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Strategic Orientations to Strengthen Policymaking: Study of Small-Scale Cassava-Based Agroindustry in Central Java, Indonesia

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ABSTRACT

The cassava agroindustry is an essential part of the food sub-sector, and as it provides economic benefits for business actors from upstream to downstream. The development of the industry has been focused on aspects of cultivation, whereas the aspects of processing, marketing, management, and business innovation also need support. This study aims to formulate strategic orientations of SMEs in developing cassava-based agroindustry. This exploratory study was conducted on SMEs in the agroindustry with products made from cassava. A total of 115 SMEs in Central Java Province were taken as samples using stratified random sampling. Factor analysis was performed with the Principle Component Analysis (PCA). The strategic orientations covered product focus and short-term orientation to survive; market knowledge and flexibility; long-term orientation for market penetration or development; product development innovation to create differentiation; and reactive strategy orientation for stability. These five aspects should be considered to win the competition, build a competitive advantage, and face changes in the business environment. However, implementing them required the commitment of cassava-based SMEs, government support, and the development of collaboration with larger industries. Thus, the strategic orientations could be applied as a regional policy to improve the business performance in the cassava agroindustry in Central Java.

Keywords: Cassava-based agroindustry; Principle Component Analysis; Policymaking; Small and Medium Enterprises; Strategic orientations

INTRODUCTION

Agriculture is the mainstay sector in national development, and as one of the sub-systems, agroindustry has a highly strategic role. Agriculture has contributed 20.7% to economic growth (Alkasim, Hilman, Bohari, Abdullah, & Sallehddin, 2018; Lechner & Gudmundsson, 2014; Timisela, Masyhuri, & Darwanto, 2021) and the agroindustry is the primary driver of the agricultural sector development in Indonesia. Hence, efforts to realize vital agriculture and become a leading sector in national development should be supported by agroindustry development. Agroindustry contributes to industrialization and overall

economic development. The increasingly fierce business competition encourages industry players to develop the best business strategy. Determining a strategic orientation can enhance the company's performance in a constantly changing business environment (Vlasic, 2023).

Agriculture SMEs have accounted for 48.85% of all SMEs in Indonesia (Lembaga Pengambangan Perbangkan Indonesia dan Bank Indonesia, 2015). It signifies that SMEs in agriculture have great potential to grow. Likewise, the high potential of agricultural SMEs in Central Java Province is supported by the high production of agricultural commodities. One of the commodities cultivated in this province is cassava. Cassava (*Manihot esculenta Crantz*) is one of the agricultural products with great potential for its diverse uses ranging from consumption to industry (Prakash, Jaganathan, Immanuel, & Sivakumar, 2020).

Moreover, cassava plants are the essential ingredients for producing flour. In the community, cassava is widely consumed as a processed food ingredient; each country has a specific product, and the most common names are tapioca and chips (Kégah & Ndjouenkeu, 2023). The annual demand for cassava for food and industrial needs has escalated. Nine areas in Central Java, including Wonogiri Regency, Banjarnegara, Jepara, Pati, Wonosobo, Purbalingga, Rembang, Karanganyar, and Salatiga City, are the bases for cassava (Darwanto, Raharjo, & Hendra, 2018). The abundance of cassava raw materials encourages the development of SMEs selling processed cassava products. Certainly, the development of the cassava agroindustry can reduce reliance on wheat flour.

The cassava agroindustry plays a vital role in developing the food crop sub-sector in Central Java. This industry allows many economic players, ranging from farmers, intermediary traders, and agroindustry players, to participate in their business chains, from small to large-scale SMEs (Altindag, Zehir, & Acar, 2011).

Therefore, agro-industrialization should be accompanied by a clear policy. The development strategy should be tailored to the characteristics and problems of the agroindustry. Hence, it is necessary to formulate strategies to optimize existing potential and overcome problems, including limited knowledge and skills in entrepreneurship, difficulty in accessing capital assistance, and limited scope of marketing (Altindag et al., 2011; Takacs, Brunner, & Frankenberger, 2022; Telukdarie, Dube, Matjuta, & Philbin, 2023). Cassava-based agroindustry in Central Java also encounters similar challenges, such as a lack of access to potential markets, inconsistent product quality, ineffective production management, and lack of innovation.

