



Analysis of Internal and External Factors in the E-Business Transformation of Mocaf MSMEs

Didit Herlianto^{1*}, Astrid Wahyu Adventri Wibowo², Sylvert Prian Tahalea³

*Corresponding author email: diditherlianto@upnyk.ac.id

^{1,2,3}Universitas Pembangunan Nasional Veteran Yogyakarta, Yogyakarta, Indonesia

Abstract. Micro, Small, and Medium Enterprises (MSMEs) are important to a country's economy. One of the MSMEs producing Mocaf (Modified Cassava Flour) is KWT (Women Farmers Group) Ngudi Rejeki, which is located in Gunungkidul, Yogyakarta, Indonesia. However, in facing increasingly fierce competition and rapid changes in the business environment, KWT Ngudi Rejeki is also faced with various challenges. E-business transformation needs to be carried out at KWT Ngudi Rejeki because the adoption of technology and the transition to the digital realm provide various benefits. This research aims to determine the right strategy for KWT Ngudi Rejeki in implementing e-business by analyzing internal and external factors using SWOT Analysis, EFAS Matrix, and IFAS. The research results show that the IFAS matrix is 1,15 and EFAS is 0,30 (Quadrant I), which means that an aggressive strategy must be implemented, namely utilizing strengths to seize existing opportunities.

Keywords: Mocaf, SWOT Analysis, IFAS, EFAS

1 Introduction

Micro, Small, and Medium Enterprises (MSMEs) are essential to a country's economy [1][2][3][4] including Indonesia. One of the growing MSME sectors is processing processed food, such as Mocaf (Modified Cassava Flour) products. Mocaf is a cassava flour product that has been processed using an inevitable process to increase added value and its use in various food products [5][6][7]. Along with increasing health and lifestyle trends, the demand for Mocaf products is also increasing for domestic and export consumption.

However, in the face of increasingly fierce competition and rapid changes in the business environment, Mocaf MSMEs face various challenges. The development of technology and the adoption of e-business have fundamentally changed the business landscape [8][9][10]. What's more, the COVID-19 pandemic has accelerated the shift of consumers to online platforms, creating new challenges and opportunities for MSMEs to integrate their businesses into the digital realm.

The Ngudi Rejeki Women's Farming Group (KWT Ngudi Rejeki) is a group of women farmers in Dukuh Jaten, Ngestirejo Village, Ngestirejo Village, Tanjungsari Gunungkidul District, Indonesia who currently have the ability to process cassava into Mocaf. The capacity to process cassava into mocaf flour is still very low, only capable of producing around 200 kg of mocaf per month. This is caused by the production process, which is still manually using traditional technology and limited processing facilities, only at the house of KWT chairman Ngudi Rejeki. However, a feasibility study for constructing the Mocaf factory has been conducted to support increasing production capacity [11]. The increase in capacity must also be

balanced with determining the right business strategy so that the existence of KWT Ngudi Rejeki is maintained.

E-business transformation needs to be carried out at KWT Ngudi Rejeki because technology adoption and the transition to the digital realm provide various benefits and are also an urgent need in dealing with changes in the business environment. Thus, e-business transformation is a strategy to survive, grow, and compete in a changing market. For Mocaf MSMEs, adopting technology and innovating in e-business are crucial steps to increase competitiveness, develop business, and take advantage of existing opportunities.

Therefore, it is necessary to analyze internal and external factors to assist in a deeper understanding of the internal and external conditions of the business. One method of analysis that can be used is a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats). By conducting a SWOT analysis, Mocaf MSMEs can maximize the opportunities in e-business while overcoming obstacles and dealing with threats better. This helps MSMEs in planning a more prosperous and sustainable e-business transformation.

2 Method

The method for this research can be done with a comprehensive and structured approach. This research can be started by determining the scope of the research. First of all, determine the scope of the research by identifying the critical parameters to be analyzed in the e-business transformation of KWT Ngudi Rejeki, including aspects: internal factors (Strengths and Weaknesses) related to expertise in Mocaf production, product quality, technological infrastructure, finance, management human resources, and external factors (Opportunities and Threats) related to market trends in the mocaf industry, competition in the e-commerce market, changes in e-commerce regulations, changes in consumer behavior. The next stage is the collection of data obtained by conducting surveys and interviews with KWT Ngudi Rejeki, making Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS) matrix, making SWOT Analysis, and choosing possible strategies.

