct household provisioning to cash income, cultural needs and as a fall back in times of emergency or a means to income diversification (Shackleton, et al., 2011; Stanley, D., et al, 2012). In recent decades, with growing concern about conservation, together with rural poverty and sustainable development made efforts to brings NTFPs at the center of discourse (Arnold and Perez, 2001). NTFPs management has been receiving increasing attention in the last few years (Banjade and Paudel, 2008).

Indonesian government policies recognize NTFPs enterprises as one of the potential means to contribute to poverty reduction. One of the NTFPs that are widely used by people around the forest is *Aleurites moluccana* (L.) Willd., or 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 et al., 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; biodiesel (Pham, et al. 2018), pharmaceuticals (Quintao et al., 2011; Ubada 2017), and most candlenut is used as a spice in Indonesian cooking.

Villagers around the forest area have long been utilizing candlenut products as their livelihood. It provides a cash income for subsistence farmers in forest area 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 & Cant 2009), and marketing partnership expansion with established enterprises (Hadiyati 2015), however, the utilization of this product is still limited and has not been utilized optimally, which has an impact on the income of the community around the forest. In addition, the trade and marketing of these products is still largely hidden and lack access to market information, so it does not provide a large marketing margin for the villagers. Therefore, business development through the formulation of the right marketing strategy is needed by the community, especially for community groups in utilizing and managing candlenut tree products and other NTFP products. Thus, the potential of NTFPs can be utilized sustainably and can contribute significantly to increasing the income of rural communities around the forest area. This paper is an integration of Business Model Canvas (BMC), Strengths, Weaknesses, Opportunities, and Threats (SWOT) and Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrix to determine alternative strategies for NTFPS development specifically for candlenut business.

## **Methodology**

### **Study Site**

Research location was determined purposively on the basis of selecting villages which had the largest area of *Aleurites moluccana* 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 4°45' - 5°07' South Latitude and 109°205' - 129°12' East longitude, which borders northern Pangkep District, Makassar and Gowa south, eastward of Bone and Makassar Strait next to the West. The total area of 1619.12 km Maros regency that the administration of its government into 14 district and 103 Villages/ Kelurahan.

*Aleurites moluccana* is distributed across almost all islands in 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 *A. moluccana* 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, as reported by the Ministry of Forestry and the National Statistics Agency (2004), the provinces with the highest number of *A. moluccana* trees planted by smallholders are East Nusa Tenggara and North Sumatra, with more than 2 million *A. moluccana* trees reportedly planted by households in each of these provinces (Krisnawati, 2011).

Candlenut forests in Maros Regency, South Sulawesi were built independently by community members both individually and as a family group community since the Dutch era. In this study area, candlenut has been identified as one of the major important marketable commodity. The area of candlenut trees managed intensively in Maros Regency is 9,350 hectares, spread mainly in three sub-districts with details, District of Camba covering 2,086 hectares, District of Mallawa covering 4,956 hectares, and District of Cenrana covering 2,064 hectares where the focus of this research is in Mallawa.

### Data Analysis

Primary data were obtained through observation and in-depth interviews. In-depth interviews method was select to assign each comparison using the scale. The heads of farmer groups, collecting and intermediate traders, and people involved in the marketing of candlenut were select to to assign score of internal and external factor evaluation. A scale from Saaty (2008) was employed to assign relative score to pair-wise comparison among the factor and sub factor (see Table 1). Other relevant information was collected from the field to evaluate the aspect and criteria.

**Table 1** The Saaty's fundamental scale

Rate of Importance	Defenition	Explanation
1	Equal importance	Two activities contribute equally to the objective
2	Weak or slight	
3	Moderate importance	Experience and judgetment slightly favour one over another
4	Moderate plus	
5	Strong importance	Experience and judget slightly favour one over another
6	Strong plus	
7	Very strong or demonstrated importance	An activity is favoured very strongly over another, its dominance demonstrated in practice
8	Veri, very Strong	
9	Extreme importance	The evidence favouring one activity over another is of the highest possible order of affirmation
Reciprocals of above	If activity I has one of the above non-zero assigned to it when compared with activity j, the j has the reciprocal value when compared with i	

The identification of existing candlenut business model is done through descriptive analysis with Business Model Canvas (BMC) approach on 9 (Nine) important elements of BMC (Chesbrough and Rosenbloom, 2002) such as customer segment, value proposition, channels, revenue streams, customer relationships, key activities, key resources, and key partnerships. BMC or also known as Business Model Generation is a tool to help see more accurately the form of business that is being or will be lived. Turning complex business concepts into simple ones is displayed on one canvas sheet containing a business plan with nine key elements that are well integrated and which include strategy analysis internally and externally (Osterwalder and Pigneur, 2015).

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 customers want (Dolnicar et al, 2018). The Value Proposition Canvas focuses on how to create value to customers through the product offered by different companies in the BMC of competitors (Osterwalder & Pigneur, 2010; Osterwalder and Pigneur, 2015). According to Szopa and Pekal (2012), a distribution channel is a group of depend on each other organisation units, which are taking part in process delivery of products or services from company to customer. A revenue streams is income received by the company from the consumer that is the core of the business for their sustainability (Makkarennu et al., 2019). Standard relationship with customers is personal assistance, which is based on human interaction. Customer communicates directly with the salesman during the whole sale 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 describe the most important activities involved in value creating to delivery of product (Stefan and Richard, 2014) and key partners are section lists those people or company you need to work with to carry out your activities and reach your customers (Osterwalder & Pigneur, 2010)

The business development model and the marketing strategy of the candlenut business are formulated through integrating of BMC, analysis of Internal Factor Evaluation (IFE), External Factor Evaluation (EFE) matrix and SWOT analysis. Phase identification of SWOT, summarized in internal and external strategic factors within the IFE and EFE matrix are then matched to the IE matrix. Alternative strategy formulated by using SWOT analysis. The next step is to weight and factor against SWOT strategy alternatives using Quantitative BMC to selection of the main strategy (Table 2).

**Table 2** Scoring of internal and external factors in nine block elements of BMC

Internal/external factors in 9 key elements of BMC	Weight	Rating	Score
Strengths, Weaknesses, Opportunities and Threats			
1. Customer segment (CS)			
2. Value proposition (VP)			
3. Channels (CH)			
4. Customer relationship (CR)			
5. Revenue streams (RS)			
6. Key resources (KR)			
7. Key activity (KA)			
8. Key partnership (KP)			
9. Cost structure (CC)			
Total			

## Results

### Existing Business Model of Cundlenut Business (CB) with BMC

#### Customer segments (CS)

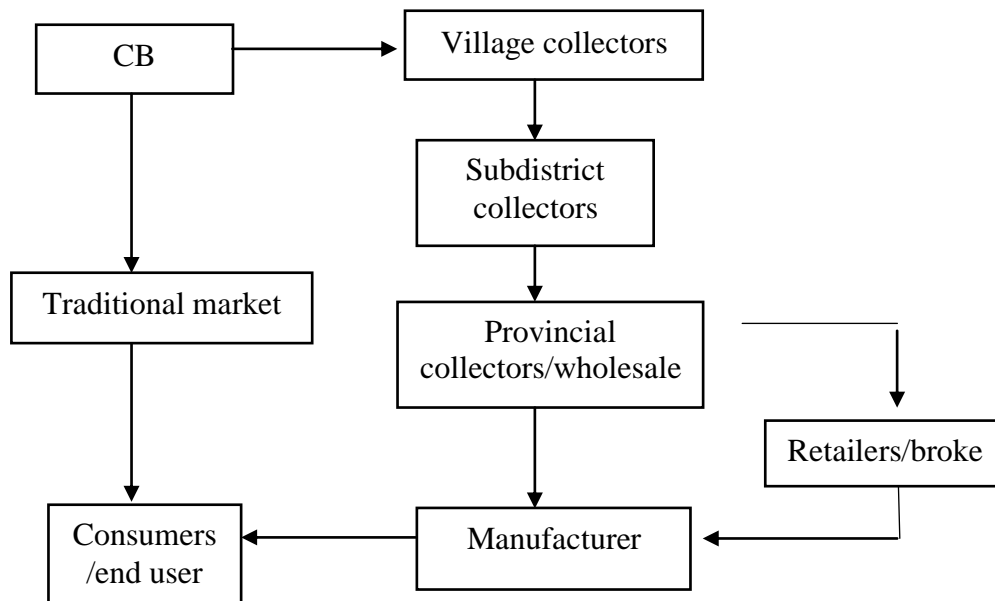
Customer is one of the key factors to keep the business running. The Customer segmentation of CB are mass-market system and segmented market. CB sells the product to intermediary traders/collectors both in village level and sub-district level. This intermediary trader then sells it back to the collector merchant at the provincial level. In addition, farmers also sell their products to retailers who will distribute it to end consumers in village level. In market segmentation, farmers also use an open market system where the farmers allow their customers to access their products. Customers (intermediary traders) are mostly make the prepaid system when they order the candlenut because of the collecting traders facing the difficulties to get candlenut in sufficiently. Farmers can also sell the product directly to the nearest market, although in relatively few quantities.

#### Value proporsion (VP)

Central to the business model is the value proposition. The value proposition linked with the supplier and the customer. On the supply side should be cleared which are required to realize the offering, which activities they undertake and what resources they require. On the buyers' side it must be cleared what the customers want, what their needs are and how the relationship is established and maintained with them. The value offered by candlenuts to its customers is accessibility. Customers can easily access the product both in quantity and time of harvesting of the desired candle. In addition to access the products, access to information is also simple to obtain especially in terms of time of taking the products that have been ordered in advance. There is a trust relationship established between the farmer and the customer, including in terms of the transaction and the mode of payment. Sometimes the customer keeps his money (prepaid) before the product is ready to be marketed. This happens because of there are times when the quantity produced are relatively small, depending on the raw material.

