# Agribusiness Development Strategy for Instant Red Ginger Produced by Farmer Groups in Banyuwangi Regency

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**Abstract.** Red ginger agribusiness, from planting to processing into instant red ginger, is a growing business in Banyuwangi district today. In fact, many farmer groups take part in managing this business even though they lack experience. Various obstacles were encountered, such as raw material constraints and marketing constraints. Therefore, it is necessary to develop a comprehensive strategy to overcome all the existing obstacles. The purpose of this research was to formulate the most influential strategy for sustainable product development. The research method used was the MICMAC (Matrix of Crossed Impact Multiplications Applied to a Classification) method. The results showed that there were 3 strategies in the quadrant of the influence variable, namely product innovation, business capital support and training, and fluctuations in raw material prices. These three strategies are triggers for sustainable development that need to be prioritized.

**Keywords:** instant red ginger, farmer groups, micmac method, sustainable development

## 1 Introduction

Indonesia as a tropical country has earned a nickname as a living laboratory because it has about 90% of the total types of medicinal plants in the world, namely 8000 species of medicinal plants. As many as 800-1200 species have been used by the community as traditional herbal medicinal plants [1]. One type of medicinal plant that is widely cultivated and has high economic value in Indonesia is ginger which is recommended for the prevention and transmission of the COVID-19 virus [2]. Red ginger (*Zingiber officinale* var.Rubrum) is a type of ginger that is widely cultivated in Indonesia. In 2020, Indonesia's ginger production reached 183,517,778 kg and East Java was the province with the largest production compared to other provinces, which was 45,092,555 kg [3].

Instant red ginger business is a growing business in Banyuwangi Regency at this time, but this agribusiness faces several obstacles, including the difficulty to obtain the quality raw materials, fluctuations in raw material prices, and marketing that is not yet optimal. This rapidly growing business has succeeded in developing urban farming, especially in the field of instant red ginger

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processing. Farmer groups are spread across 25 districts in Banyuwangi regency Theyo are experienced in food crop farming and noware also developing instant red ginger business. This business is still relatively new, especially for farmer groups who are still newand still do not have sufficient experience. The efforts to develop the instant red ginger business have been carried out by the relevant agencies, but these efforts have not been carried out comprehensively. Therefore, to develop all these potentials, a comprehensive instant red ginger product development strategy is needed.

The purpose of this research was to formulate the most influential strategy in sustainable product development. Based on the results of the previous studies using the SWOT and AHP methods, it has been concluded that there were 8 strategies that need to be developed and prioritized. This research analyzed the existing strategies further using MicMac method in such a way that would be able to develop an instant red ginger business accurately, especially in Banyuwangi regency.

## 2 Methods

This research was a qualitative research, namely a research that obtains the data naturally and not artificially through questionnaires and interviews ([4]). This research was conducted on 3 farmer groups at the instant red ginger business center in Banyuwangi Regency, namely Pucang Sari Farmers Group in Sempu District, Sinar Cabe Farmers Group in Pesanggaran District, and Sri Tanjung Women Farmer Group in Srono District. The research was carried out for 4 months starting from January 2022. The research sample was selected intentionally (purposive sampling [5]) consisting of the staff from the Food Agriculture Service, head of the farmer groups, agricultural extension workers, and experts from universities.

### 2.1 Data Collecting

The types of data used included primary and secondary data. Primary data were obtained from the interviews with respondents. Secondary data were from literature and related statistical reports.

The selection of respondents was done intentionally (purposive sampling) with the consideration that the respondents must understand the red ginger development strategy and must be experts in their fields. The research respondents consisted of the staff from the Food Agriculture Service, the head of the farmer groups, the agricultural extension workers, and the experts from universities.

The data collection was carried out by using in-depth interviews with the respondents and doing direct observation to the research object.

### 2.2 Data Analysis

The identification of the important variables and analysis of the relationship between these variables was carried out using a prospective analysis method based on integrated analytical

participatory scenario planning, namely MICMAC (Matrix of Crossed Impact Multiplications Applied to a Classification) [6] [7].