The data that has been collected will be carried out with a SWOT analysis to provide a comprehensive view of the condition of KWT Ngudi Rejeki in the context of e-business transformation and assist in formulating appropriate strategies for business success in the digital era. The Internal Factor Analysis Summary (IFAS) matrix is an analysis tool that provides the company's internal conditions to be able to determine the strengths and weaknesses of a company, while the External Factor Analysis Summary (EFAS) matrix is an analysis tool that provides the company's external conditions to be able to determine the opportunity and threat factors that a company has. The way to create IFAS and EFAS matrix is as follows:

- a) Determine strategic factors that are strengths and weaknesses as well as opportunities and threats.
- b) Give each weight on a scale ranging from 1.0 (very important) to 0.0 (not important). These factors are likely to have an impact on strategic factors.
- c) Calculate the rating for each factor by giving a scale ranging from 4 (outstanding or the highest) to 1 (poor or the lowest). The rating value for the opportunity and strength factors is positive (a greater opportunity is given a rating of +4, but if the opportunity is small, it is given a rating of +1). Assessing weaknesses and threats is the opposite. For example, if the threat value is very large, the rating is 1. Conversely, if the threat value is small, the rating is 4.

- d) Determine the score value by multiplying the weight and rating.
- e) Add up the weighting scores to obtain the total weighting score for IFAS and EFAS.

3 Result and Discussion

3.1 Identification of Internal and External Factors

SWOT (Strengths, Weaknesses, Opportunities, Threats) can help KWT Ngudi Rejeki determine the right business strategy and avoid unnecessary risks. SWOT is a framework to evaluate internal and external factors influencing an entity or organization. In KWT Ngudi Rejeki, which focuses on adopting e-business, SWOT can provide an overview of the strengths, weaknesses, opportunities, and threats this business faces. The following is a SWOT analysis for KWT Ngudi Rejeki.

Strengths refer to positive factors or internal advantages of KWT Ngudi Rejeki, while Weaknesses refer to internal factors that limit or hinder the performance or potential of KWT Ngudi Rejeki. These weaknesses are negative aspects or vulnerabilities that must be considered and overcome to achieve business goals better. Based on the interview results, there are five strengths and five weaknesses in KWT Ngudi Rejeki while adopting e-business. The identification of internal factors can be seen in Table 1.

Table 1. Internal factors for KWT Ngudi Rejeki.

Strength	
S1	MOCAF is an innovative product that has the potential to meet the growing market
S2	Have a website or e-commerce
S3	Offer high-quality products or services to attract online customers
S4	Expanding market share
S5	Customer data management
Weakness	
W1	Limited human resources
W2	MOCAF products may not be well known among consumers
W3	MOCAF quality uniformity
W4	Limitations in information technology infrastructure
W5	Lack of experience in e-business

Opportunities are important situations of favorable external factors in the KWT Ngudi Rejeki environment. Important tendencies are one source of opportunity. Threats refer to external factors that can hinder or endanger the performance or destruction of KWT Ngudi Rejeki. These threats are negative situations or trends in the external environment that can disrupt business operations or damage competitive advantage. Based on the interview results, there are five opportunities and five threats in KWT Ngudi Rejeki while adopting e-business. The identification of external factors can be seen in Table 2.

Table 2. External factors for KWT Ngudi Rejeki.

Opportunity	
O1	The MOCAF-based processed food market can cover various segments
O2	Changes in consumer behavior
O3	The ability to sell products or services globally
O4	Utilize social media as a marketing tool
O5	The rate of economic growth continues to increase
Threat	
T1	Competition with similar products
T2	Rapid technological progress
T3	Changes in government rules or regulations
T4	Cyber security
T5	Large capital requirements

3.2 Calculation of IFAS and EFAS Matrix

After grouping the strengths, weaknesses, opportunities, and threats of e-business implementation at KWT Ngudi Rejeki, an IFAS and EFAS matrix will be created, which can be seen in Tables 3 and 4.