## Channels (CH)

This element describes how the delivery of products to customers. The process of transactions conducted by using direct marketing and indirect marketing. In direct marketing method, the entrepreneur sells their product to the nearest market or the customer coming to the place of production, while they using the intermediary do the delivery of the product in relatively more quantity. In addition, farmers sell the product to the village/sub-district collecting traders. 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' houses from one village to another, then sold to subdistrict collector a provincial collector (wholesaler). Wholesalers sell in bulk to exporters or industries and retailers then to final customers. The market chain of CB can be seen in Fig.1



**Fig. 1** Market chain of CB

## Customer relationship (CR)

Customer relationship is a kind of relationship to be established between employers and consumers to work together to run a business that is mutually beneficial. Customer relations applied by CB is personal assistance where consumer communicates directly with the seller. To obtain the desired product, the customer may contact the farmer either directly by visiting the place of production. Conversely, farmer can also contact the customer directly either by phone or through personal communication that considers individual persons familiar with its customers, especially if product ordered by the customer is ready to transport. Farmers have not provided other services to access its products in addition to personal assistance.

### Revenue streams (RS)

The revenue stream is the revenue received from the sale of candlenut. The price mechanism used is a fixed menu pricing, where the price is set based on the quantity of the product. The prices of product have remained relatively unchanged since a few years ago that are in the range of IDR12.000 a liter (roughly 0.8 kg).

### Key resources (KR)

The main resource that is owned is human resources. In running the business, this business still relies on human labor in peeling the candlenut (*maddepa* in local terms) by using a simple equipment made of rattan woven. The quality of the candlenut produced varies greatly depending on the skills of the workers so that it still needs to be sorted. Other resources used are simple equipment such as tarps which are used to dry candlenuts from the results of stripping.

### Key activity (KA)

Key activities are the main activities undertaken by the company so that the business model that runs in accordance with the plan. Key activities undertaken by the candlenut farmer group include harvesting or picking of candlenut, drying, stripping, sorting and packaging. The results of these activities produce the candlenut that are ready to be processed and sold to consumers. For the landowner, the activity of collecting seeds of candlenut is done together with family members and also done by involving other people with profit sharing system. The next step is drying the candlenut before peeling it with natural drying in the sun for two or three days. This drying greatly affects the quality of the candlenut produced. The next activity is the stripping process (*maddepa*) by using a simple tool made from woven rattan. Other equipment used is a slightly flat stone as a place to break the candlenut. After finished peeled, the resulting of product then sorted according to the level of wholeness (broken or not). The last activity is packaging by using sack with size 25 kg and 50 kg

### Key partnerships (KP)

To do business well, partnership is crucial for business actors. The main partners in this business are raw material suppliers, namely candlenut seed farmers and intermediary traders. The kind of relationship that is woven in accordance with the theory of Osterwalder and Pigneur (2010), is a non-competitive strategic alliance in which the cooperation is to gain their respective benefits through activities undertaken without feeling unrivaled. The type of this activity it does is also different. In establishing cooperation with partners, the type of motivation that underlies the relationship is the type of optimization and economies of scale, which is the most common type underlying the establishment of cooperation between companies and other parties. This is based because the company is hard to do all its activities alone. They need others to support their own business and objectives. In addition to the smoothness of this partnership business this relationship can also reduce costs incurred. Although there are some farmers who directly process for this product, but most of them sell it in the form of round candlenut. On the other hand, this business is highly dependent on the supply of raw materials of round of candlenut. The achievement of business goals for the CB is also highly dependent on intermediary traders or collectors. This partner who plays an active role in channeling these business products to be up to 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 from the business of CB to run the business model. For the cost structure incurred by this business is low because the tools used are very traditional and do not require power. The power used is the human power to peel the candlenut and to dry the seeds of candlenut using the source of the sun. Based on the BMC approach, the business model of CB (Fig. 2) is still relatively simple, where in the nine elements analyzed, CB still maintains the same market segmentation long ago without any effort to get new customers. Continuity of production is also not guaranteed so there is no target market is done. They only produce in accordance with the wishes and opportunities that exist.

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

**Fig. 2** Existing business model of CB

**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 that these business groups have of various BMC elements that include customer segments, the proportion of values, channels, customer relationships, revenue streams, key activities, partnerships and cost structures. After identifying some internal and external factors, then the formulated of strengths, weaknesses, opportunities and challenges are encountered.

The steps in compiling the Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) table by determining the factors that become the Strength and Weakness of CB, then give the weight of each factor from a scale ranging from 0.0 (not important) to 1.0 (very important) where all of these weights do not exceed the total score of 1.00. Weight determination is obtained by using paired comparison method. To determine the score value of each internal and external factor, then do the rating, which refers to the condition of the CB with a value of 1 to 4 for each factor by providing a scale ranging from 1 (below average) to 4 (excellent). After entering the data into the IFE Matrix and EFE Matrix and performing the weighting and rating for each point, the next step is to calculate the number of scores obtained from the two matrices, which is meant to know the positioning of a company. Positioning is meant here is the position of a company is in what kind of situation when viewed from internal factors and external factors faced, so that can be determined formulation of appropriate strategy based on quadrant SWOT positioning. IFE and EFE factor score values can be seen in Table 3 and Table 4.

**Table 3** Scoring of internal factor of CB

Internal Factor	Weight	Rating	Score
<b>Strenght (S)</b>			
CS/S1	0.12	4.00	0.47
VP/S2	0.15	1.00	0.15
CH/S3	0.11	3.00	0.33
CR/S4	0.14	2.00	0.28
RS/S5	0.07	4.00	0.28
KR/S6	0.07	4.00	0.28
KA/S7	0.13	1.00	0.13
KP/S8	0.15	2.00	0.29
CC/S9	0.07	4.00	0.28
<b>Sub Total</b>	<b>1.00</b>		<b>2.49</b>
<b>Weaknesses (W)</b>			
CS/W1	0.17	3.00	0.50
VP/W2	0.09	1.00	0.09
CH/W3	0.14	1.00	0.14
CR/W4	0.10	1.00	0.10
RS/W5	0.10	1.00	0.10
KR/W6	0.10	1.00	0.10
KA/W7	0.10	1.00	0.10
KP/W8	0.12	2.00	0.24
CC/W9	0.09	2.00	0.18
<b>Sub Total</b>			<b>1.54</b>

Table 3 shows the scores for internal factors (strengths and weaknesses) below 2.5, respectively at 2.45 and 1.54. This indicates that the margin of exploitation positions are internally weak especially in the proportion of offered value (VP/S2), key activities (KA/S7) for strength and most weak for weakness or weakness factor such as value, channel, customer relationship, main revenue stream and resources (VP/W2, CH/W3, CR/W4, RS/W5, KR/W6, KA/W7).

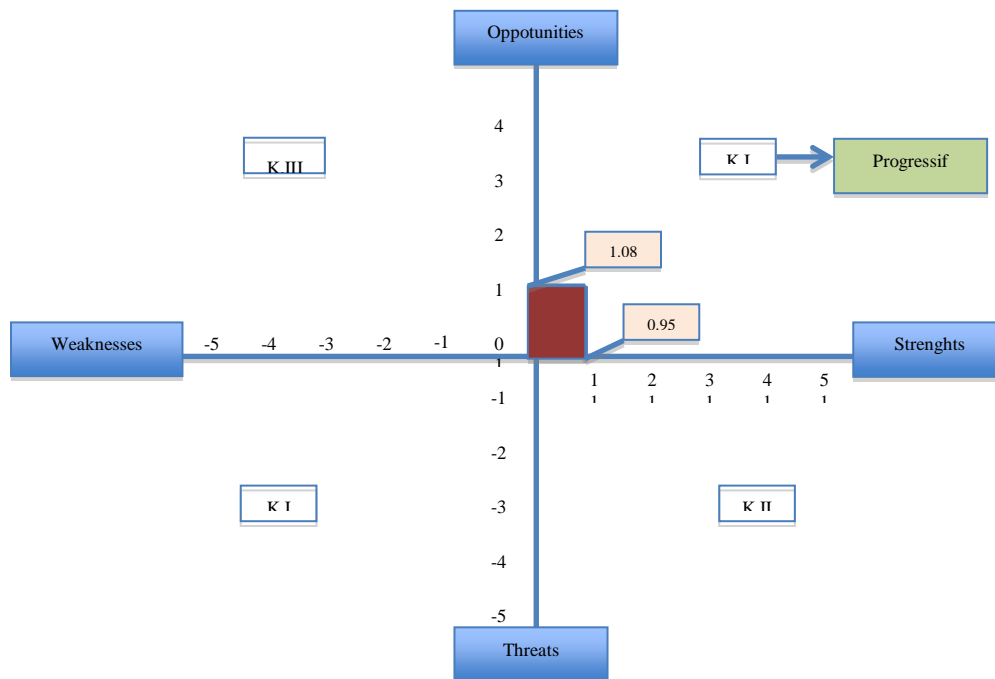
**Table 4** Scoring of external factor (opportunities and threats) of CB

External factor	weight	rating	score
Opportunities (O)			
CS/O1	0.08	4.00	0.33
VP/O2	0.13	3.00	0.38
CH/O3	0.13	3.00	0.40
CR/O4	0.15	2.00	0.31
RS/O5	0.07	4.00	0.28
KR/O6	0.11	3.00	0.33
KA/O7	0.11	3.00	0.33
KP/O8	0.12	3.00	0.35
CC/O9	0.10	3.00	0.29
<b>Sub total</b>	<b>1.00</b>		<b>3.00</b>
Threats (T)			
CS/T1	0.14	3.00	0.42
VP/T2	0.09	1.00	0.09
CH/T3	0.13	3.00	0.40
CR/T4	0.13	2.00	0.26
RS/T5	0.09	1.00	0.09
KR/T6	0.15	2.00	0.29
KA/T7	0.09	1.00	0.09
KP/T8	0.08	1.00	0.08
CC/T9	0.10	2.00	0.19
<b>Sub Total</b>	<b>1.00</b>		<b>1.92</b>

Table 4 shows the scores for opportunity factors above 2.5 ie 3.0 which means externally have a great opportunity in the development of candlenut especially on channel element (CH/O3) ie the development of technology so that can access information needed and can promote and market their products online. In addition, the development of essential oil industry and other industries that use raw materials of candlenut can be a motivation to capture this opportunity. On the other hand, the main threat faced by this effort is the low productivity of the candlenut tree (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 who in this case farmers and pickers of round candlenut as a source of raw materials of the product have the potential to switch to the business insidental (KP/T8) which also resulted in the continuity of production and revenue revenue.

