

Can Indonesia export vegetables? A feasibility study on the development of vegetables export to taiwan using a business partnership framework

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Abstract. Indonesia has various vegetable potentials that can be developed as export commodities. Taiwan is one of the countries with high potential as a destination for vegetable exports. AIM is a company that develop its business by exporting vegetables. In its activities, AIM faces challenges in maintaining the quality, quantity, and continuity of vegetable supplies for export. This research aimed to develop a sustainable business model for vegetable exports from Indonesia to Taiwan, focusing on a partnership framework then consider a feasibility study of the business model was carried out using two scenarios were evaluated: self-planting by AIM and partnering with local farmers. The results of the study showed that the business model by partnering with farmers is the best scenario with a higher feasibility value. The study revealed that the partnership model with farmers resulted in a 1.21 times higher income for AIM compared to the self-planting scenario. It reflected that the success of the business model that involves partnerships with farmers in increasing the quantity, quality, continuity of exported vegetable products. The partnership model not only enhances AIM's profitability but also ensures the sustainability and competitiveness of Indonesian vegetable exports.

1 Introduction

The horticulture sub-sector in the agricultural sector has great potential in increasing consumption, raw materials for industries, export commodities and substitute goods for import activities [1]. Vegetables, with 80 types, have the largest variety among horticultural commodities that can be consumed by the community [2-3].

Indonesia has types of vegetables that also have high potential to be developed in export activities. As one of the developing countries, Indonesia has achieved significant growth in the development of vegetable exports [4]. There is an ancrease in the number of vegetable exports by 58.9% in 2017 – 2020, showing the great potential for the development of Indonesian vegetable exports in the future. The development of vegetable exports is an opportunity from the existence of free trade which is now becoming easier to do in every country, including Indonesia [5].

The development of exports is also evidenced by the total export value of vegetable commodities in 2021 known to be IDR 1.25 trillion. The five destinations of Indonesia's vegetable export countries in 2021 are Taiwan, China, Singapore, Malaysia and the Philippines. The existence of obstacles in vegetable

cultivation in the destination country such as limited land, and the existence of annual disasters cause the destination country to still have a dependence on the supply of vegetable exports from Indonesia [6-7].

Table 1. The destination of vegetables export.

No	Destination	Volume (Kg)	Value (US\$)
1	Taiwan	23.705.983	13.456.940
2	China	19.032.560	11.762.892
3	Singapore	13.771.826	11.416.212
4	Malaysia	13.139.371	6.375.338
5	Philippines	10.292.039	14.171.041

Source : [8].

Lettuce (*Brassica oleracea*) are one of the vegetable commodities that have the second highest average production in Indonesia at 1.415.662 tons. There was an increase in production of 24.738 tons in 2018-2021. The increase is due to the high level of local and foreign people's need for vegetables [9]. Associated with export activities, the requirements in exporting vegetables are the fulfillment of requirements in terms of quality, quantity and continuity of vegetable products [9], [10].

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PT. Agro Indonesia Multiresource (AIM) is a company that has been supplying vegetable to Taiwan since 2021. In its business activities, AIM has problems in fulfilling the supply of vegetables in terms of continuity, quality and quantity due to intermediary cooperation from middlemen and farmers. Seeing these problems, AIM wants to carry out a partnership with farmers directly without intermediaries or middlemen. This step has a positive impact on vegetable farmers, especially cabbage in terms of coaching, increasing farmers' income, and vegetable quality for farmers as well as providing benefits in terms of quality for companies [1], [11], [12]. In order to find out the feasibility of developing a partnership framework that will be carried out by AIM on cabbage vegetable farmers, it is necessary to conduct a feasibility study of the partnership framework based vegetable export business which is expected to be the basis for the company's decision-making [13]. The magnitude of the vegetable trading business opportunity in Indonesia, AIM as a company engaged in agricultural trade that conducts business in the field of vegetable export trade by collaborating with middlemen as the main supplier of cabbage to be exported.

The business model of AIM currently focuses on vegetable export activities from farmers. The revenue stream obtained only comes from direct sales to companies in Taiwan which will forward-market vegetable products to consumers in Taiwan. There are a wide variety of vegetables including chicory and sweet corn and cabbage supplied by AIM to Taiwan. It is like Vietnam, Taiwan also has the threat of climate disasters, namely typhoons that cause disruption in the cultivation process of vegetable crops [14]. The natural disaster is also an opportunity for AIM to be able to carry out its business activities with vegetable exports.

The business activities that AIM has been carrying out so far is carried out through cooperation with middlemen as explained in Figure 1. There is a problem that often occur such as inappropriate quality of vegetables, as well as continuity of supply. In terms of risk, this is because AIM cannot control the quality of vegetable farmers directly so that the quality and continuity have the potential problems from destination consumers, in this case Taiwan [15].