Table 3. IFAS Matrix of KWT Ngudi Rejeki

No	Internal Factors	Weight (W)	Rating (R)	Score (WxR)
Strength (S)				
S1	MOCAF is an innovative product that has the potential to meet the growing market	0,10	4	0,40
S2	Have a website or e-commerce	0,10	3	0,30
S3	Offer high-quality products or services to attract online customers	0,10	3	0,30
S4	Expanding market share	0,15	4	0,60
S5	Customer data management	0,05	3	0,15
Sub-Total (I)		0,50		1,75
Weakness (W)				
W1	Limited human resources	0,15	1	0,15
W2	MOCAF products may not be well known among consumers	0,05	2	0,10
W3	MOCAF quality uniformity	0,05	2	0,10
W4	Limitations in information technology infrastructure	0,15	1	0,15
W5	Lack of experience in e-business	0,10	1	0,10
Sub-Total (II)		0,50	24	0,60
Total (I+II)		1,00		1,15

Based on the IFAS matrix, expanding market share is the biggest strength in implementing e-business at KWT Mocaf with a weight of 0.15. Meanwhile, the factors of innovative products, having a website and e-commerce, and offering high-quality products or services to attract

online customers each have a weight of 0.1. And customer data management has a weight of 0.05. So based on these calculations, the IFAS value for KWT Ngudi Rejeki is 1.15. Thus, the implementation of e-business has a considerable attraction for development, but efforts are still needed to improve these weaknesses.

Table 4. EFAS Matrix of KWT Ngudi Rejeki

No	External Factors	Weight (W)	Rating (R)	Score (WxR)
Opportunity (O)				
O1	The MOCAF-based processed food market can cover various segments	0,03	3	0,09
O2	Changes in consumer behavior	0,08	3	0,24
O3	The ability to sell products or services globally	0,10	4	0,40
O4	Utilize social media as a marketing tool	0,10	3	0,30
O5	The rate of economic growth continues to increase	0,04	3	0,12
Sub-Total (I)		0,35		1,15
Threat (T)				
T1	Competition with similar products	0,15	1	0,15
T2	Rapid technological progress	0,10	2	0,20
T3	Changes in government rules or regulations	0,10	2	0,20
T4	Cyber security	0,15	1	0,15
T5	Large capital requirements	0,15	1	0,15
Sub-Total (II)		0,65		0,85
Total (I+II)		1,00	20	0,30

Regarding external factors, the most tremendous weight is given to limited human resources, limitations in information technology infrastructure, and lack of experience in e-business, with a weight of 0.15. Based on these calculations, the EFAS value is 0.30. This means that changes in external factors are highly attractive to implementing e-business at KWT Ngudi Rejeki. When compared with the IFAS value, the EFAS value is smaller than the IFAS value, indicating that the implementation of e-business at KWT Ngudi Rejeki has a strong ability to face external changes.

Based on the mapping of strengths, weaknesses, opportunities, and threats identified at KWT Ngudi Rejeki, it was found that KWT Ngudi Rejeki's position was in Quadrant 1, which means implementing an aggressive strategy, namely utilizing strengths to seize existing opportunities. An overview of the e-business implementation quadrant at KWT Ngudi Rejeki from the EFAS IFAS matrix is shown in Figure 1.

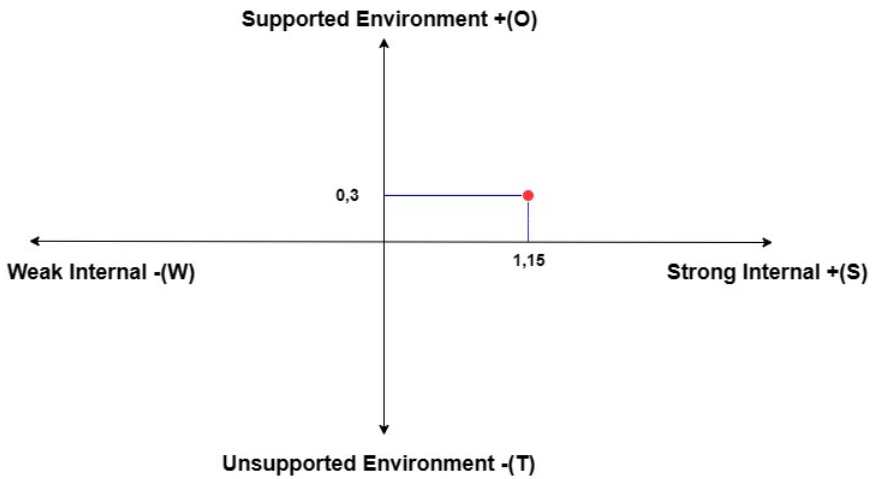


Fig. 1. KWT Ngudi Rejeki e-business implementation quadrant position based on IFAS-EFAS analysis.