The calculation results in the IFE - EFE matrix shows that the difference between strength (2.49) and weakness in internal factors (1.54) is 0.95 while 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 (Fig.3), which means the company is in a strong condition and has a chance. Then the suggested strategy is Progressive or aggressive, which means that the company is very likely to continue to expand, increase growth and achieve maximum progress.



**Fig. 3** Positioning quadrant or strategic position for Cundlenut business

**Strategy alternative based on SWOT analysis and BMC**

*Strategy S-T (Strengths-Threats)*

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

*Strategy W-O (Weaknesses-Opportunities)*

This strategy is applied by taking advantage of opportunities by minimizing existing weaknesses. Strategies that can be used are utilizing information technology as a media campaign for the resulting product so it does not depend on the trader intermediary/collector. CB needs to access a wider market. The next strategy is to diversify the product so that it not only sells the candlenut but also can process itself candlenut into essential oil.

*Strategy W-T (Weaknesses-Threats)*

This strategy is a defensive strategy that seeks to minimize existing weaknesses and avoid threats. The strategy that can be done is to utilize partnership opportunities with the government to gain access to technology, information and capital. In addition, in order to retain customers, expand market access, increase bargaining position, employers must take advantage of today's emerging technologies, so they not only for direct promotion but also utilize other promotional media, such as online marketing, and make brochures. However, Cunningham (2017) states that the potential supply of an NTFP product must be compared with another 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 NTFPs (candlenut business) by combining BMC, SWOT and IFE-EFE techniques. The finding shows that the quadrant of this business position is in quadrant I, which means the company is in a strong condition and has a chance. Then the suggested strategy is aggressive, where the CB is very likely to continue to expand, increase growth and achieve maximum progress. The alternative strategies to develop candlenut business are maintain relationships with customers and partners, increasing the quantity and quality of products through technology inputs, promotion, product diversification and partnership with the government.

## **Acknowledgment.**

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## Small-scale Forestry

### An integration of Business Model Canvas on prioritizing strategy: case study of small scale NTFPs enterprises in Indonesia

--Manuscript Draft--

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<b>Article Type:</b>	Original Research
<b>Keywords:</b>	business model; BMC; candlenut; IFAS-EFAS; NTFPs; SWOT
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<b>Order of Authors Secondary Information:</b>	
<b>Funding Information:</b>	
<b>Abstract:</b>	<p>Abstract NTFPs are one of the forest products that can provide direct benefits to communities living around the forest. One of the most used NTFP products is candlenut trees because they have many benefits from the stem, leaves and fruit. Candlenut fruit is widely used in the cosmetics, pharmaceuticals, biodiesel industries and is generally used as a mixture of cooking ingredients in Indonesia. However, only a few people or community groups around the forest managed to increase their income from this business. The aim of this study is to identify business models, which serves as the basis to develop alternative business model organizational plan for candlenut business in the Forest area. A case study was adopted, and a qualitative research and in depth interview method were used to collect the fundamental data. The integration of Business Model Canvas (BMC), SWOT Analysis, Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrix to determine alternative strategies for development of candlenut business. The results exhibit that from 9 blocks of BMC, value proposition is the most challenging for the improvement this business. The Positioning Quadrant SWOT shows that the score values of internal factors (strengths and weaknesses) lower than 2.5, i.e. 2.45 and 1.54, respectively. This fact indicates that the candlenut business position is internally weak. However, the scores of external factors (opportunities and threats) higher than 2.5, (3.0), which means that externally have a great opportunity in the development of candlenut. The alternative strategies to develop candlenut business are maintain relationships with customers and partners; increasing the quantity and quality of products through technology inputs, promotion, product diversification, and partnership with the government.</p> <p>Keywords business model, BMC, candlenut, IFE-EFE, NTFPs, SWOT</p>
<b>Response to Reviewers:</b>	<p>Dear Reviewers</p> <p>First, we would like to thank you for your reviewers for the extremely helpful comment provided for our paper. In the paper we have addressed all comment.</p>

Reviewer #1: General comments:

This article mainly characterizes the nine important elements of Business Model Canvas approach with their strengths, weaknesses, opportunities and threats. The existing candlenut market in the South Sulawesi of Indonesia is the case study site. The structure of the manuscript is good, however, some contents need to be discussed for better understanding. Authors' claim of suitability of the model is not evaluated. There are many anomalies exist in English sentence making throughout the manuscript. Some abbreviations and their full forms are not properly placed. The title is long and hard to follow. A short and clear title may increase readership of the article.

Thank you for the helpful comment.

- Several explanations and discussions have been added and improved both in the method and in the results section
- Some writing in English has repaired and some abbreviations have been adjusted (in section Internal and external factor analysis)
- The title changes to: An integration of Business Model Canvas on prioritizing strategy: case study of small scale NTFPs enterprises in Indonesia.

Specific comment:

1. Abstract lacks specifying the importance of candlenut, otherwise it is well structured.

-The abstract has improved by adding a little introduction and the importance of candlenut

2. Introduction is very poor and needs rewriting. The reasons of the study are not clear. The selection of candlenut for this study is not justified. The description of the NTFPs is long.

-The introduction has been rewritten by reducing the portion of NTFPs and explaining the reasons for choosing candlenut as one of the non-timber forest products

3. Methodology needs to be elaborated. The significance of the site selection is needed. Candlenut is not well known to all, so, it seeks a description of candlenut, which will improve the quality of the article. A short description of the nine important elements is needed. The scale of Saaty (1996) needs to be explained including weighting, rating and scoring methods. The data and information gathering methods need elaboration.

-The methodology has revised by adding the study site and short description about candlenut in Maros Regency as a study site in this research. A brief explanation of nine elements of BMS also added this section. The scale of Saaty was explained in Table 1 including weighting, rating and scoring in Table 2.

4. Sketches are necessary in some cases of results, for example adding a flowchart for the distribution system of candlenut in the customer segments of Business Model Canvas may increase the beauty of the manuscript. The price of what is Rp 12,000/litre in Revenue streams sub-section not clear. But kg used as quantity unit in Key activity sub-section. Both kg and litre units are confusing and failed to explain. SP, PN, SL, HP, AP, SU, AK, KU, SB of Table 1 & Table 2 have used without introducing them before. Internal and external factors analysis have used some description which are suitable in Methodology section. Minus (-) sign has used for the strength and opportunity options, while plus (+) sign has used for weakness and threats options in page 8, both are wrong. Fig. 1 has not cited in the text. Table 4 has shown mistakenly in page 8.

-The sketches of distribution system of candlenut in the customer segment already added on the channels (CH) part as in figure 1 to explained the market chain of this product.

-The price of candlenut in revenue streams as IDR 12,000/liter. In general, in the village, they used liter as a unit to sell candlenut. 1 liter roughly 0.8kg.

-Abbreviation on table has replaced and adjusted to the previous explanation. Minus (-) and plus (+) sign have been changed for weakness and threats option. Fig. 1 already cited in the text.

5.The text in the conclusion mismatch with the results claimed before  
-The conclusion has adjusted with the result

Reviewer #3

1) Please seek English language editing.

2) I do understand the potential of NTFP for improving local livelihood have not been realized in many cases, but I am not convinced developing a business model alone would improve the situation. For example, lack of infrastructure that limited the market access cannot be solved by communities alone.

3) It is described that researchers collected qualitative data, using PAR then analyzed the data using the framework of Business Model Canvas (BMC) approach. I am not sure how BMC can be applied here. Would the only customers that this farmer's group have directly dealing with be the middle-men? Who exactly are the customers that farmers' group can call? How can they differentiate their products If middle-men collect from multiple sources to supply the next in the supply chain?

4) It is unclear how IFE, EFE and SWOT, QSPM are applied in data analysis. For example, what qualitative data were collected for the purpose of these analyses need to be described clearly.

5) What does each strategy alternative mean for the farmers' group? Since this is not explained, it is hard to know what business model the authors are proposing to the group (which was the purpose of the study).

Thank you for the helpful comment and some suggestion has been rewriting.