The advantage of MICMAC is its ability to build interactions between variables by grouping them into influencing variables and variables that depend on the other variables (dependence variables), either directly through the matrix of direct influence (MDI) or indirectly through the matrix of direct and indirect influence (MDII). MICMAC as shown in **Figure 1** will produce four main classifications of variables on a map consisting of four quadrants, namely: influence variables, relay variables, dependence variables, autonomous variables, and regulator variables whose location is in the middle of the four quadrants [8].

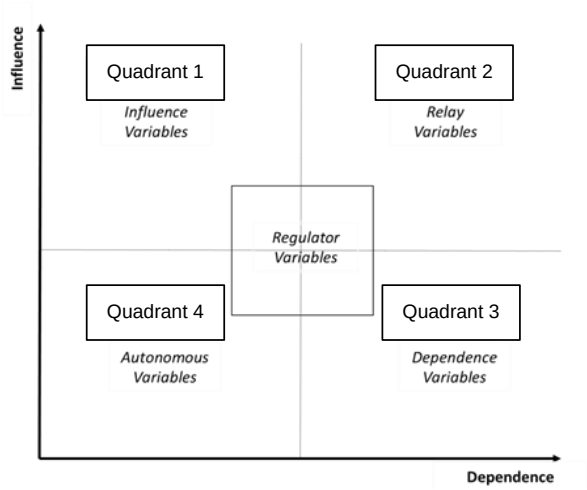


**Fig.1.** Variable categorization based on the degree of influence and dependence

The categorization of variables in Figure 1 can be interpreted based on the influence and dependence of one variable on another variable as described in **Table 1**.

**Table 1.** Categories, roles, and implications of variables in MICMAC system

| Type of variable/strategy | Status and role | Implication |
|---|---|---|
| Influence variables | Very influential with very few dependencies. | A crucial element in the system because it can act as a key system. The effect of other variables on this variable is not transmitted into the system. |
| Relay variables | Influential but highly dependent, describes an unstable variable. | Describe the instability of a system. Any changes that occur in this variable have serious consequences on other variables in the system. |
| Dependence variables | Has little influence but high dependency. | This variable is quite sensitive to changes that occur in influence and relay variables. |
| Autonomous variables | Small influence, small dependence. | Has low potential to bring about change. This variable is also said to be excluded because it will not stop the operation of a system or take advantage of the system itself. |
| Regulator variable | Has moderate influence and dependence. | Act as a lever. |

## 3 Results and Discussion

In order to formulate strategies to develop instant red ginger business, a SWOT (strength weakness opportunity threat) analysis was carried out, combined with the AHP (analytical hierarchy process) method ([9] [10]). The strategies that had been successfully formulated are as follows:

(1) Maintaining product quality to increase sales (ProdQual),
(2) Maintaining affordable product selling prices in order to expand the market coverage (SellPrice),
(3) Conducting product innovation in order to increase revenue and expand marketing (ProdInov),
(4) Utilizing government support in terms of working capital and training for workers (GovSupp),
(5) Increasing the intensity of promotions in order to expand the coverage of markets that are still unreachable (PromoInten),
(6) Creating packaging and flavors characteristics in order to remain competitive with similar products (PackTaste),
(7) Developing raw material as the sources of red ginger independently in order to suppress fluctuations in raw material prices (RawMater),
(8) Increasing the intensity of marketing that more variesin order to reach market coverage that is still not yet reached (VariMarket).

The results of this research are consistent with research conducted by [9] and [10] in producing production and marketing development strategies. This research further analyzes the resulting strategies and maps them based on their effects so that they are easier to implement.

This research wanted to know what strategies that had an important influence in realizing the sustainable development of instant red ginger in Banyuwangi regency. Then, the eight strategies above were discussed in a; FGD with participants from the Food Agriculture Office staff, farmer groups, agricultural extension workers, and university experts. The results of the assessment can be seen in **Figure 2**. Influences ranged from 0 to 3, with the possibility to identify potential influences:

0: No influence

1: Weak

2: Moderate influence

3: Strong influence

P: Potential influences

| | 1 : ProdQual | 2 : SellPrice | 3 : ProdInov | 4 : GovSupp | 5 : PromoInten | 6 : PackTaste | 7 : RawMater | 8 : VariMarket |
|---|---|---|---|---|---|---|---|---|
| 1 : ProdQual | 0 | 3 | 0 | 2 | 3 | 3 | 0 | 3 |
| 2 : SellPrice | 2 | 0 | 0 | 2 | 0 | 3 | 2 | 3 |
| 3 : ProdInov | 3 | 3 | 0 | 2 | 3 | 3 | 2 | 2 |
| 4 : GovSupp | 2 | 3 | 2 | 0 | 0 | 3 | 2 | 2 |
| 5 : PromoInten | 1 | 2 | 0 | 0 | 0 | 3 | 2 | 2 |
| 6 : PackTaste | 3 | 3 | 0 | 1 | 2 | 0 | 2 | 2 |
| 7 : RawMater | 3 | 3 | 1 | 2 | 2 | 2 | 0 | 2 |
| 8 : VariMarket | 1 | 2 | 2 | 0 | 3 | 2 | 2 | 0 |

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**Fig.2.** Matrix of direct influence (MDI)

Based on the MDI, the direct influence/dependence map can be seen in **Figure 3**. The results of this mapping showed that there were 3 strategies which were in the influence variable quadrant, namely ProdInov (innovating products), GovSupp (government support for business capital and HR training), and RawMater (developing raw material sources). These three strategies were the triggers for the sustainable development of instant red ginger agribusiness in Banyuwangi regency.

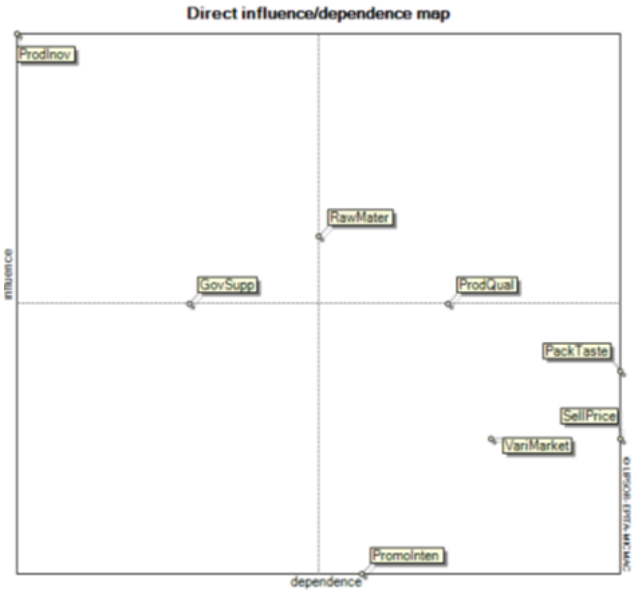


**Fig.3.** Direct influence/dependence map

Product innovation will make this product more able to compete with other brand products and will also make this product more qualified. Innovations that are being carried out are in the form of improving taste, color, aroma, and product packaging as shown in **Figure 4**. Now the packaging is made of plastic standing pouch using aluminum foil with a panoramic background of Banyuwangi tourism.

**Fig.4.** Packaging innovation

Government support is primarily aimed at the availability of financial institutions as a source of business capital which is needed any time. Another important support is training to improve HR skills in the form of in-house training, especially marketing and business management skills.

Raw materials are the next problem that needs to be addressed immediately, especially related to the fluctuations in raw material prices which are sometimes very high. For farmer groups,

this can actually be overcomed by a movement that involves all members of the farmer group to plant red ginger either independently or together in the yard or in the fields.

In quadrant 3 (dependent variable), there were 4 strategies that are influenced by other strategies, meaning that these strategies must be implemented as a result of the implementation of other strategies. Those 4 strategies were PackTaste, VariMarket, SellPrice, and PromoInten strategies.

Product quality (ProdQual) was the only strategy that is included in the relay variable, meaning that ProdQual is a sensitive and very unstable strategy in achieving sustainable development of instant red ginger business because any intervention in this strategy will have an impact on the system as a whole.