The first quadrant means that KWT Ngudi Rejeki can use its strengths to adopt strategies, such as market penetration, market development and product development, to form competitive strength. If companies in the first quadrant have additional resources, forward, backward, and horizontal integration may be an efficient strategy. Quadrant I shows a very good situation or condition because there are strengths that can be utilized to achieve profitable opportunities. The strategy that can be applied in this condition is to support progressive growth policies. This means that KWT Ngudi Rejeki is in prime and stable condition, making it possible for it to continue to develop and achieve maximum progress.

3.3 Strategy Formulation

To determine the priorities and relationships between strategies based on SWOT weights, interactions between internal and external strategies are carried out which can be explained as follows: the formulation of SO, ST, WO, and WT strategies is based on internal factors S and W; and external factors O and T into the IFAS-EFAS SWOT interaction matrix as in Tables 3 and 4. Then, based on the SWOT interaction matrix, a weighting assessment is carried out to determine the priority scale. The arrangement of alternative strategies based on priority order can be seen in Table 5.

Table 5. SWOT business development matrix.

Strength (S)	Weight	Weakness (W)	Weight
S1 MOCAF is an innovative product that has the potential to meet the growing market	1,75	W1 Limited human resources	0,06
S2 Have a website or e-commerce		W2 MOCAF products may not be well known among consumers	

S3	Offer high-quality products or services to attract online customers	W3	MOCAF quality uniformity
S4	Expanding market share	W4	Limitations in information technology infrastructure
S5	Customer data management	W5	Lack of experience in e-business

Opportunity (O)		Weight	Threat (T)		Weight
O1	The MOCAF-based processed food market can cover various segments	1,15	T1	Competition with similar products	0,85
O2	Changes in consumer behavior		T2	Rapid technological progress	
O3	The ability to sell products or services globally		T3	Changes in government rules or regulations	
O4	Utilize social media as a marketing tool		T4	Cyber security	
O5	The rate of economic growth continues to increase		T5	Large capital requirements	
Strength – Opportunity (SO)					Weight
SO1	Using MOCAF product innovation to develop various MOCAF processed products that meet various consumer needs. For example, developing MOCAF nuggets, MOCAF sausages, or MOCAF pasta to reach various market segments.				2,90
SO2	Improve the quality and functionality of a website or e-commerce platform to create a better user experience.				
SO3	Utilize digital platforms such as online advertising, SEO, and social media to expand market share to a broader geographic area.				
SO4	Leverage customer data to provide exclusive offers or promotions to customers who are more loyal or spend more.				
Weakness – Opportunities (WO)					
WO 1	Utilizing technology to automate several tasks or processes that require human resources, such as administration and order processing.				1,21
WO 2	Utilizing e-commerce technology to facilitate product sales globally.				
WO 3	Look for a mentor or consultant experienced in e-business to provide guidance and advice.				
WO 4	Focus on marketing strategies that are optimized for mobile devices, as the use of mobile devices to access social media tends to be more common.				
Strength – Threat (ST)					
ST1	Offer competitive prices or special discount programs to attract customers and compete effectively with similar products.				2,60
ST2	Maintain the quality of Mocaf products to remain superior and compete with similar products on the market.				
ST3	Partner with an expert cybersecurity service provider to better secure customer data.				
ST4	Identify the most important customer data and focus data management efforts on them.				
Weakness – Threat (WT)					
WT 1	Educate consumers about the benefits of Mocaf products.				0,91
WT 2	Conduct regular security audits to identify and address potential vulnerabilities before they become serious problems.				
WT 3	Conduct employee training to gain a better understanding of e-business and government regulations.				
WT 4	Utilizing existing or new technology in the Mocaf production process.				

Based on the weighting of the questionnaire results, strategy priority is based on a combination of strategies with the highest to lowest scores, as shown in Table 6 below.