1.English language in this paper has been rewrite

2.NTFPs have the potential that can be developed by communities around the forest. Some of NTFPs have been sold by several community groups, but it has not provided maximum results because of the existing business model that carried out still ingenuous. I agree that the government's attention is still needed in developing the business

3.To analyze of BMC using the qualitative and quantitative data. BMC is a tool to help see more accurately the form of business that is being or will be lived. Turning complex business concepts into simple ones is displayed on one canvas sheet containing a business plan with nine key elements that are well integrated and which include strategy analysis internally and externally.

4.The qualitative data were collected to explain internal and external factors on nine elements of BMC

5.Some of strategy alternative has been explained on the result and on the conclusion of this paper.

Sincerely,

Makkarenu

[Click here to view linked References](#)

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6 Integrating Business Model Canvas, SWOT and QSPM in Strategic Planning:  
7 An Application Model for the Development of NTFPs business  
8 in the Forest Farmer Group, South Sulawesi, Indonesia  
9

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16

17 **Abstract** NTFPs are one of the forest products that can provide direct benefits to communities living  
18 around the forest. However, there are only a limited number of NTFPs enterprises that have been  
19 successful in creating income and employment for the poor. The aim of this study is to identify business  
20 models, which serves as the basis to develop alternative business model organizational plan for NTFPs  
21 especially candlenut business in the Forest Farmer Group (CB-FFG) at Educational Forest Hasanuddin  
22 University. A case study was adopted, and a qualitative research and face-to-face interview were used to  
23 collect the fundamental data. The Business Model Canvas (BMC) used to investigated the existing  
24 business model of CB-FFG, while an integrating BMC, SWOT analysis and QSPM were develop to  
25 defined a positioning of business model as the basis to develop alternative strategy of CB-FFG. The  
26 results exhibit that from 9 blocks of BMC, value proposition is the most challenging for the improvement  
27 of CB-FFG. The *Positioning Quadrant* SWOT shows that the score values of internal factors (strengths  
28 and weaknesses) lower than 2.5, i.e 2.45 and 1.54, respectively. This fact indicates that the candlenut  
29 business position is internally weak. However, the scores of external factors (opportunities and threats)  
30 higher than 2.5, (3.0), which means that externally have a great opportunity in the development of  
31 candlenut. The alternative strategies to develop CB-FFG are maintain relationships with customers and  
32 partners, increasing the quantity and quality of products through technology inputs, promotion, product  
33 diversification and partnership with the government.  
34  
35  
36

37 **Keywords** business model, BMC, candlenut, IFAS-EFAS, NTFPs, SWOT  
38

39 **Introduction**  
40

41 Over the last decade, interest in managing forests for Non Timber Forest Products (NTFPs) has growing  
42 tremendously, yet very little is known about the materials collected, the people who collect them, or the  
43 enterprises that produce and market them (Chamberlain and Predny, 2003). Millions of rural and urban  
44 dwellers across the world make use of a wide diversity of forest products to fulfill several livelihood  
45 requirements from direct household provisioning to cash income, cultural needs and as a fall back in  
46 times of emergency or a means to income diversification (Shackleton, et al., 2011; Stanley, D., et al,  
47 2012).  
48

49 NTFPs are widely used in sector as diverse as pharmaceuticals, botanical medicines, cosmetics,  
50 abrasives, and food beverage industries (Belcher and Schreckenberg, 2007). NTFPs can open several  
51 routes to livelihood improvement among marginalized, rural community in the developing world  
52 (Ayisso, et al., 2009). The contribution that NTFPs can make to rural livelihoods, and the fact that theirs  
53 use is less ecologically destructive than timber harvesting, have encouraged the belief that more intensive  
54 management of forests for such products could contribute to both development and conservation  
55 objectives, and have led to initiatives to expand commercial use of NTFPs (Arnold and Perez, 2001).  
56 Valuing NTFPs therefore requires a holistic perspective that considers these products in relation to  
57 multiple livelihood strategies, and within particular contextual settings.  
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59 In recent decades, with growing concern about conservation, together with rural poverty and sustainable  
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4 development made efforts to bring NTFPs at the center of discourse (Arnold and Perez, 2001). NTFPs  
5 management has been receiving increasing attention in the last few years (Banjade and Paudel, 2008).  
6 However, the potential of NTFPs to contribute to development remained limited and open to doubt  
7 (Adam, et al., 2013).  
8

9 Indonesian government policies recognize NTFPs enterprises as one of the potential means to  
10 contribute to poverty reduction. In practice, however, there are only a limited number of NTFPs  
11 enterprises that have been successful in creating income and employment for the poor. In South  
12 Sulawesi, the NTFPs not developed well caused the lack of community capacity on NTFPs  
13 management than the capacity on farming management. The needs for improvement on all fronts are  
14 increasingly relevant because of growing demand for NTFPs (Ritchie, et al., 2013). An emphasis on  
15 global markets for NTFPs often overshadows attention to the local trade in many traditionally important  
16 products. Inattention to local markets can result in diminished appreciation of their role in supporting  
17 livelihoods and potentially lead to further marginalization of the low-income groups involved  
18 (Shackleton, et al., 2007). Entrepreneurship and innovation by actors in the market for non-timber forest  
19 products (NTFPs) cannot be fully understood without a proper understanding of the position and  
20 behavior of actors in the value chain of NTFPs (Velde, et al., 2006).  
21

22 Villagers in the vicinity of HP-UH areas have long used NTFPs products as their livelihood.  
23 However, the collection and utilization of NTFPs has not been utilized optimally so that it impacts the  
24 income of the people around the forest. NTFPs utilization is only done traditionally so the product value  
25 is still very low. In addition there is no data on potential NTFPs, benefits and business feasibility that  
26 causes the planning of utilization and exploitation of NTFPs has not been optimal. On the other hand, the  
27 trade and marketing of NTFPs is still largely hidden and the lack of access to market information so as  
28 not to provide a large marketing margin to villagers. Therefore, the design of business development and  
29 the formulation of appropriate marketing strategy is needed by the community, especially for forest  
30 farmer groups in the utilization and management of potential NTFPs. Hence, the potential of NTFPs can  
31 be utilized in a sustainable and sustainable manner so as to contribute significantly to the increased  
32 income of rural communities around the forest area and a tangible contribution to the addition of foreign  
33 exchange. This paper represents an integrating BMC, SWOT and QSPM (IFE and EFE matrix) to specify  
34 alternative strategies for development of NTFPs especially for candlenut business.  
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## 39 **Methodology**

40 The research took place at Candlenut Business-Former Farmer Group (CB-FFG) in Maros Regency,  
41 South Sulawesi. Primary data were obtained through Participatory Action Research (social mapping,  
42 resource mapping and in-depth interviews). In-depth interviews method was selected to assign an each  
43 comparison using the scale. The heads of farmer groups, collecting and intermediate traders, and people  
44 involved in the marketing of candlenut were selected to assign scores of internal and external factor  
45 evaluation. A scale from Saaty (1996) was employed to assign relative scores to pair-wise comparison  
46 among the factor and sub factor.  
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## 49 **Data Analysis**

50 The identification of CB-FFG is done through descriptive analysis with Business Model Canvas approach  
51 on 9 (Nine) important elements of BMC (Chesbrough and Rosenbloom, 2002) such as customer segment,  
52 proportion, channels, revenue streams, customer relationships, key activities, key resources, and key  
53 partnerships. The business development model and the marketing strategy of the candlenut are formulated  
54 through integrating of BMC, analysis of Internal Factor Evaluation (IFE), External Factor Evaluation  
55 (EFE), SWOT matrix and Quantitative Strategic Planning Matrix (QSPM).  
56 Phase identification of opportunities, threats, strengths and weaknesses summarized in internal and  
57 external strategic factors within the IFE and EFE matrix are then matched to the IE matrix. Alternative  
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4 strategy formulated by using SWOT analysis. The next step is to weight and factor against SWOT  
5 strategy alternatives using Quantitative BMC and QSPM to selection of the main strategy.  
6

## 7 **Results**

### 9 **Existing Business Model of CB-FFG with BMC**

#### 10 Customer segments (CS)

11  
12 Customer is one of the key factors to keep the business running. The Customer segmentation of CB-FFG  
13 are mass-market system and segmented market. CB-FFG sells the product to intermediary  
14 traders/collectors both in village level and sub-district level. This intermediary trader then sells it back to  
15 the collector merchant at the provincial level. In addition, farmers also sell their products to retailers who  
16 will then distribute it to end consumers in village level. In market segmentation, farmers also use an open  
17 market system where the farmers allow their customers to access their products. Customers (intermediary  
18 traders) are mostly make the prepaid system when order the candlenut because of the collecting traders  
19 facing the difficulties to get candlenut in sufficiently. Farmers can also sell the product directly to the  
20 nearest market, although in relatively few quantities.  
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#### 23 Value proporsion (VP)

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25 Central to the business model is the value proposition. The value proposition linked with the supplier and  
26 the customer. On the supply side should be clear which parties are required to realize the offering, which  
27 activities they undertake and what resources they require. On the buyers side it must be clear what the  
28 customers want, what their needs are and how the relationship is established and maintained with them.  
29 The value offered by candlenuts to its customers is accessibility. Customers can easily access the product  
30 both in quantity and time of harvesting of the desired candle. In addition to access to products, access to  
31 information information is also very easy to obtain especially in terms of time of taking the products that  
32 have been ordered in advance. There is a trust relationship established between the farmer and the  
33 customer, including in terms of the transaction and the mode of payment. Sometimes the customer keeps  
34 his money (prepaid) before the product is ready to be marketed. This happens because there are times  
35 when the quantity produced are relatively small, depending on the raw material.  
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#### 39 Channels (CH)