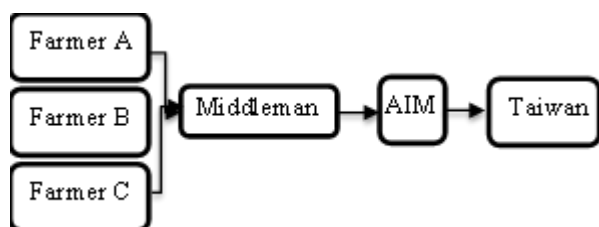


Fig. 1. AIM's business model.

The business model to farmers is one of the solutions to the problems that often occur at AIM. The existence of cooperation agreements with farmers can contribute to increasing income to farmers by up to 75 percent [16], [17]. Through this partnership, AIM could not always depend on middlemen, but can run its business by

directly participating in farmers. In addition, farmers can also get benefits not only from a financial perspective, but are also expected to improve their farming skills. In practice, AIM not only supplies vegetables from farmers but also carries out coaching and control activities from vegetable cultivation. This is a step to create a new business model that is considered to be enough to provide benefits to AIM in running a business with a partnership framework. By changing the business model, there will also be potential risks and challenges from the implementation of the partnership model, such as potential losses for the company if farmers do not want to become direct partners, or suffer losses in the future so that it affects the amount of vegetable production supplied. So, it is also necessary to see the feasibility of non-financial aspect and financial aspects as illustration of the strategy with this partnership framework can provide benefits or vice versa for farmers and AIM. Based on these ideas the research objectives are (1) to develop the AIM's business model using partnership framework (2) to measure the feasibility of the non-financial and financial aspects of the business model by partnership by local farmers as an implication the business development strategy of AIM.

2 Literature review

2.1 Feasibility study

Feasibility Study is a consideration in deciding whether an entrepreneur will accept a project or reject it by considering whether there are benefits from the project [18]. Feasibility study is an activity to assess the amount of benefits that can be obtained in carrying out a business activity [19], [20], [21]. This feasibility study is also an activity that studies about businesses that are feasible or not feasible to run by digging up data related to the business, measuring, calculating, and analysing so that maximum results are obtained that are close to the facts in the field [22], [23].

The purpose of conducting a feasibility study according to [21] are (a) avoiding the risk of loss due to the nature of the future full of uncertainty, (b) facilitating planning so that resources can be allocated optimally, (c) facilitating the implementation of work because it has been systematically arranged, (d) facilitating supervision, (e) facilitating control because the deviations that occur have been predicted so that they can be detected from the beginning. Based on this objective, the implementation of a feasibility study can provide benefits not only for entrepreneurs but also stakeholders related to the business [11], [24]. The benefits of conducting a feasibility study among others, financial benefits related to the profit and loss of a business for entrepreneurs, national economic benefits related to the existence of the business can broadly affect the country's economy, and social benefits related to the existence of the business, especially in terms of location providing benefits to the surrounding community directly and indirectly [19], [21].

In conducting a feasibility study on the financial aspect, there are several investment criteria that can be a reference for whether a business is feasible. Eligibility criteria that can be used to measure the feasibility of an investment include: [22], [24], [25] NPV (Net Present Value), Internal Rate of Return (IRR), Payback Period (PP), Profitability Index (PI).

2.2 Partnership framework

The canvas business model is one of the methods to plan or evaluation of a business by mapping 9 elements consisting of key partners, key activities, value proposition, channels, customer segments, customer relationship, key resource, cost structure, revenue stream [26], [27]. Business model canvas provides convenience for business in creating and designing business models to obtain business model stipulations called the validation stage by gathering input from similar business or partners in business units. The existence of a partnership in business is a positive thing because with a partnership, a business gets certainty in doing its business [28], [29]. In businesses engaged in agricultural commodities, the existence of partnerships aims to reduce risks. The partnership pattern in a business is dominated by livestock commodities such as research [17] [30] which describes the feasibility of a broiler business if partnering with a company. Research conducted by [31] also analyzes the feasibility of the business if the entrepreneur carries out a partnership and, in this study, accommodates alternative partnership patterns that are expected to benefit both parties.

The partnership framework system is divided into (a) the plasma core partnership model which is the relationship between farmers, farmer groups or partner groups as plasma and core businesses [12], [17]. The main business is land supply, manufacturing facilities, engineering consulting, management, housing, processing and product sales services; (b) subcontractor partnership model which is a trading partner partnership model that employs a group of trading partners to manufacture components that the partner company expects to produce; (c) the common business connection model with the parties involved in this model are those who have a group of companies that supply the required products and are product marketing business relationship partners; (d) Agency partnership model is a form of partnership consisting of an affiliated company and the owner of an affiliated group or small company; and (e) the cooperation model of agribusiness organizations which is a commercial relationship maintained by the affiliate group and the affiliated company with the association group provides land, facilities, and employees, while the association company provides the cost, capital, management, and supply of production equipment to plant and sow crops and the partner also acts as a guarantor of the product

market by providing added value to the product through processing and packaging.