The agricultural policy orientation focuses more on production, giving limited attention to agroindustry development. Studies on the development of cassava as one of the vital commodities have been carried out. However, they primarily focused on the technical aspects of cultivation techniques, signifying a gap between existing studies and further research on cassava development. Efforts to develop cassava as a crucial commodity require support in the aspect of post-harvest, including processing, marketing, management, and business innovation. Moreover, several studies of agricultural commodity development strategies, including cassava, have mainly applied a SWOT analysis, which resulted in the generic strategy formulation (Carvalho & Vasconcelos, 2013; Hasibuan & Nazir, 2017; Peuo et al., 2021;

Rozi, Sutrisno, & Elisabeth, 2022). This study employed the Principle Component Analysis (PCA) approach by testing 16 factors (differentiation, cost leadership, prospector, defender, analyzer, reactor, market penetration, market development, product development, diversification, product focus, stability, product flexibility, market flexibility, market knowledge, and shorter return focus) to provide a more specific strategic orientation formulation. The findings could supplement references in strategic orientation studies, particularly in the case of cassava-based agroindustry.

Many studies examined various variables: learning, innovation, entrepreneurship, technology, sales, cost, brand, relationship, and stakeholder orientations. Most confirmed that the ownership of a specific strategy has been beneficial for business continuity, generating the most strategic orientation from company preferences, behavior, and performance (Cadogan, 2012). Previous studies have analyzed environmental factors to determine the most appropriate strategic orientation (Adams, Freitas, & Fontana, 2019).

Strategic orientation could help a company boost its competitiveness and business performance (Penco, Torre, & Scarsi, 2019; Vlasic, 2023). Efforts to create and manage environmental responses have also become more effective (Jassmy & Bhaya, 2016). Given the importance of the cassava agroindustry in the economy, the challenges that cassava SMEs face, and development efforts mainly focused on production, developing practical strategic orientations is critical. This study aims to formulate the strategic orientations of SMEs in developing cassava-based agroindustry.

RESEARCH METHOD

This research utilized an exploratory approach. Being a cassava-producing area, Central Java Province was designated as the research location, generating 2,979,780 tons in 2019 (BPS-Statistics of Jawa Tengah Province, 2021) and potentially developing cassava-based SMEs. The study population included all SMEs based in the cassava agroindustry in Central Java.

Sampling procedure and data collection

Stratified random sampling was applied by determining the two highest cassava production areas in Central Java: Wonogiri (890,438 tons) and Pati (746,516 tons) in 2019 (BPS-Statistics of Jawa Tengah Province, 2021). A census was conducted to obtain a sample of 115 SMEs operating in the cassava-based agroindustry across two regions. The data were gathered through a survey and direct interviews with the owners of cassava-based SMEs. A pre-designed structured questionnaire was applied as the data collection tool. Variables in the study comprised differentiation, cost leadership, prospector, defender, analyzer, reactor, market penetration, market development, product development, diversification, product focus, stability, product flexibility, market flexibility, market knowledge, and shorter return focus. These variables were measured using a Likert scale ranging from 1 “strongly agree” to 5 “strongly disagree”.

Analytical technique

Strategic orientations aim to achieve business performance and continuity in the study of marketing, management, and innovation (Hakala, 2011). Analysis was performed using the Principle Component Analysis (PCA) technique. Moreover, factor analysis was conducted to extract factors representing various orientation variables of cassava-based agroindustry strategies. There were 16 variables examined, encompassing differentiation, cost leadership, prospector, defender, analyzer, reactor, market penetration, market development, product development, diversification, product focus, stability, product flexibility, market flexibility, market knowledge, and shorter return focus. The analysis explained and investigated the relationship between variables by reducing dimensions.