40 This element describes how the delivery of products to customers. The process of transactions conducted  
41 by using direct marketing method and by using the intermediary of collectors and retailers. In direct  
42 marketing method, the entrepreneur sells their product to the nearest market or the customer coming to  
43 the place of production, while they using the intermediary do the delivery of the product in relatively  
44 more quantity. In addition, farmers sell the product to the village/sub-district collecting traders. There are  
45 three trading institutions involved in the marketing of candlenut to end consumers: village/sub-district  
46 collectors, provincial collectors (wholesalers) and retailers. Village/sub-district collecting traders buy  
47 candlenut by visiting farmers' houses from one village to another, then sold to a provincial collector  
48 (wholesale). Wholesalers sell in bulk to exporters or industries and to retailers then to final customers.  
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#### 51 Customer relationship (CR)

52 Customer relationship is a kind of relationship to be established between employers and consumers to  
53 work together to run a business that is mutually beneficial. Customer relations applied by CB-FFG is  
54 personal assistance (Customer communicates directly with the seller/trader). To obtain the desired  
55 product, the customer may contact the farmer either directly by visiting the place of production or through  
56 a telephone call. Conversely, farmer can also contact the customer directly either by phone or through  
57 personal communication that considers individual persons familiar with its customers, especially if  
58 product ordered by the customer is ready to transport. Farmers have not provided other services to access  
59 its products in addition to personal assistance.  
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4 *Revenue streams*

5 The revenue stream is the revenue received by the farmer group from the sale of candlenut. The price  
6 mechanism used is a fixed menu pricing, where the price is set based on the quantity of the product. The  
7 shelled of the product prices have remained relatively unchanged since a few years ago that are in the  
8 range of Rp. 12.000/litre.  
9

10  
11 *Key resources*

12 The main resource that is owned is human resources. In running the business, this business still rely on  
13 human labor in peeling the pecan seeds into pecan peel (*maddepa* in local terms). The tool used is still  
14 very simple that is by using a self-made candlenut made from wicker. This tool is stomped on a flat stone  
15 to break the round seed. The quality of candlenuts produced varies greatly depending on the skills of the  
16 workers. However, since the activities of this *maddepa* have been done for generations, the local  
17 community, especially the group that seeks these pecan seeds is accustomed. The resulting peeled pecan  
18 still requires selection (sorting). In addition to human resources, other resources used are physical  
19 facilities in the form of simple equipment and equipment. In addition to using *maddepa* tools, this  
20 business group also uses the base (tarpaulins) to dry while the results of peelings and sacks to  
21 accommodate the results of peel while waiting for customers.  
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24 *Key activity*

25 Key activities are the main activities undertaken by the company so that the business model that runs in  
26 accordance with the plan. Key activities undertaken by the candlenut farmer group include harvesting or  
27 picking of candlenut, drying, stripping, sorting and packaging. The results of these activities produce the  
28 candlenut that are ready to be processed and sold to consumers. For the landowner, the activity of  
29 collecting seeds of candlenut is done together with family members and also done by involving other  
30 people with profit sharing system. Purchase of round candlenut is also done for farmers/group members  
31 who do not own land. To facilitate the process of breaking the pecan seeds into peeling product, the next  
32 process is drying. This activity is done in a very simple way by relying on natural drying under the sun.  
33 The tool he used was also very simple ie tarpaulin with a size adjusted to the number of candlenuts to be  
34 dried. In addition, the drying time is determined by the sun and usually takes 2 to 4 days. This drying  
35 greatly affects the quality of the candlenut produced. The drier will usually result in a whole peeled  
36 candlenut.  
37

38 The next activity is the stripping process (*maddepa*) using a very simple tool made of woven rattan. This  
39 tool is usually made by the farmer or buys it in the nearest market. Other equipment used is a slightly flat  
40 stone as a place to break the candlenut. After finished peeled, the resulting of product then sorted  
41 according to the level of wholeness (broken or not) from the results of *maddepa* activities. The last  
42 activity of this activity is packaging. The packaging in question is to include the hulled peanuts into the  
43 sack (size 25 kg and 50 kg) to be sold to customers.  
44  
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46 *Key partnerships*

47 To do business well, partnership is crucial for business actors. The main partners in this business are raw  
48 material suppliers, namely candlenut seed farmers and intermediary traders. The kind of relationship that  
49 is woven in accordance with the theory of Osterwalder and Pigneur (2010), is a non-competitive strategic  
50 alliance in which the cooperation is to gain their respective benefits through activities undertaken without  
51 feeling unrivaled. The type of this activity it does is also different. In establishing cooperation with  
52 partners, the type of motivation that underlies the relationship is the type of optimization and economies  
53 of scale, which is the most common type underlying the establishment of cooperation between companies  
54 and other parties. This is based because the company is hard to do all its activities alone. They need others  
55 to support their own business and objectives. In addition to the smoothness of this partnership business  
56 this relationship can also reduce costs incurred. Although there are some farmers who directly process for  
57 this product, but most of them sell it in the form of round candlenut. On the other hand, this business is  
58 highly dependent on the supply of raw materials of round of candlenut.  
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The achievement of business goals for the CB-FFG is also highly dependent on intermediary traders or collectors. This partner who plays an active role in channeling these business products to be up to 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*

The cost structure is all expenses incurred from the business of CB-FFG to run the business model. For the cost structure incurred by this business is low because the tools used are very traditional and do not require power. The power used is the human power to peel the candlenut and to dry the seeds of candlenut using the source of the sun. Based on the BMC approach, the business model of CB-FFG is still relatively simple, where in the nine elements analyzed, CB-FFG still maintains the same market segmentation long ago without any effort to get new customers. Continuity of production is also not guaranteed so there is no target market is done. They only produce in accordance with the wishes and opportunities that exist.

<b>Key partner</b>	<b>Key activities</b>	<b>Value proportion</b>	<b>Customer relationship</b>	<b>Customer segment</b>
Farmers Middleman	Production process  <b>Key resources</b> Human reseources	Easy to access information and product (accessibility);	Good relationship with customer  <b>Channels</b> Direct marketing; intermediary of collectors and retailers	Segmented market; Mass market:
<b>Cost Structure</b>			<b>Revenue stream</b>	
Cost Driven			Low revenue contribution to overall revenue Low willingness or ability to pay	

**Fig. 1** Existing business model of CB-FFG

**Internal and external factor analysis (IFAS and EFAS)**

The identification of several internal and external factors is needed to identify the strengths, weaknesses, opportunities and threats that these business groups have of various BMC elements that include customer segments, the proportion of values, channels, customer relationships, revenue streams, key activities, partnerships and cost structures. After identifying some internal and external factors, then the formulated of strengths, weaknesses, opportunities and challenges are encountered.

The steps in compiling the Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) table by determining the factors that become the Strength and Weakness of the CB-FFG, then give the weight of each factor from a scale ranging from 0.0 (not important) to 1.0 (very important) where all of these weights do not exceed the total score of 1.00. Weight determination is obtained by using paired comparison method. To determine the score value of each internal and external factor, then do the rating, which refers to the condition of the CB-FFG with a value of 1 to 4 for each factor by providing a scale ranging from 1 (below average) to 4 (excellent). After entering the data into the IFE Matrix and EFE Matrix and performing the weighting and rating for each point, the next step is to calculate the number of scores obtained from the two matrices, which is meant to know the positioning of a company. Positioning is meant here is the position of a company is in what kind of situation when viewed from internal factors and external factors faced, so that can be determined formulation of appropriate strategy based on quadrant SWOT positioning. IFE and EFE factor score values can be seen in Table 1 and Table 2.

**Table 1** Scoring of internal factor of CB-FFG

Internal Factor	Weight	Rating	Score
<b>Strenght (S)</b>			
SP/S1	0.12	4.00	0.47
PN/S2	0.15	1.00	0.15
SL/S3	0.11	3.00	0.33
HP/S4	0.14	2.00	0.28
AP/S5	0.07	4.00	0.28
SU/S6	0.07	4.00	0.28
AK/S7	0.13	1.00	0.13
KU/S8	0.15	2.00	0.29
SB/S9	0.07	4.00	0.28
<b>Sub Total</b>	<b>1.00</b>		<b>2.49</b>
<b>Weaknesses (W)</b>			
SP/W1	0.17	3.00	0.50
PN/W2	0.09	1.00	0.09
SL/W3	0.14	1.00	0.14
HP/W4	0.10	1.00	0.10
AP/W5	0.10	1.00	0.10
SU/W6	0.10	1.00	0.10
AK/W7	0.10	1.00	0.10
KU/W8	0.12	2.00	0.24
SB/W9	0.09	2.00	0.18
<b>Sub Total</b>			<b>1.54</b>