In this research, there were no strategies belonging to quadrant 4. The MicMac method can show the effect of implementing one strategy on another, as can be seen in the 'direct effect graph' as shown in **Figure 5**. In this case, if 'ProdInov' product strategy is executed properly, it will affect the other 4 strategies, namely intensive promotion, maintaining price sales, product characteristics, and product quality. However, that does not mean that by implementing the 'ProdInov' product strategy, it is not necessary to carry out the 4 strategies mentioned above.All strategies are carried out according to their respective priorities. On the other hand, there are strategies that are influenced by other strategies, such as product quality strategy which is influenced by strategy of products and raw materials (ProdInov). Thus, this shows that all strategies must be carried out in accordance with predetermined stages.

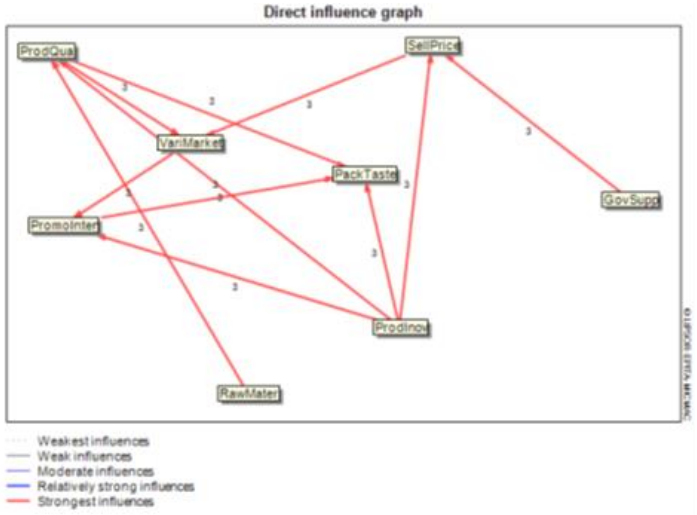


**Fig.5.** Direct influence graph

The 'indirect influence/dependency map' shows that the 'ProdQual' strategy is no longer part of the relay variable but is now included in the dependent variable, meaning that now this strategy is no longer a sensitive strategy but a stable strategy. But now the 'RawMater' strategy has changed to a strategy that is classified as a relay variable as can be seen in **Figure 6**.

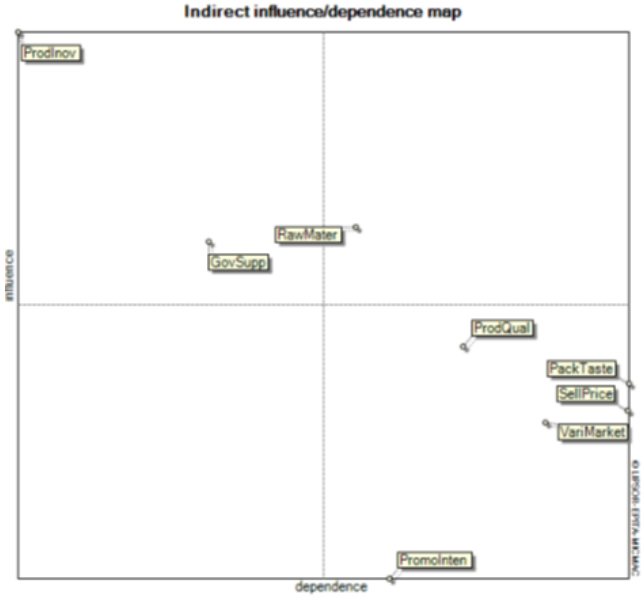


**Fig.6.** Indirect influence/dependence map

Meanwhile, the indirect influence graph informs that ProdInov's strategy now affects 4 other strategies, namely PackTaste, SellPrice, VariMarket, and ProdQual strategies, where the strongest influence is shown in the first 2 strategies, as can be seen in **Figure 7**.