2.3 Vegetable export

Horticulture is one of the important subsectors in agricultural development which broadly speaking, horticultural commodities consist of groups of vegetables, fruits, medicinal plants, ornamental plants including aquatic plants, moss and fungi that can function as vegetables, medicinal plants or ornamental plants [32]. Vegetables as one of the horticultural products have the potential as one of Indonesia's export sources. Studies related to vegetable exports are limited to the obstacles and effects of Indonesia's bilateral relations with destination countries [33], [34] as well as factors that affect the competitiveness of these vegetables in the international market [32]. The existence of these limitations makes it possible to analyse the feasibility of vegetable exports because a business will run well if a feasibility analysis has been carried out both from non-financial aspects and financial aspects.

3 Research method

3.1 Location and collecting data

The research was conducted on AIM's businesses in Januari-April 2024 that carry out business operations in Pasuruan Regency and Malang Regency purposively. The location of the study was chosen based on the availability of information on cabbage farmers in the two locations as parties to be contracted with a partnership model, and the nearest location of the factory which has been a vegetable supplier through middlemen. The types of data used in this study are primary data and secondary data. Primary data e.g data production, cost-revenue and sales and more were obtained through direct observation in the field e.g farmers, business owner and expect [35].

This primary data includes data on sales, cultivation and export activities of vegetables carried out by the company and costs incurred for export activities during the life of the business. Secondary data is obtained from published and unpublished data sets owned by business actors, library materials, internet sites, research reports, and data from related agencies [36]. The data collection techniques carried out are by means of direct interviews, structured interviews, and observations.

3.2 Data analysis

Data analysis was carried out by identifying businesses using the business canvas model with a partnership pattern through a 9-element mapping. The feasibility study was carried out using several financial aspects using investment criteria in the form of NPV, IRR, and PP. In addition, in non-financial aspects consisting of legal aspects, business aspects, management aspects,

marketing aspects, legality aspects, and technology aspects. Financial feasibility analysis is carried out by using investment criteria, namely NPV, IRR, Net B/C and Payback Periods. Financial feasibility analysis aims to assess whether this investment is feasible or not to pursue seen from the financial aspect.

Net Present Value (NPV) is the difference between the present value (PV) of the benefit flow and the PV of the cost flow [19]. NPV shows the net benefits that a business receives over the life of the business at a certain discount rate. NPV can be mathematically formulated as follows:

$$NPV = \sum_{t=1}^n \frac{Bt - Ct}{(1+i)^t} \quad (1)$$

Bt is the gross revenue obtained from multiplying the selling price of the product with the number of products sold in one cycle a year, Ct is the gross cost of the product consisting of investment costs and operational costs. Operational costs include fixed costs and variable costs, namely the cost of production raw materials and the company's variable needs, n is the age of the business (years), t is the year of business activities. i is the discount rate based on the average interest rate per month of deposits or savings [19], [20], [21].

Internal Rate of Return (IRR) is a discount rate that makes the NPV of the business zero. IRR is the average annual rate of internal profit for a company that invests and is expressed in percent. IRR can be systematically formulated as follows:

$$NIRR = i_1 + \left[\frac{NPV_1}{NPV_1 - NPV_2} \times (i_2 - i_1) \right] \quad (2)$$

$i1$ is the discount rate that produces positive NPV, $i2$ is the discount rate that produces negative NPV, $NPV1$ is a positive NPV value, $NPV2$ is a negative NPV value [19], [23].

Payback Period (PP) is a period needed to recoup investment expenses using cash flow. The Payback Period method is a technique for assessing the period of return on investment of a business. This calculation can be seen from the calculation of the net benefits obtained each year. The faster the return time, the better it is to work on. Mathematically formulated:

$$Payback\ Period = \frac{I}{Ab} \quad (3)$$

I is the total investment cost of the product cultivation business that is needed, Ab is the net benefit that can be obtained by the product cultivation business every year. The assessment criteria are that if the payback period is shorter than the maximum business life, then the product cultivation business can be accepted [19], [21]. However, if the payback period is longer than the maximum lifespan of the business, then the business is rejected.

4 Results and discussion

4.1 AIM's profile

AIM was established in 2019. Seizing export opportunities, AIM's efforts focus on the vegetable export sector to Taiwan. The mission of AIM is to become an export company based on the empowerment of local farmers. AIM develop vegetables especially cabbage vegetables as the main business line oriented towards export marketing. Although it can be said that AIM is still as old as corn, in the period 2019 – 2024 it has had an impact on cabbage vegetable farmers in Malang and Pasuruan Regencies as vegetable suppliers. AIM continues to strive to improve the welfare of cabbage farmers and also develop a professional business line.