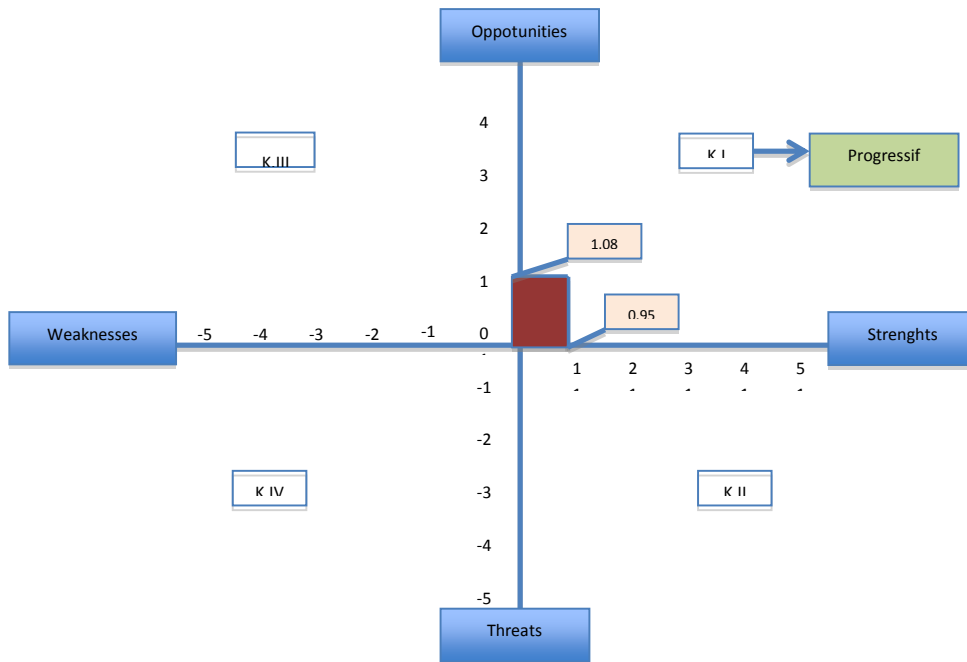
Table 1 shows the scores for internal factors (strengths and weaknesses) below 2.5, respectively at 2.45 and 1.54. This indicates that the margin of exploitation positions are internally weak especially in the proportion of offered value (PN/S2), key activities (AK/S7) for strength and most weak for weakness or weakness factor such as value, channel, customer relationship, main revenue stream and resources (PN/W2, SL / W3, HP / W4, AP / W5, SU / W6, AK / W7).

**Table 2** Scoring of external factor (opportunities and threats) of CB-FFG

External factor	weight	rating	score
<b>Opportunities (O)</b>			
SP/O1	0.08	4.00	0.33
PN/O2	0.13	3.00	0.38
SL/O3	0.13	3.00	0.40
HP/O4	0.15	2.00	0.31
AP/O5	0.07	4.00	0.28
SU/O6	0.11	3.00	0.33
AK/O7	0.11	3.00	0.33
KU/O8	0.12	3.00	0.35
SB/O9	0.10	3.00	0.29
<b>Sub total</b>	<b>1.00</b>		<b>3.00</b>
<b>Threats (T)</b>			
SP/T1	0.14	3.00	0.42
PN/T2	0.09	1.00	0.09
SL/T3	0.13	3.00	0.40
HP/T4	0.13	2.00	0.26
AP/T5	0.09	1.00	0.09
SU/T6	0.15	2.00	0.29
AK/T7	0.09	1.00	0.09
KU/T8	0.08	1.00	0.08
SB/T9	0.10	2.00	0.19
<b>Sub Total</b>	<b>1.00</b>		<b>1.92</b>

Table 4 shows the scores for opportunity factors above 2.5 ie 3.0 which means externally have a great opportunity in the development of candlenut especially on channel element (SL / O3) ie the development of technology so that can access information needed and can promote and market their products online. In addition, the development of essential oil industry and other industries that use raw materials of candlenut can be a motivation to capture this opportunity. On the other hand, the main threat faced by this effort is the low productivity of the candlenut tree (PN/T2) that has the potential to threaten the sustainability of the production process so that it may affect revenue (AP/T5). In addition, partners who in this case farmers and pickers of round candlenut as a source of raw materials of the product have the potential to switch to the business insidental (KU/T8) which also resulted in the continuity of production and revenue revenue.

Based on the results obtained from the scores on the IFE and EFE Matrix, it can be illustrated a diagram that can see the position of a company is in the condition of quadrant I, quadrant II, quadrant III, or quadrant IV by using Positioning Quadrant SWOT. The value of the total strength score of -2.49 the total score of weakness is 1.54, and then the IFE matrix value is equal to 0.95. While the value of EFE matrix obtained from the total score of the probability score is -3.00 the total threat score is 1.92 that is 1.08 (Fig. 2).



**Fig. 2** Positioning quadrant of CB-FFG

**Strategy alternative based on SWOT analysis and BMC**

**Strategy S-T (*Strengths-Threats*)**

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

**Strategy W-O (*Weaknesses-Opportunities*)**

This strategy is applied by taking advantage of opportunities by minimizing existing weaknesses. Strategies that can be used are utilizing information technology as a media campaign for the resulting product so it does not depend on the trader intermediary/collector. CB-FFG needs to access a wider market. The next strategy is to diversify the product so that it not only sells the candelnut but also can process itself candlenut into essential oil.

**Strategy W-T (*Weaknesses-Threats*)**

This strategy is a defensive strategy that seeks to minimize existing weaknesses and avoid threats. The strategy that can be done is to utilize partnership opportunities with the government to gain access to technology, information and capital. In addition, in order to retain customers, expand market access, increase bargaining position, employers must take advantage of today's emerging technologies, so they not only for direct promotion but also utilize other promotional media, such as online marketing, and make brochures.

## Conclusion

Based on the analysis of IFAS, EFAS and Positioning Quadrant SWOT as well as several alternative strategies derived from the SWOT matrix, then the model is suitable strategy to be applied to CB-FFG are maintaining relationships with customers and partners, increasing the quantity, product quality and product diversification, utilizing information technology to conduct promotion, and establish partnerships with the government to gain access to technology and capital

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## An integration of Business Model Canvas on prioritizing strategy: case study of small scale NTFPs enterprises in Indonesia.

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**Abstract** NTFPs are one of the forest products that can provide direct benefits to communities living around the forest. One of the most used NTFP products is candlenut trees because they have many benefits from the stem, leaves and fruit. Candlenut fruit is widely used in the cosmetics, pharmaceuticals, biodiesel industries and is generally used as a mixture of cooking ingredients in Indonesia. However, only a few people or community groups around the forest managed to increase their income from this business. The aim of this study is to identify business models, which serves as the basis to develop alternative business model organizational plan for candlenut business in the Forest area. A case study was adopted, and a qualitative research and in depth interview method were used to collect the fundamental data. The integration of Business Model Canvas (BMC), SWOT Analysis, Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrix to determine alternative strategies for development of candlenut business. The results exhibit that from 9 blocks of BMC, value proposition is the most challenging for the improvement this business. The *Positioning Quadrant* SWOT shows that the score values of internal factors (strengths and weaknesses) lower than 2.5, i.e. 2.45 and 1.54, respectively. This fact indicates that the candlenut business position is internally weak. However, the scores of external factors (opportunities and threats) higher than 2.5, (3.0), which means that externally have a great opportunity in the development of candlenut. The alternative strategies to develop candlenut business are 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, BMC, candlenut, IFE-EFE, NTFPs, SWOT

### Introduction

Over the last decade, interest in managing forests for Non-Timber Forest Products (NTFPs) has growing 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 several livelihood requirements from direct household provisioning to cash income, cultural needs and as a fall back in times of emergency or a means to income diversification (Shackleton, et al., 2011; Stanley, D., et al, 2012). In recent decades, with growing concern about conservation, together with rural poverty and sustainable development made efforts to brings NTFPs at the center of discourse (Arnold and Perez, 2001). NTFPs management has been receiving increasing attention in the last few years (Banjade and Paudel, 2008).

Indonesian government policies recognize NTFPs enterprises as one of the potential means to contribute to poverty reduction. One of the NTFPs that are widely used by people around the forest is *Aleurites moluccana* (L.) Willd., or 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 et al., 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; biodiesel (Pham, et al. 2018), pharmaceuticals (Quintao et al., 2011; Ubeda 2017), and most candlenut is used as a spice in Indonesian cooking.

Villagers around the forest area have long been utilizing candlenut products as their livelihood. It provides a cash income for subsistence farmers in forest area 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 & Cant 2009), and marketing partnership expansion with established enterprises (Hadiyati 2015), however, the utilization of this product is still limited and has not been utilized optimally, which has an impact on the income of the community around the forest. In addition, the trade and marketing of these products is still largely hidden and lack access to market information, so it does not provide a large marketing margin for the villagers. Therefore, business development through the formulation of the right marketing strategy is needed by the community, especially for community groups in utilizing and managing candlenut tree products and other NTFP products. Thus, the potential of NTFPs can be utilized sustainably and can contribute significantly to increasing the income of rural communities around the forest area. This paper is an integration of Business Model Canvas (BMC), Strengths, Weaknesses, Opportunities, and Threats (SWOT) and Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrix to determine alternative strategies for NTFPS development specifically for candlenut business.

## **Methodology**

### **Study Site**

Research location was determined purposively on the basis of selecting villages which had the largest area of *Aleurites moluccana* 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°45' - 50° 07' South Latitude and 109°205' - 129°12' East longitude, which borders northern Pangkep District, Makassar and Gowa south, eastward of Bone and Makassar Strait next to the West. The total area of 1619.12 km Maros regency that the administration of its government into 14 district and 103 Villages/ Kelurahan.

*Aleurites moluccana* is distributed across almost all islands in 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 *A. moluccana* 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, as reported by the Ministry of Forestry and the National Statistics Agency (2004), the provinces with the highest number of *A. moluccana* trees planted by smallholders are East Nusa Tenggara and North Sumatra, with more than 2 million *A. moluccana* trees reportedly planted by households in each of these provinces (Krisnawati, 2011).

Candlenut forests in Maros Regency, South Sulawesi were built independently by community members both individually and as a family group community since the Dutch era. In this study area, candlenut has been identified as one of the major important marketable commodity. The area of candlenut trees managed intensively in Maros Regency is 9,350 hectares, spread mainly in three sub-districts with details, District of Camba covering 2,086 hectares, District of Mallawa covering 4,956 hectares, and District of Cenrana covering 2,064 hectares where the focus of this research is in Mallawa.