Factor analysis was utilized to summarize the observed variables into smaller factors to determine the strategic orientations for agroindustry development (Burman, Chandran, & Khurana, 2020; de Oliveira, Marsola, Milanez, & Fatoretto, 2022; Ul Hadia, Abdullah, & Sentosa, 2016). This method examined the relationship structure involving many variables by determining the most interconnected ones. Its general function is to discover a method for summarizing information into smaller factors without reducing the information collected (Hair, Black, Babin, Anderson, & Tatham, 2006). Factor extraction and rotation were applied to identify observed variables. Kaiser-Meyer Olkin (KMO) was employed to measure the data adequacy requirements, while factor extraction was utilized to reduce data from several indicators to explain the correlation between the observed indicators. PCA was deployed for factor extraction to produce linear combinations of the observed indicators. If it has not obtained the main components for a simpler structure, the rotation should be carried out against factors (Ul Hadia et al., 2016). The formula is as follows.

$$Fi = \beta i1\ X1 + \beta i2\ X2 + \beta i3\ X3 \ldots\ldots + \beta ik\ Xk. \quad (1)$$

Fi indicated the estimation of the i-th factor, β represented weight, *X* referred to the variable, and *k* suggested the number of variables (Mohammed, Szabó, & Szűcs, 2022; Wu, Li, Liu, & Tong, 2022).

RESULTS AND DISCUSSION

Testing the Variable Suitability

TABLE 1. KMO AND BARTLETT'S TEST RESULTS

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.688
Bartlett's Test of Sphericity	Approx. Chi-Square	909.192
	Df	120
	Sig.	.000

Bartlett's Test of Sphericity analyzed the suitability of the variables used for factor analysis, as depicted in Table 1. Acquiring a Chi-Square value of 909.192 (df of 120) and a significance value of 0.000 (less than 0.05), the correlation matrix was not an identity matrix. Therefore, PCA could be performed. A KMO value of 0.688 and a p-value of 0.000 (less than

0.05) demonstrated the feasibility of performing factor analysis. Hence, the strategic dimension variables could be analyzed further.

Anti Image Matrices were also assessed to determine the eligibility of the variables, in addition to the KMO and Bartlett's tests, as displayed in Table 2. The table exhibits that the 16 variables acquired MSA values exceeding 0.5. Thus, all variables could be utilized in further analysis.

TABLE 2. MEASURES OF SAMPLING ADEQUACY (MSA) RESULTS

No.	Variable	MSA
1.	Differentiation	.741
2.	Cost leadership	.508
3.	Prospector	.614
4.	Defender	.696
5.	Analyzer	.744
6.	Reactor	.634
7.	Market penetration	.627
8.	Market development	.711
9.	Product development	.703
10.	Diversification	.635
11.	Production focus	.783
12.	Stability	.698
13.	Production flexibility	.649
14.	Market flexibility	.691
15.	Market knowledge	.667
16.	Shorten return focus	.791

Table 3 lists the commonalities, depicting that the 16 variables obtained values of more than 0.5 and strongly correlated with the factors formed. In other words, the greater the value of commonalities, the better the factor analysis. It was because the formed factors presented the more significant characteristics of the original variables.

TABLE 3. COMMUNALITIES

No.	Variable	Initial	Extraction
1.	Differentiation	1.000	.594
2.	Cost leadership	1.000	.733
3.	Prospector	1.000	.826
4.	Defender	1.000	.798
5.	Analyzer	1.000	.599
6.	Reactor	1.000	.805
7.	Market penetration	1.000	.811
8.	Market development	1.000	.631
9.	Product development	1.000	.699
10.	Diversification	1.000	.744
11.	Production focus	1.000	.640
12.	Stability	1.000	.783
13.	Production flexibility	1.000	.720
14.	Market flexibility	1.000	.872
15.	Market knowledge	1.000	.824
16.	Shorten return focus	1.000	.774

The percentage of total variance that the diversity of formed factors could account for was represented by the total variance explained. To determine the number of factors explaining the total diversity, as indicated by the large eigenvalues, factors with eigenvalues of more than 1 were utilized. The cumulative percentage column displays the percentage of variance that the factors could explain. Table 4 portrays the five factors with eigenvalues higher than 1. These factors explained the behavioral diversity of cassava-based agroindustry strategies in Central Java.