Along with an increase of the population, it is known from the target data of the expected food-consumption in 2015-2020 that there is also an increase from 96 kcal/capita/day to 102 kcal/capita/day. This shows that the level of demand for vegetables is increasing [9], [10]

One of the vegetables that has the potential to be an export commodity, and has high nutritional value is cabbage where this vegetable has the level of nutrients needed by the body. However, the large need for cabbage vegetables is not always in line with the welfare of cabbage farmers. Various facts in the field that occur that many farmers are the object of sales practices through the middleman system where this system shows a gap in the price received by farmers from what they should be, in addition to the obstacles from the weak competitiveness of the harvested cabbage products, making the prices received by farmers worse.

4.2 Developing AIM's business

The Canvas Business Model is a business model that describes the rationality of how a business creates the right business organization, conveys and captures the value of the products offered to consumers [37]. The business model canvas or business model canvas is described through nine blocks where the blocks are the basic building blocks to show the logic related to how the company can generate financial profits. The nine blocks of the business model canvas (BMC) are divided into four main areas in the business, namely customers, offers, infrastructure, and financial feasibility [38].

AIM, which is engaged in the export of vegetables, especially cabbage vegetables (*Brassica oleracea*), already has an existing BMC. The existing BMC explained the business that has been carried out by AIM to date. However, along with the dynamic business world, AIM plans to develop its business through a partnership pattern. The partnership pattern expected by AIM can not only result in increased profits for the company but can also empower farmers. The empowerment is expected to increase farmers' income by up to 75 percent.

The development of AIM's new business model by utilizing the partnership pattern has given rise to a new BMC for the company. The new BMC accommodates the company's objectives. The existence of the new BMC is also a strategy in dealing with competitiveness

in the vegetable export business [39]. The BMC that will be implemented by the company is based on the feasibility of the company in developing its business through a partnership pattern. The information obtained in creating a new BMC is information from key informants involved in business development. The methods will help achieve of this study's goals to create AIM's new business model and measure the feasibility of implementing new business model in AIM.

4.3 Customer segment

Customers are the main component in a business because without customers, the company will not have the existence and ability to survive for a long period of time. Customer segmentation will describe a group of people or organizations that the company wants to reach or serve. To be able to satisfy customer expectations, the company must determine the segmentation of the customers to be served. AIM serves foreign customers with the main goal being Taiwan and in its development this company will expand its market to other countries that have characteristics such as Taiwan.

AIM as a vegetable export company determines the segmentation of its customers based on the type of market it enters. AIM serves specific customers, namely certain countries that have collaborated with companies with predetermined types of vegetable commodities, namely cabbage, chicory, and sweet corn. This customer segmentation is based on a niche market because it has specific and specialized criteria [40].

4.3.1 Value proportions

The Value Proposition is the reason why customers choose a company over another. Customer expression that the company solves a customer problem or meets a customer need. Each value proposition consists of a select set of products and/or services that meet the requirements of a specific customer segment. In this sense, a value proposition is an aggregation or set of benefits that a company offers to a dispoern [41], [42]. Value can be quantitative e.g. price, speed of service or qualitative e.g. design, customer experience [43]. AIM offers export vegetable products with the best quality where cabbage products are hyeginies products free from pesticides. AIM export destination countries want vegetables with the hygienic criteria or free from chemicals as the demand standard desired by the state of Taiwan.

4.3.2 Channels

Channels explain how the company communicates with and reaches out to its customer segments to convey the value proposition of the company's products [44]. Channels are a company's way of approaching customers and play an important role in the customer experience. Channels serve several functions, including [45]:

1. Increase awareness among customers about the company's products and services
2. Helping customers evaluate the company's value proposition
3. Allow customers to purchase certain products and services
4. Delivering a value proposition to customers
5. Provide post-purchase customer support

4.3.3 Customer relationship

Customer relationship show the type of relationship that a company builds with a particular customer segment. Companies must clarify the type of relationship they want to build relationships with each customer segment [46]. The existence of customer relationships is driven by several motivations, namely customer acquisition, customer retention, and increased sales (upselling)

AIM has customers with special criteria who are countries with the characteristics of having typhoons that cause crop failures for vegetable cultivation in Taiwan. The company's customers are customers with an international scope, so it is necessary to build relationships with customers consistently. AIM provides vegetable products in accordance with the quality and standards determined by the destination country with the provision that it is free from chemical substances or compounds. AIM provides a hotline for customers to communicate with the company related to the products delivered by the company, starting from the type and quality of the product, as well as the delivery process to the customer.