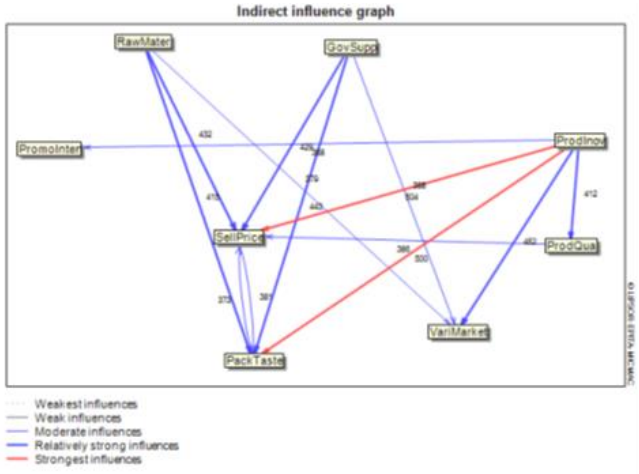


**Fig.7.** Indirect influence graph

As for **Figure 8** and **Figure 9,** they are graphs of direct and indirect effects on a more detailed scale (100) in which,of course, more things can be revealed.

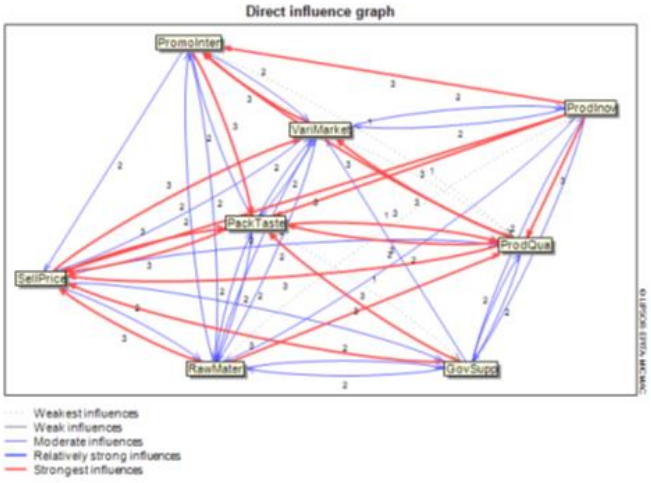


**Fig.8.** More detailed direct influence graph

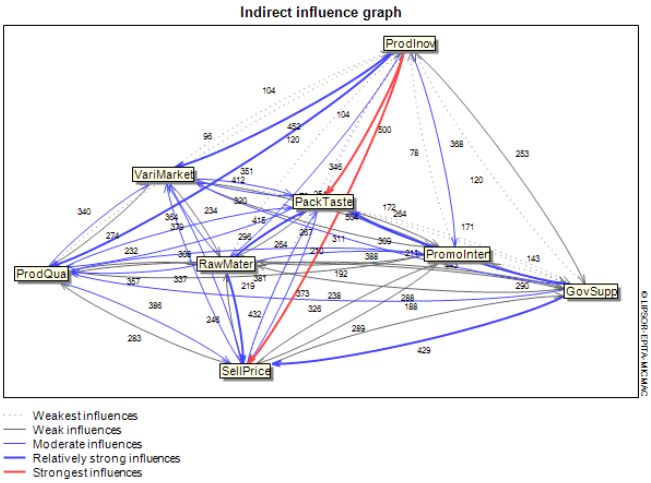


**Fig.9.** More detailed indirect influence graph

Several strategies have changed in order, such as the 'ProdQual' strategy as the most influential strategy on the MDI matrix, changing from the third to fourth after iterations taking into account the indirect influence factor. On the other hand, the 'GovSupp' strategy changed from the fourth to third based on its impact as shown in **Figure 10**. This is because in the future, the production quality strategy (ProdQual) will no longer be the main problem. On the other hand, the strategy related to HR training (GovSupp) has become a strategy that has a big impact so that the order goes up.