### Data Analysis

Primary data were obtained through observation and in-depth interviews. In-depth interviews method was select to assign each comparison using the scale. The heads of farmer groups, collecting and intermediate traders, and people involved in the marketing of candlenut were select to to assign score of internal and external factor evaluation. A scale from Saaty (2008) was employed to assign relative score to pair-wise comparison among the factor and sub factor (see Table 1). Other relevant information was collected from the field to evaluate the aspect and criteria.

**Table 1** The Saaty's fundamental scale

Rate of Importance	Defenition	Explanation
1	Equal importance	Two activities contribute equally to the objective
2	Weak or slight	
3	Moderate importance	Experience and judgetment slightly favour one over another
4	Moderate plus	
5	Strong importance	Experience and judget slightly favour one over another
6	Strong plus	
7	Very strong or demonstrated importance	An activity is favoured very strongly over another, its dominance demonstrated in practice
8	Veri, very Strong	
9	Extreme importance	The evidence favouring one activity over another is of the highest possible order of affirmation
Reciprocals of above	If activity I has one of the above non-zero assigned to it when compared with activity j, the j has the reciprocal value when compared with i	

The identification of existing candlenut business model is done through descriptive analysis with Business Model Canvas (BMC) approach on 9 (Nine) important elements of BMC (Chesbrough and Rosenbloom, 2002) such as customer segment, value proposition, channels, revenue streams, customer relationships, key activities, key resources, and key partnerships. BMC or also known as Business Model Generation is a tool to help see more accurately the form of business that is being or will be lived. Turning complex business concepts into simple ones is displayed on one canvas sheet containing a business plan with nine key elements that are well integrated and which include strategy analysis internally and externally (Osterwalder and Pigneur, 2015).

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 customers want (Dolnicar et al, 2018). The Value Proposition Canvas focuses on how to create value to customers through the product offered by different companies in the BMC of competitors (Osterwalder & Pigneur, 2010; Osterwalder and Pigneur, 2015). According to Szopa and Pekal (2012), a distribution channel is a group of depend on each other organisation units, which are taking part in process delivery of products or services from company to customer. A revenue streams is income received by the company from the consumer that is the core of the business for their sustainability (Makkarennu et al., 2019). Standard relationship with customers is personal assistance, which is based on human interaction. Customer communicates directly with the salesman during the whole sale 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 describe the most important activities involved in value creating to delivery of product (Stefan and Richard, 2014) and key partners are section lists those people or company you need to work with to carry out your activities and reach your customers (Osterwalder & Pigneur, 2010)

The business development model and the marketing strategy of the candlenut business are formulated through integrating of BMC, analysis of Internal Factor Evaluation (IFE), External Factor Evaluation (EFE) matrix and SWOT analysis. Phase identification of SWOT, summarized in internal and external strategic factors within the IFE and EFE matrix are then matched to the IE matrix. Alternative strategy formulated by using SWOT analysis. The next step is to weight and factor against SWOT strategy alternatives using Quantitative BMC to selection of the main strategy (Table 2).

**Table 2** Scoring of internal and external factors in nine block elements of BMC

Internal/external factors in 9 key elements of BMC	Weight	Rating	Score
Strengths, Weaknesses, Opportunities and Threats			
1. Customer segment (CS)			
2. Value proposition (VP)			
3. Channels (CH)			
4. Customer relationship (CR)			
5. Revenue streams (RS)			
6. Key resources (KR)			
7. Key activity (KA)			
8. Key partnership (KP)			
9. Cost structure (CC)			
Total			

## Results

### Existing Business Model of Cundlenut Business (CB) with BMC

#### Customer segments (CS)

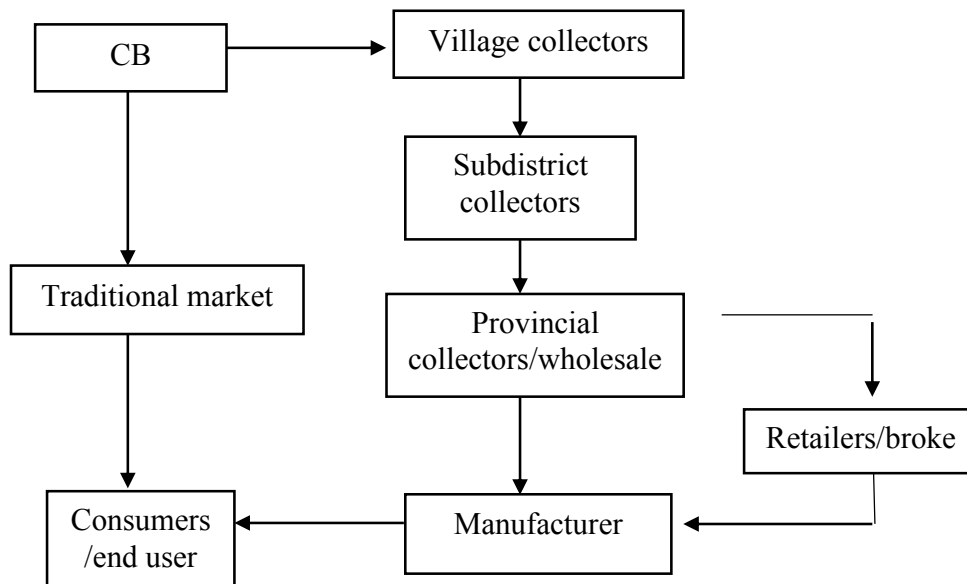
Customer is one of the key factors to keep the business running. The Customer segmentation of CB are mass-market system and segmented market. CB sells the product to intermediary traders/collectors both in village level and sub-district level. This intermediary trader then sells it back to the collector merchant at the provincial level. In addition, farmers also sell their products to retailers who will distribute it to end consumers in village level. In market segmentation, farmers also use an open market system where the farmers allow their customers to access their products. Customers (intermediary traders) are mostly make the prepaid system when they order the candlenut because of the collecting traders facing the difficulties to get candlenut in sufficiently. Farmers can also sell the product directly to the nearest market, although in relatively few quantities.

#### Value proporsion (VP)

Central to the business model is the value proposition. The value proposition linked with the supplier and the customer. On the supply side should be cleared which are required to realize the offering, which activities they undertake and what resources they require. On the buyers' side it must be cleared what the customers want, what their needs are and how the relationship is established and maintained with them. The value offered by candlenuts to its customers is accessibility. Customers can easily access the product both in quantity and time of harvesting of the desired candle. In addition to access the products, access to information is also simple to obtain especially in terms of time of taking the products that have been ordered in advance. There is a trust relationship established between the farmer and the customer, including in terms of the transaction and the mode of payment. Sometimes the customer keeps his money (prepaid) before the product is ready to be marketed. This happens because of there are times when the quantity produced are relatively small, depending on the raw material.

## Channels (CH)

This element describes how the delivery of products to customers. The process of transactions conducted by using direct marketing and indirect marketing. In direct marketing method, the entrepreneur sells their product to the nearest market or the customer coming to the place of production, while they using the intermediary do the delivery of the product in relatively more quantity. In addition, farmers sell the product to the village/sub-district collecting traders. 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' houses from one village to another, then sold to subdistrict collector a provincial collector (wholesaler). Wholesalers sell in bulk to exporters or industries and retailers then to final customers. The market chain of CB can be seen in Fig.1



**Fig. 1** Market chain of CB

## Customer relationship (CR)

Customer relationship is a kind of relationship to be established between employers and consumers to work together to run a business that is mutually beneficial. Customer relations applied by CB is personal assistance where consumer communicates directly with the seller. To obtain the desired product, the customer may contact the farmer either directly by visiting the place of production. Conversely, farmer can also contact the customer directly either by phone or through personal communication that considers individual persons familiar with its customers, especially if product ordered by the customer is ready to transport. Farmers have not provided other services to access its products in addition to personal assistance.

### Revenue streams (RS)

The revenue stream is the revenue received from the sale of candlenut. The price mechanism used is a fixed menu pricing, where the price is set based on the quantity of the product. The prices of product have remained relatively unchanged since a few years ago that are in the range of IDR12.000 a liter (roughly 0.8 kg).

### Key resources (KR)

The main resource that is owned is human resources. In running the business, this business still relies on human labor in peeling the candlenut (*maddepa* in local terms) by using a simple equipment made of rattan woven. The quality of the candlenut produced varies greatly depending on the skills of the workers so that it still needs to be sorted. Other resources used are simple equipment such as tarps which are used to dry candlenuts from the results of stripping.