4.3.4 Revenue streams

Revenue streams represent the cash a company generates from each customer segment [47]. A company must understand what value customers are really willing to pay so that the company can generate more than one revenue stream. AIM's main revenue stream is the sale of vegetables exported to foreign countries. Each revenue stream has a different pricing mechanism. A business model can involve two types of revenue streams:

1. Transaction revenue generated from a single customer payment
2. Recurring revenue generated from ongoing payments to provide

4.3.5 Key resources

Key resources can bet he important assets that are needed to make the business model work. These resources allow companies to create and offer value propositions, reach markets, maintain relationships with customer segments, and earn revenue. The main resources can be physical, financial, intellectual, or human. Key resources can be owned or leased by companies or obtained from key partners.

In terms of human resources, AIM will form a new position, namely a farmer facilitator who will be in

charge of assisting farmers, then in terms of technological resources, AIM has prepared various advanced technological tools to be used in running business processes and modernizing farmers' agriculture.

4.3.6 Key activity

Key activities describe the most important things a company must do in order for its business model to work [44]. Every business model consists of several main activities. The main activities will affect the company in meeting the needs in realizing the proportion of value, channel efficiency, effectiveness of customer relationships, and smooth revenue streams. The main activities differ depending on the type of business model.

AIM's main activity is the export of vegetables including cabbage, mustard greens, and sweet corn. The vegetables are obtained from the company's partners. In addition, the company also grades and standardizes the export products in accordance with the criteria determined by the customer. AIM also packs so that vegetables remain fresh and quality during delivery until they arrive at the customer's place.

Another activity carried out by AIM is the creation of a network of partners through farmer empowerment. AIM can increase revenue streams when companies partner directly with farmers without going through middlemen.

4.3.7 Key partnership

Key partners is the networking of suppliers and partners that make the business model work. Companies enter into partnerships for a variety of reasons, and partnerships are the cornerstone of many business models. Companies create alliances to optimize their business models, reduce risk, or acquire resources. Partnerships are divided into four types, namely:

1. Strategic alliances between non-competitors
2. Cooperation: strategic partnerships between competitors
3. Joint ventures to develop new businesses
4. Buyer-supplier relationship to ensure reliable supply

AIM's main partners are farmers with a partnership pattern. The company chose to partner directly with farmers due to several factors. The first factor is to reduce risk and uncertainty. In the previous business model, AIM collaborated with middlemen to supply vegetables to be exported. However, the supply has quality constraints. AIM could not control the quality of products from middlemen, so AIM decided to develop direct partners through farmers. The company's partnership relationship with farmers includes the provision of alsintan and production facilities as well as the improvement of human resources in terms of cultivation prepared through cooperation agreements. The agreement contains related to ensure the consistency of the quality of exported vegetables.

4.3.8 Cost structure

All of the costs incurred to operate the business model [48]. The cost structure also describes the most important costs incurred while operating under a particular business model [49]. All business activities include creating and delivering value, nurturing customer relationships, and generating revenue, incurring costs. Companies can differentiate cost structures through cost driven or value driven .

The nine BMC blocks that are the company's new BMC in running a business based on the goals that the company wants to achieve, both financial and non-financial goals, to be able to survive and compete in the vegetable export market.

4.4 Feasibility study

Feasibility study is carried out systematically and comprehensively on a business plan, both new businesses and developments that will be carried out by AIM from various aspects that can affect the success of the business. This study is very important considering that every activity that will be carried out by AIM cannot always be in accordance with expectations, where there is a potential for failure of every decision chosen, so it is important to conduct a feasibility analysis. This feasibility study is always carried out comprehensively by looking at various aspects such as market and marketing aspects, technological and technical aspects, and financial aspects [50]. Criteria that are commonly used to measure eligibility can use financial criteria which include cost of money or B/C ratio, capital development time or payback period, net present value and internal rate of return.

4.4.1 Technology aspect

Identification and Analysis of Raw Material Availability needs to be carried out. The products that will be marketed are cabbage vegetable products that have been in the form of well-packaging. Cabbage vegetables are the result of a partnership program that is planned to be carried out by empowering farmers and combined cabbage vegetable farmer groups. The raw materials needed to market vegetable products come from cabbage vegetables produced by farmers or a combination of farmer groups from two districts, namely in Pasuruan Regency and Malang Regency. Cabbage vegetables are received by AIM, then a grading process is carried out with price difference treatment, then payments are made to farmers.

Vegetables produced by farmers were initially sold through middlemen who made direct payments at the time of harvest, but in the future AIM will do at least 2 alternative channels to obtain raw materials, namely (1) AIM buys cabbage vegetables from cabbage farmers directly, (2) AIM buys cabbage vegetables to farmer groups where the results of cabbage vegetables are obtained from farmers.

Table 2. The total production of cabbage.

No	Items	Unit	Total
1	Productivity of cabbage vegetables	ton/ha	10-12
2	Average area of farmers' cabbage land ownership	ha	3
3	Number of cabbage vegetable supplier farmers	pax	230
4	The price of cabbage vegetables in farmers	IDR/kg	6.000

Source: Primary Data (2024).