TABLE 4. PERCENTAGE OF DIVERSITY ON BEHAVIORAL FACTORS IN CASSAVA-BASED AGROINDUSTRY STRATEGIES

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	Variance Percentage	Cumulative Percentage	Total	Variance Percentage	Cumulative Percentage
1	3.799	23.741	23.741	3.799	23.741	23.741
2	3.027	18.918	42.659	3.027	18.918	42.659
3	2.277	14.233	56.891	2.277	14.233	56.891
4	1.699	10.620	67.512	1.699	10.620	67.512
5	1.051	6.572	74.083	1.051	6.572	74.083

These five factors produced a loading matrix in which the values were the correlation coefficients between variables. In the variables correlated with each factor, the resulting loading could not give meaning as expected. Each factor could not be interpreted; therefore, the factors were rotated using a varimax method. This orthogonal rotation could maximize the variance of the loading factors (Table 5). Furthermore, the original variables would have a high and strong correlation with certain factors.

TABLE 5. COMPONENT MATRIX OF ROTATION RESULTS

Variable	Component				
	1	2	3	4	5
Differentiation	.241	.418	.107	.584	.088
Cost leadership	-.120	-.112	.177	.294	.767
Prospector	-.459	.075	.781	.009	.022
Defender	.868	.133	-.123	.013	.110
Analyzer	.495	-.103	.379	-.337	.293
Reactor	.286	-.035	-.157	.018	.835
Market penetration	.152	.037	.883	.085	-.008
Market development	.161	.464	.535	.258	.195
Product development	.091	.278	-.030	.766	.161
Diversification	-.092	-.018	.091	.852	-.034
Production focus	.610	.448	.255	-.040	.002
Stability	.198	-.112	.468	-.376	.608
Production flexibility	.752	-.381	.066	.015	-.071
Market flexibility	-.033	.907	-.024	.204	-.082
Market knowledge	.081	.872	.093	.126	-.181
Shorten return focus	.792	.246	-.051	.185	.222

The loading factors gave meaning as expected and could be interpreted clearly; each variable was strongly correlated with one of the factors. In Factor 1, strongly correlated variables existed, including defender, production focus, production flexibility, shorter return focus, and analyzer. Variables with strong correlation in Factor 2 comprised market flexibility

and market knowledge. Prospectors, market penetration, and market development were the variables with strong correlations in Factor 3. The correlated variables in Factor 4 encompassed differentiation, product development, and diversification. Furthermore, the correlated variables in Factor 5 consisted of the reactor, cost leadership, and stability.

On the one hand, the prospector is highly proactive and innovative and greatly values flexibility. It prioritizes business security and stability by selecting the safety of a relative product or service and fighting to protect the position. On the other hand, the defender focuses more on overcoming existing challenges rather than market penetration. The analyzer is both a defender and a seeker. The advantage is that existing innovations provide stability and product differentiation. Subsequently, the analyzer searches for information from competitors and technologies rather than from the market. The reactor does not focus on the product but adjusts to environmental conditions (Desarbo, Di Benedetto, Song, & Sinha, 2004; Moore, 2005; Topaloglu, Koseoglu, & Ondracek, 2013).

Other strategic orientations were cost leadership and differentiation. These two strategies could significantly impact business performance (Dutse & Aliyu, 2018). Combining these two strategies could be accomplished for SMEs by creating medium-quality products at a lower price than competitors(Minovic, Lazarevic - Moravcevic, & Beraha, 2016). In general, processed cassava products had a downward market share, causing the selling price to be one of the tools to win the competition. Mocaf flour, cassava chips, and traditional cakes made from cassava have become the community's daily consumed products. Product differentiation and affordable prices due to cost leadership could lead to good market response and escalate cost efficiency and business performance (Alkasim et al., 2018; Lechner & Gudmundsson, 2014).

Market penetration came up as a strategy to intensify business performance, especially marketing performance. The search for new markets has generally become the main strategy pursued by an emerging company. Therefore, it could jack up current and new product sales volume in existing markets (Hussain, Khattak, Rizwan, & Lati, 2013). Performance could also be elevated through market development designed to obtain new customers by utilizing existing resources effectively and efficiently. Market development strategies must prioritize selling products available by raising market share (Alkasim et al., 2018). Moreover, diversification has become a reliable business strategy to develop the company and strengthen its competitiveness or survive in the marketplace (Kang, 2013).