### Key activity (KA)

Key activities are the main activities undertaken by the company so that the business model that runs in accordance with the plan. Key activities undertaken by the candlenut farmer group include harvesting or picking of candlenut, drying, stripping, sorting and packaging. The results of these activities produce the candlenut that are ready to be processed and sold to consumers. For the landowner, the activity of collecting seeds of candlenut is done together with family members and also done by involving other people with profit sharing system. The next step is drying the candlenut before peeling it with natural drying in the sun for two or three days. This drying greatly affects the quality of the candlenut produced. The next activity is the stripping process (*maddepa*) by using a simple tool made from woven rattan. Other equipment used is a slightly flat stone as a place to break the candlenut. After finished peeled, the resulting of product then sorted according to the level of wholeness (broken or not). The last activity is packaging by using sack with size 25 kg and 50 kg

### Key partnerships (KP)

To do business well, partnership is crucial for business actors. The main partners in this business are raw material suppliers, namely candlenut seed farmers and intermediary traders. The kind of relationship that is woven in accordance with the theory of Osterwalder and Pigneur (2010), is a non-competitive strategic alliance in which the cooperation is to gain their respective benefits through activities undertaken without feeling unrivaled. The type of this activity it does is also different. In establishing cooperation with partners, the type of motivation that underlies the relationship is the type of optimization and economies of scale, which is the most common type underlying the establishment of cooperation between companies and other parties. This is based because the company is hard to do all its activities alone. They need others to support their own business and objectives. In addition to the smoothness of this partnership business this relationship can also reduce costs incurred. Although there are some farmers who directly process for this product, but most of them sell it in the form of round candlenut. On the other hand, this business is highly dependent on the supply of raw materials of round of candlenut. The achievement of business goals for the CB is also highly dependent on intermediary traders or collectors. This partner who plays an active role in channeling these business products to be up to 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 from the business of CB to run the business model. For the cost structure incurred by this business is low because the tools used are very traditional and do not require power. The power used is the human power to peel the candlenut and to dry the seeds of candlenut using the source of the sun. Based on the BMC approach, the business model of CB (Fig. 2) is still relatively simple, where in the nine elements analyzed, CB still maintains the same market segmentation long ago without any effort to get new customers. Continuity of production is also not guaranteed so there is no target market is done. They only produce in accordance with the wishes and opportunities that exist.

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

**Fig. 2** Existing business model of CB

### 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 that these business groups have of various BMC elements that include customer segments, the proportion of values, channels, customer relationships, revenue streams, key activities, partnerships and cost structures. After identifying some internal and external factors, then the formulated of strengths, weaknesses, opportunities and challenges are encountered.

The steps in compiling the Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) table by determining the factors that become the Strength and Weakness of CB, then give the weight of each factor from a scale ranging from 0.0 (not important) to 1.0 (very important) where all of these weights do not exceed the total score of 1.00. Weight determination is obtained by using paired comparison method. To determine the score value of each internal and external factor, then do the rating, which refers to the condition of the CB with a value of 1 to 4 for each factor by providing a scale ranging from 1 (below average) to 4 (excellent). After entering the data into the IFE Matrix and EFE Matrix and performing the weighting and rating for each point, the next step is to calculate the number of scores obtained from the two matrices, which is meant to know the positioning of a company. Positioning is meant here is the position of a company is in what kind of situation when viewed from internal factors and external factors faced, so that can be determined formulation of appropriate strategy based on quadrant SWOT positioning. IFE and EFE factor score values can be seen in Table 3 and Table 4.

**Table 3** Scoring of internal factor of CB

Internal Factor	Weight	Rating	Score
<b>Strenght (S)</b>			
CS/S1	0.12	4.00	0.47
VP/S2	0.15	1.00	0.15
CH/S3	0.11	3.00	0.33
CR/S4	0.14	2.00	0.28
RS/S5	0.07	4.00	0.28
KR/S6	0.07	4.00	0.28
KA/S7	0.13	1.00	0.13
KP/S8	0.15	2.00	0.29
CC/S9	0.07	4.00	0.28
Sub Total	1.00		2.49
<b>Weaknesses (W)</b>			
CS/W1	0.17	3.00	0.50
VP/W2	0.09	1.00	0.09
CH/W3	0.14	1.00	0.14
CR/W4	0.10	1.00	0.10
RS/W5	0.10	1.00	0.10
KR/W6	0.10	1.00	0.10
KA/W7	0.10	1.00	0.10
KP/W8	0.12	2.00	0.24
CC/W9	0.09	2.00	0.18
Sub Total			1.54

Table 3 shows the scores for internal factors (strengths and weaknesses) below 2.5, respectively at 2.45 and 1.54. This indicates that the margin of exploitation positions are internally weak especially in the proportion of offered value (VP/S2), key activities (KA/S7) for strength and most weak for weakness or weakness factor such as value, channel, customer relationship, main revenue stream and resources (VP/W2, CH/W3, CR/W4, RS/W5, KR/W6, KA/W7).

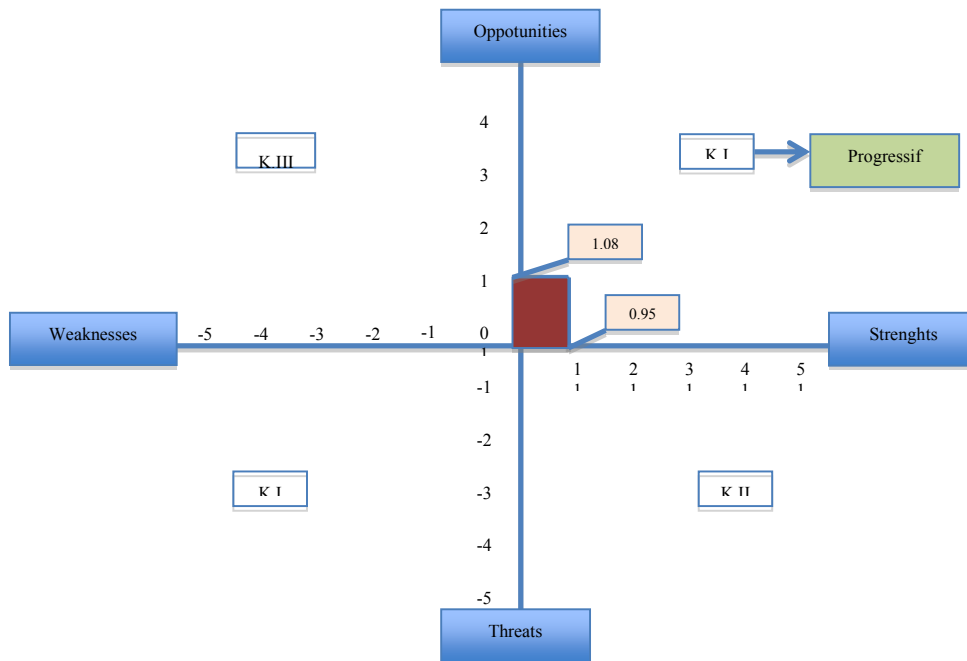
**Table 4** Scoring of external factor (opportunities and threats) of CB

External factor	weight	rating	score
<b>Opportunities (O)</b>			
CS/O1	0.08	4.00	0.33
VP/O2	0.13	3.00	0.38
CH/O3	0.13	3.00	0.40
CR/O4	0.15	2.00	0.31
RS/O5	0.07	4.00	0.28
KR/O6	0.11	3.00	0.33
KA/O7	0.11	3.00	0.33
KP/O8	0.12	3.00	0.35
CC/O9	0.10	3.00	0.29
<b>Sub total</b>	<b>1.00</b>		<b>3.00</b>
<b>Threats (T)</b>			
CS/T1	0.14	3.00	0.42
VP/T2	0.09	1.00	0.09
CH/T3	0.13	3.00	0.40
CR/T4	0.13	2.00	0.26
RS/T5	0.09	1.00	0.09
KR/T6	0.15	2.00	0.29
KA/T7	0.09	1.00	0.09
KP/T8	0.08	1.00	0.08
CC/T9	0.10	2.00	0.19
<b>Sub Total</b>	<b>1.00</b>		<b>1.92</b>

Table 4 shows the scores for opportunity factors above 2.5 ie 3.0 which means externally have a great opportunity in the development of candlenut especially on channel element (CH/O3) ie the development of technology so that can access information needed and can promote and market their products online. In addition, the development of essential oil industry and other industries that use raw materials of candlenut can be a motivation to capture this opportunity. On the other hand, the main threat faced by this effort is the low productivity of the candlenut tree (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 who in this case farmers and pickers of round candlenut as a source of raw materials of the product have the potential to switch to the business insidental (KP/T8) which also resulted in the continuity of production and revenue revenue.

The calculation results in the IFE - EFE matrix shows that the difference between strength (2.49) and weakness in internal factors (1.54) is 0.95 while 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 (Fig.3), which means the company is in a strong condition and has a chance. Then the suggested strategy is Progressive or aggressive, which means that the company is very likely to continue to expand, increase growth and achieve maximum progress.



**Fig. 3** Positioning quadrant or strategic position for Cundlenut business

**Strategy alternative based on SWOT analysis and BMC**

*Strategy S-T (Strengths-Threats)*

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

*Strategy W-O (Weaknesses-Opportunities)*

This strategy is applied by taking advantage of opportunities by minimizing existing weaknesses. Strategies that can be used are utilizing information technology as a media campaign for the resulting product so it does not depend on the trader intermediary/collector. CB needs to access a wider market. The next strategy is to diversify the product so that it not only sells the candelnut but also can process itself candlenut into essential oil.

*Strategy W-T (Weaknesses-Threats)*

This strategy is a defensive strategy that seeks to minimize existing weaknesses and avoid threats. The strategy that can be done is to utilize partnership opportunities with the government to gain access to technology, information and capital. In addition, in order to retain customers, expand market access, increase bargaining position, employers must take advantage of today's emerging technologies, so they not only for direct promotion but also utilize other promotional media, such as online marketing, and make brochures. However, Cunningham (2017) states that the potential supply of an NTFP product must be compared with another 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 NTFPs (candlenut business) by combining BMC, SWOT and IFE-EFE techniques. The finding shows that the quadrant of this business position is in quadrant I, which means the company is in a strong condition and has a chance. Then the suggested strategy is aggressive, where the CB is very likely to continue to expand, increase growth and achieve maximum progress. The alternative strategies to develop candlenut business are maintain relationships with customers and partners, increasing the quantity and quality of products through technology inputs, promotion, product diversification and partnership with the government.

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