Raw materials for the export vegetable sales process are planned to be supplied from a location not far from the AIM warehouse, which is in Pandaan District, Malang Regency. At least AIM needs 300 containers or the equivalent of 22,5 tons per container or the equivalent of 6.750 tons of cabbage vegetables to be exported to Taiwan.

The main raw material supply has been identified to have 3 alternative channels. By considering the factors of convenience, continuity, and risk qualitatively, the best channel chosen is to buy directly from farmers through freelance partnerships. These channels have the highest convenience and continuity compared to other channels because they already have cooperation agreements, and have the least risk as described in Table 3. The risk in question is the provision of raw material quality and price agreement to adjust to quality.

Table 3. Assessment of raw material supply selection.

Channel alternatives	Considerations		
	Convenience	Sustainability	Risk
Farmer groups	Medium	Medium	Medium
Middleman	Medium	Medium	Medium
Farmers	Low	Low	Low

Source: Primary Data (2024).

Choosing a warehouse location is part of a long-term decision-making process. Ideally, the location needs to be close to raw materials, good transportation facilities and sufficient energy sources. In other words, the unit cost of production and distribution can be reduced to a minimum level so that it can generate maximum profits. Factors that affect the choice of location include, a) Distance to sources and raw materials, b) Distance to marketing areas c) Transportation facilities d) Availability of labor e) Availability of electric power facilities or energy sources f) Fuel prices and lubricants

The selection of the location of the warehouse with the right raw materials for cabbage vegetables is not only based on the criteria mentioned above, but also based on the potential of the raw materials. Considering that cabbage vegetables that are currently produced are plants that can grow in areas with relatively cold temperatures, so the distribution is uneven or in groups. In addition, the characteristics of non-durable cabbage vegetables determine the location of the warehouse. The

location of the warehouse chosen by AIM is in the city of Pandaan district, which is one of the areas that has a relatively cold temperature, where raw materials are taken in the Malang Regency and Pasuruan Regency areas which takes 1-2 hours of the process of transporting raw materials from farmers to the warehouse.

After determining the location of the warehouse as vegetable storage, the next step is to arrange the layout of the building. The layout of the area required for the main building and the supporting building as well as open space. The main and supporting buildings include production rooms such as cooling and packaging as well as non-production such as offices, guard posts, and others. The space needs for the office are adjusted to the needs. AIM's warehouse room consists of rooms for production managers, finance managers and operations departments. Meanwhile, open spaces created by AIM are needed to support work comfort such as parks and parking lots. In the preparation of building layouts, data on space needs and types of relationships between spaces are needed.

The storage of vegetables is carried out in the warehouse consisting of 4 units of handpallets, 1 unit of cold storage, 2 units of conveyor belts. Conveyor with cooling blower. The conveyor belt consists of 2 units, with a minimum width of 600 mm, a length of 3000 mm. The conveyor is equipped with a stainless steel plate divider with a thickness of 1.2 mm and a minimum height of 1200 mm. The conveyor is equipped with a blower in the middle of the top of the conveyor as can be seen in the Figure 2.



Fig. 2. AIM's Conveyor Belt.

Cold Storage has special specifications as a cooler and storage of vegetables at a low temperature of 0-80oC which is used to overcome products that are weakly damaged and not durable as shown in the Figure 3 (left). Handpallets are used as a tool to move various tools from one place to another. AIM requires a handpallet with the purpose of transporting vegetable products that are ready for export as described in the Figure 3 (right).

Basically, the process of cabbage vegetable export activities to Taiwan is not significantly different compared to shipping to several cities. The fundamental difference of this process is the packaging process considering that cabbage vegetable products have perishable properties so that appropriate packaging

techniques are needed. The selected packaging is a packaging with a waterproof container that can maintain the quality of vegetables by more than 500%, using temperature and humidity indicators. The appropriate temperature for cabbage vegetables is 10-15°C, oxygen content (O₂) is 2-5 percent, carbon dioxide (CO₂) content is 0 percent, and humidity level is 95 percent. The selection of packaging is intended so that the product can be accepted in Taiwan by AIM in a fresh and undamaged state.



Fig. 3. Cold Storage (left), Handplate (right).

Before being packaged, the product will be sorted first where the vegetables must be free from insect bites (hygienic) and not ripe. Then the product is packaged with bubble wrap and arranged on a crate with styrofoam material and the product is put into an additional box/crate to avoid a direct collision with other boxes/crates.

4.4.2 Management aspect

AIM, which does business in the field of cabbage vegetables, involves many farmers/farmer groups. However, not all farmers or farmer groups are included in the management or management of AIM. Therefore, farmers/gapoktan form a management institution for a professional and legal entity partnership process such as cooperatives. The role of farmers/gapoktan is to choose representatives who are in accordance with their abilities and shared vision to oversee the management of the partnership program.