Strategic flexibility has been considered beneficial in improving a company's competitive position. Flexibility refers to the extent of a company's ability to take action to deal with environmental challenges (Alamro, Awwad, & Anouze, 2018; Saghiri & Barnes, 2016). Product and market flexibility are two areas of strategic flexibility to consider. In terms of products, companies must be able to innovate by either creating new products or making product improvements (Slack, 1987). Meanwhile, market flexibility appeared to be an essential factor allowing companies to exist in the international market and contribute a high share. Product and market flexibility could boost performance, specifically quality, productivity, cycle time, and cost efficiency (Alamro et al., 2018).

Knowledge emerged as a strategic organizational resource guiding companies to achieve competitive performance. Therefore, companies should emphasize developing support-based understanding and acquiring market knowledge (Bolisani & Bratianu, 2017), with a role in increasing product value. They could enhance their inventiveness, seize market opportunities, and respond to business environment changes by thoroughly understanding customers and competition (Rakthin, Calantone, & Wang, 2016).

The core of this concept lies in the orientation to identify, collect, and analyze ideas or data into innovations (Cacciolatti & Fearne, 2013). The PCA analysis generated the following classification of the strategic orientations of the cassava-based agroindustry. The first strategic orientation was flexible product-focused, short-term oriented, and resilient orientation. The second focused on market flexibility and knowledge-oriented. Meanwhile, the third included prospector by market penetration or market development. Diversification to create product differentiation emerged as the fourth strategic orientation, followed by reactive and cost leadership strategy for stability as the fifth. As has been asserted (Beliaeva, Shirokova, Wales, & Gafforova, 2020), the capability of strategic orientations based on the established strategies would demonstrate how companies are oriented to understand the organization's management to meet the demands of their competitive environment. Figure 1 exhibits the resulting strategic orientations for cassava-based agroindustrial SMEs.

FIGURE 1. STRATEGIC ORIENTATIONS OF SMES IN THE CASSAVA-BASED AGROINDUSTRY

Flexible-product-focused, short-term oriented, and resilient strategy

In line with the findings of a previous study (Minovic et al., 2016), product innovation dominated SME advancement. As (Awwad & Almahamid, 2008) disclosed, production flexibility emerged as a strategy focusing on product excellence, such as design innovation, creating a shorter product life cycle, adopting a change strategy, and overcoming uncertainties such as technology, customer demand, and expectations. The production flexibility strategy

requires SMEs to allocate resources well. It is in line with what (Singh & Sushil, 2004) reported that production flexibility dealt with the effective use of company resources to create various products or services to meet various demands regardless of environmental uncertainty with minimum impact on costs and overall objectives. Moreover, flexibility significantly impacts the sustainability of competitive advantage (Tong & Rahman, 2022).

Market flexibility and knowledge orientation

Market knowledge-oriented strategies have been associated with circumstances that could improve a company's ability to adapt existing resources to the environment and achieve greater product commercialization success (Adams et al., 2019). Orientation could be defined as evidence of the ability to manage resources with the market as the primary goal (Talaja, Miočević, Alfirević, & Pavičić, 2017). It is a powerful tool to improve adaptability in a dynamic market or business environment (Jonathan, 2020). Market orientation is one of the tools to build the competitive advantage of food SMEs, intensifying SMEs' organizational performance (Ali, Hilman, & Gorondutse, 2020; Rashid, Kalyar, & Shafique, 2020).

Prospector by market penetration or market development

The third strategic orientation was prospector by market penetration or market development. It is consistent with the study of Herath and Mahmood (2014), where the configuration of market orientatation is a good predictor variable. Market penetration refers to a growth strategy concentrating on selling existing products in pre-existing markets. This strategic orientation could maintain and escalate product market share (Kukartsev et al., 2019). It also could strengthen the advantage and reduce risk. However, implementing it by gaining a competitive advantage in existing markets necessitated fewer resources to develop new products or transfer the success of existing products (market development) (Alkasim et al., 2017; Kukartsev et al., 2019). Market strategic orientation tended to maximize the approach to product development based on consumer demand (Kim, Im, & Slater, 2013). It could identify customer needs and preferences and provide satisfaction (Jassmy & Bhaya, 2016).