Table 6. SWOT strategy priorities

Priority	Strategy	Weight
I	Strength – Opportunity (SO)	2,90
II	Strength – Threat (ST)	2,60
III	Weakness – Opportunities (WO)	1,21
IV	Weakness – Threat (WT)	0,91

Based on Table 6 and Figure 1, the alternative strategy with the highest weight is the Strength-Opportunity (SO) strategy, which utilizes existing strengths to obtain opportunities. The Strength-Opportunity (SO) strategy based on the interaction of IFAS and EFAS SWOT is as follows:

- a. Taking advantage of MOCAF product innovation to develop a variety of MOCAF processed products that meet various consumer needs. For example, developing MOCAF nuggets, MOCAF sausages, or MOCAF pasta to reach various market segments.
- b. Improve the quality and functionality of a website or e-commerce platform to create a better user experience.
- c. Utilize digital platforms such as online advertising, SEO, and social media to expand market share to a wider geographic area.
- d. Leverage customer data to provide exclusive offers or promotions to customers who are more loyal or spend more.

4 Conclusion

Based on the IFAS and EFAS scores from the questionnaires and interviews, strategy priorities are based on a combination of strategies with the highest to lowest scores. The most appropriate strategy for adopting e-business at KWT Ngudi Rejeki is Strength-Opportunity (SO) because it is in Quadrant I and has the highest weight of 2.9, which means that an aggressive strategy must be implemented, namely using strengths to seize existing opportunities.

Acknowledgment

Thank you to the Institute for Research and Community Service (LPPM) UPN Veteran Yogyakarta for providing financial support and assistance to this research. Hopefully, in the future, there will be more research that is beneficial to society.

References

- [1] S. Gade, "MSMEs' Role in Economic Growth-a Study on India's Perspective," *Int. J. Pure Appl. Math. [Internet]*, vol. 118, no. 18, pp. 1727–40, 2018, [Online]. Available: <https://www.researchgate.net/publication/343189302>
- [2] A. D. Kruja, "The Contribution of SMEs to the Economic Growth (Case of Albania)," *EuroEconomica*, vol. 1, no. 32, pp. 55–67, 2013.
- [3] V. Glonti, R. Manvelidze, and I. Surmanidze, "The contribution of sme to regional economic development: On example of adjara autonomous republic," *Eur. J. Sustain. Dev.*, vol. 10, no. 1, pp. 513–26, 2012.
- [4] M. Bayraktar and N. Algan, "The Importance Of SMEs On World Economies," in *International Conference on Eurasian Economies 2019. Eurasian Economists Association*, 2029, pp. 56–61.
- [5] J. Sulistyono and K. Nakahara, "Cassava Flour Modification by Microorganism," in *The 1st International Symposium on Microbial Technology for Food and Energy Security [Internet]*, 2013. [Online]. Available: <https://www.researchgate.net/publication/268079165>
- [6] L. Ratnawati, D. Desnilasari, R. Kumalasari, and D. N. Surahman, "Characterization of modified cassava flour (Mocaf)-based biscuits substituted with soybean flour at varying concentrations and particle sizes," *Food Res*, 2020.
- [7] M. A. Hamidi and E. Banowati, "Utilization of mocaf flour (modified cassava flour) for revitalization of the use tapioca flour in communities for empowering hulu-hilir human resources in wonogiri regency," in *IOP Conference Series: Earth and Environmental Science*, 2019.
- [8] L. Chen and C. W. Holsapple, "E-Business Adoption Research: State of the Art," *J. Electron. Commer. Res. [Internet]*, vol. 14, no. 3, pp. 261–86, 2013, [Online]. Available: <https://www.researchgate.net/publication/274635398>
- [9] H. M. Beheshti and E. Salehi-Sangari, "The benefits of e-business adoption: An empirical study of Swedish SMEs," *Serv. Bus.*, 2007.
- [10] S. A. Al-Somali, B. Clegg, and R. Gholami, "E-business adoption and its impact on performance," in *Encyclopedia of E-Business Development and Management in the Global Economy*, IGI Global, 2010, pp. 95–105.
- [11] D. Herlianto, S. P. Tahalea, A. W. A. Wibowo, and I. Rahatmawati, "Economic Feasibility of Modified Cassava Flour Milling in Gunungkidul Region, Indonesia: A Value-Added Agribusiness Venture." 2023. [Online]. Available: <https://iopscience.iop.org/article/10.1088/1755-1315/1242/1/012027>

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