The AIM organization is structured based on the functionality of each management component which emphasizes the skills and abilities of individuals in carrying out their functions and responsibilities. Therefore, AIM also applies a cooperation contract system pattern and the preparation of more detailed job descriptions for each type of work. Thus, the company must provide compensation and guarantees/allowances to the management parties within the organizational structure. For mutual benefit, AIM needs to make terms and conditions for the partnership program to be carried out. The company must carry out quality control and assistance to farmers.

4.4.3 Marketing aspect

Marketing is a process and managerial that enables individuals or groups to obtain what they need and want by creating, offering, and exchanging products that have value to other parties or all activities related to the delivery of products or services ranging from producers to consumers. Currently, the role of marketing is not only to deliver products or services to consumers but also how the product or service can provide satisfaction to customers by obtaining profits [51]. The target of marketing is to attract new customers by providing superior value, setting attractive prices, distributing products easily, promoting effectively and retaining existing customers while still holding the principle of customer satisfaction [52].

Marketing as the spearhead in the business system chain is a function of cost. Success is highly determined by the added value and benefits obtained by the production unit. The cabbage marketing system greatly affects the purchase of products by consumers and the efficiency of the overall cabbage business. Low marketing efficiency will lead to high costs and final selling prices. Marketing inefficiencies not only suppress the profits that AIM will obtain but can also weaken competitiveness. Therefore, marketing systems and strategies in accordance with marketing goals and efficiency in the absorption/use of resources are important to be studied. To develop a decent cabbage vegetable export, various information is needed as the basis for a comprehensive marketing design that contains important things through the marketing mix. The marketing mix as one of the marketing strategies used in AIM uses 4P (Product, Price, Place, Promotion).

A product is everything that can be traded and offered for activities to meet and satisfy the needs of consumers in accordance with their desires. The marketing strategy set by company is to market vegetable products in the form of cabbage vegetables. The vegetables marketed by AIM have guaranteed quality, because they have gone through a series of processes such as grading, storage and sorting where the management has met the standards.

Price is a sum of money paid or exchanged for goods or services or to the amount of value provided by consumers, namely, to benefit from the ownership of goods or services. AIM has implemented pricing from the decisions it has implemented which are used as a marketing strategy. The price set by AIM for a cabbage vegetable crop is NT\$ 32.4/kg. The determination of the price has been calculated clearly and is in accordance with the cost of the production factor so that later income from the sale of cabbage vegetables will be obtained.

Place is one of the elements of place as a suitable distribution aspect in marketing activities. Strategies in determining the location of offices and invitations need to be considered. Therefore, AIM chose Pasuruan Regency precisely in Pandaan as the storage location and is the closest location to the place of distribution/export to Taiwan through the city of Surabaya. The location was chosen because it is one of

the areas that has good temperature and humidity suitability for vegetables and considers the risks and obstacles that will be experienced to the process of cabbage vegetable export activities.

The promotional process for the sale of vegetable products carried out by AIM tends to be passive considering that AIM has partnered with a vegetable supplier company in Taiwan. In addition, product segmentation that focuses on export products makes promotional activities for sales ineffective to be carried out, so that promotional activities carried out in the future are how to invite farmers to be able to join AIM partners as suppliers of vegetable raw materials, and or develop markets to other countries. In the future, AIM can focus on Taiwan's exports not only on Taiwan, but also on other countries.

Promotional activities are not only carried out for product sales, but also to farmers through facilitators who oversee inviting farmers to participate in the partnership program from AIM. At the beginning, cooperation with agricultural extension workers will be carried out as an effort to approach and open the way of communication to farmers.

4.4.4 Institutional/social aspect

Institutions are procedural rules that determine how humans act, and/or play an organizational role that aims to obtain a certain status or legitimacy. Therefore, the institution is an organizational system and community control over the use of resource [17]. Institutions emerged as human efforts to solve problems faced by community groups. The institution itself will undergo changes in form and value in accordance with the social turmoil that grows from the community environment that interacts with each other. Institutions that grow from society tend to become informal institutions and will survive as long as their existence has a role in solving the problems faced. However, changes in the form and value of institutions can also occur due to the intervention of second parties such as the government or other organizations through rules or laws so that the institution tends to become a formal institution [35]. One of the informal institutions in the community is an economic institution formed from the system of buying and selling agricultural production products, where the organ that drives the role of the informal institution is the collector trader.

Cabbage farmers in the Pasuruan Regency, especially in the sub-district where the sub-district is the location where the warehouse is planned to be established, sell relatively more cabbage vegetable products to the surrounding market through collectors. Collectors through collectors come to farmers' houses to collect vegetables. One of the benefits obtained by farmers with the arrival of collectors to their homes to collect cabbage vegetables is that farmers can save costs. This is because they do not need to spend transportation costs to bring their goods (cabbage vegetables) to the market. This kind of buying and selling system then formed an informal economic

institution among cabbage farmers and collectors as explained in Figure 4.