Diversification to create product differentiation

The fourth strategic orientation was diversification to create product differentiation. According to (Cyrilla, Purwanto, Atabany, Astuti, & Sukmawati, 2016), product development is one of the competitive strategies, which refers to a long-term orientation applying unique values in creating products. Competitors could not replicate this product development strategy, nor could its benefits be utilized for differentiation. Jassmy and Bhaya (2016) reported that customer-based strategic orientation correlated significantly with differentiation variables. Furthermore, product development could augment results. By implementing it, companies could elevate their competitive advantage, create attractive customer products (Henry, Muya, Omar, & Momanyi, 2022), and enhance greater business performance (Dirisu, Iyiola, & Ibidunni, 2013).

Reactive and cost leadership strategy for stability

A reactive and cost leadership strategy for stability appeared as the fifth strategic orientation. It is tailored toward the establishment of the business. According to (Bannikova, Baydakov, & Vaytsekhovskaya, 2015), a stable strategy is intended for stable companies to develop their business. The company believes that it has the potential to be successful and involves less risk. The environment is both relatively stable and quite efficient. This strategy is selected when competitiveness is critical to the business unit strategy. Market growth, on the other hand, is slow or saturated, and the external environment is less dynamic or stable. Strategic orientations refer to a corporate philosophy demonstrating the company's ability to improve results and complete the targets based on the values the company believes in (Izadi & Ahmadian, 2018). Improving the quality of SMEs could be accomplished by implementing strategic orientations involving customers, entrepreneurship, learning, and innovation. The findings of previous studies unveiled that entrepreneurial orientation affected the performance of agribusiness companies (Serna, Martínez, & Párga, 2017) and SMEs in Indonesia (Syahdan, Djaelani, & Mahdi, 2020). Other research disclosed strategic resources driving SMEs to meet consumer needs (Amadasun & Mutezo, 2022).

Furthermore, the fifth strategic orientation has become an essential component of innovation, expanded to include more orientations, such as technology, entrepreneurship, learning orientations, and innovation (Deutscher, Zapkau, Schwens, Baum, & Kabst, 2016). Previous studies by Yang, Jaafar, Al Mamun, Salameh, and Nawi (2022) also reported that strategic orientations, innovations, networks, and technology strengthened the competitiveness and sustainability of the business. These five strategic orientations should help cassava-based agroindustry businesses in Central Java Province achieve greater success.

CONCLUSION

This research yielded five strategic orientations for cassava-based SMEs in Central Java: product focus and short-term orientation to survive, market knowledge and flexibility, long-term orientation for market penetration or development, product development innovation to create differentiation and reactive strategic orientation for stability. Implementing these strategic orientations should involve several parties, encompassing cassava agroindustrial SMEs, governments, universities, and cassava processing industries. Initially, cassava SMEs could implement strategies based on internal and external business conditions. (1) SMEs must meet market demand by focusing on the quality of materials and processes, ensuring that products meet specifications, and avoiding product rejection. (2) A market penetration strategy is required to gain a new profitable market share. (3) Innovation must remain a priority for SMEs to adapt to changing market needs and tastes. Moreover, openness and a learning process for new knowledge have been necessary to boost business competitiveness. Hence, establishing effective strategy orientations has been expected.

Parties other than cassava SMEs should implement these strategic orientations, such as the government, universities, and cassava-processed industry players. Additionally, the

government could support the implementation of several strategic orientations, including market development and product innovation. Efforts could also be made. (1) Disseminating knowledge about innovation and new market opportunities could help SMEs access a larger market. (2) The government's supervision of food diversification policies could support the community's absorption of cassava-based processed products. Subsequently, universities could support SMEs in implementing these strategic orientations by improving their innovations, knowledge, and skills. The competitiveness of cassava SMEs could also be enhanced through training in cultivation, processing innovation, business management, promotion, and partnership-building strategies. Moreover, the cassava processed user industry could support SMEs in implementing strategic orientations by offering partnership opportunities through process and product quality coaching and mentoring. With product quality following the industrial demand, SMEs were expected to receive a reasonable price.

As a follow-up to this study, future research could examine factors influencing the success of strategic orientation implementation and further investigate cassava commodities in other countries to acquire a complete picture and compare the behavior of strategic orientations of the cassava agroindustry SMEs.

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