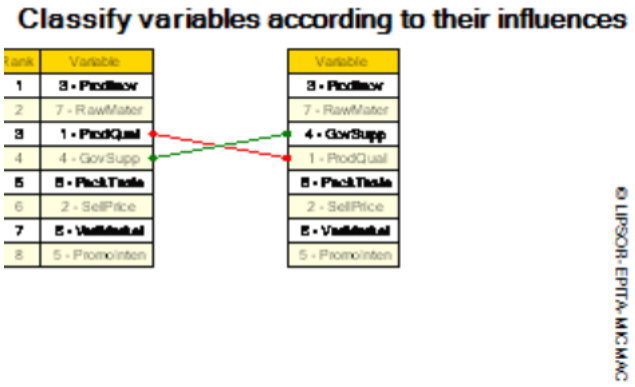


**Fig.10.** Order of strategies/variables based on their effect

Based on the dependencies, the SellPrice strategy changed from the first to second order. On the other hand, PackTaste's strategy changed from the second to first as can be seen in **Figure 11**. This is very likely to happen because the selling price of the product (SellPrice) is no longer a priority strategy as price is not the main consideration for buying products, but product quality. Meanwhile, the product characteristics increase in order because instant red ginger products that are needed by consumers in the future are products that have the best taste and packaging.

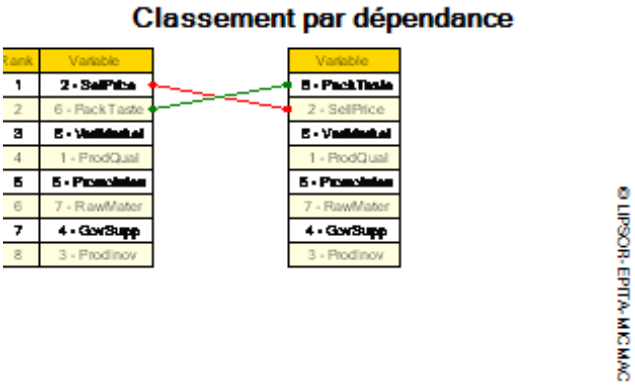


**Fig.11.** Order of strategies/variables by dependency

The shift in strategy as a result of the indirect effect can be seen in **Figure 12**. The dotted line shows the change in the position of each strategy from the initial position to the final position after taking the indirect effect into account. The shift of these variables generally still occurs in the same quadrant, but changes in magnitude. However, there are 2 strategies that shifted to another quadrant, namely 'RawMater' strategy which shifted from quadrant 1 to quadrant 2 and 'ProdQual' strategy which shifted from quadrant 2 to quadrant 3. The causes of the shift have been discussed above.

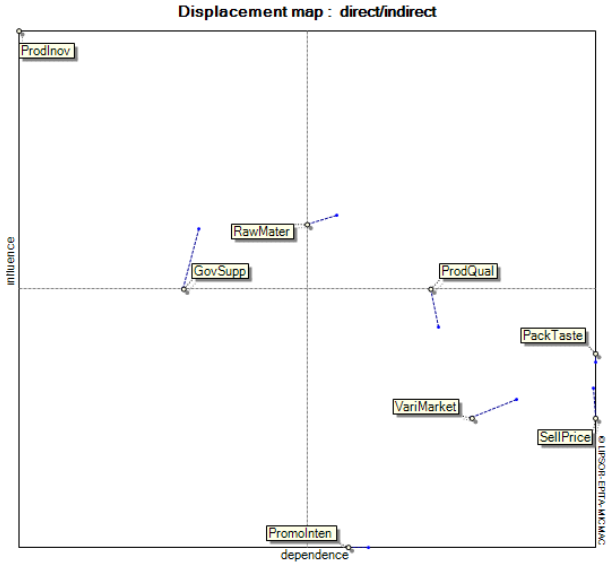


**Fig.12.** Displacement map : direct/indirect

## 4 Conclusions and Suggestions

This research has identified 8 variables which are sustainable development strategies of instant red ginger business in Banyuwangi regency. The results of the analysis using the MICMAC method. Based on the strength of the influence, it was found four classifications of variables, namely: 1) Influence variables consist of product innovation, government support related to business capital and HR training, and development of raw material sources, 2) The relay variable consists of 1 strategy, namely maintaining product quality, 3) Dependent variables consist of creating packaging and taste characteristics, more varied marketing intensity, maintaining selling prices, and increasing promotion intensity, 4) There are no variables including autonomous variables. The application of prospective structural analysis using the MICMAC method in the decision-making process has considered the position and intensity of the influence of variables in the form of direct and indirect impacts. This research clarified the validity and strength of the approach in determining the most influential variables on the sustainability of the instant red ginger business as expected in the future.

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