Fig. 4. Cabbage sales flow in Pasuruan, Malang Regencies.

The institutions that grow from society tend to become informal institutions and will survive as long as they have a role in solving the problems faced. The existence of economic institutions formed between farmers and collectors in Pandaan District will still be able to exist if it is able to solve problems from farmers such as the discrepancy in selling prices that are felt to be detrimental to farmers. However, if these problems cannot be solved or even the existence of these problems arise due to the economic institutional system that has been formed, then the existence of the existing economic institutions can be disrupted, and the institution can be replaced by a new institution that is felt to be more able to answer the problems of farmers.

The construction of AIM warehouses and offices in Pandaan District can become a new economic institution that is formed in the community. Farmers who initially sold their production to collectors, with the establishment of this vegetable warehouse they were able to sell raw materials for cabbage vegetables to AIM for export. If AIM can provide an appropriate price for cabbage vegetables that have been successfully collected by farmers, then the buying and selling system formed between farmers and AIM will be more efficient because farmers will get income only from selling raw materials for cabbage vegetable sugar. This can certainly save time, effort, and costs that must be incurred by farmers. However, the new institution formed due to the establishment of the AIM warehouse and office can trigger conflicts between collectors and AIM. The existence of these warehouses and offices is felt to be able to shift the existence of the economic institution of farmers – collectors that have been formed first in Pasuruan or Malang District.

The identification of potential conflicts due to the establishment of warehouses and offices needs to find an alternative solution so that the potential conflict does not arise to cause significant losses to the parties involved. One of the solutions that can be offered is to do community development. Basically, this community development is an effort to empower the company, in this case AIM, to the community around the warehouse and office area. This form of community development is such as making collectors as employees or an extension of AIM as sellers, but the sales system can be in the form of cooperatives or partnership framework.

These partnership business patterns are expected to be able to establish cooperation between farmers as providers of cabbage ingredients and AIM which will process raw materials so that the cooperation can be mutually beneficial for each party. However, this collaboration must also be accompanied by coaching and development by AIM to farmers so that later farmers

can also benefit in the form of knowledge about the market, capital, management, entrepreneurial systems controlled by AIM, and so on. Likewise, AIM can take advantage of the flexibility and agility of farmers in doing business. Thus, these partnership patterns can be beneficial for all parties. This partnership effort will not be able to take place effectively and sustainably if it is solely carried out through a social concept based on the motive of compassion. Therefore, this partnership business must be carried out within the framework of economic development.

4.4.5 Financial Aspect

Table 4. The assumptions of financial feasibility.

No	Items	Total	Unit
Self-Planting Scenario			
1	Investment in Warehouse and Machinery Agricultural Production Equipment	4.738.464.000	IDR
2	Total of cabbage crops per hectare	25.000	Unit
3	The cost of land cultivation to harvest	25.000.000	IDR
4	Cost of harvesting cabbage	300	IDR/kg
5	Cost of shipping cabbage to the warehouse	300	IDR/kg
6	Investment loan 100% of the investment value	0	IDR
7	Working capital loan	0	IDR
8	Economical life of machinery and buildings	20	Year
9	Working capital	6.000.000.000	IDR
10	Wage's Minimum Standard of Pasuruan Regency	4.515.133	IDR
Partnership Scenario			
1	Warehouse machinery investment	4.699.264.000	IDR
2	Loan fees	25.000.000	IDR/ha
3	Total of cabbage crops per hectare	25.000	Unit
4	Cost of harvesting cabbage	25.000.000	IDR
5	Cost of shipping cabbage to the warehouse	2.000	IDR/kg
6	Economical life of machinery and buildings	20	Year

Source : Primary Data (2024).

Financial analysis is one of the important aspects that need to be considered in the analysis of the feasibility of developing an investment project, in this case the feasibility of developing a cabbage export business with partnership scenarios and direct purchases to farmers. There are 3 financial statements used in the analysis of the financial feasibility of business development from AIM consisting of a cash flow report, a profit and loss statement and a balance sheet statement [53], [54].

The AIM cash flow report is a projected cash flow report or cash flow in AIM in a certain period. Some of the following assumptions are used in analysing the financial feasibility of developing a vegetable export business using 2 scenarios, namely self-planting with a period of 2 plantings because the export period will only be carried out in June – October only and the partnership scenario by giving contracts to farmers to provide vegetable crops where farmers need to provide their own labour [54].

The value of investment in the development of AIM's cabbage exports is determined based on the needs of land, buildings, equipment, infrastructure and supporting facilities. The investment cost of building warehouses and offices is in the form of procurement of new goods and services so that the value is adjusted to current conditions and prices. This cost is calculated based on the construction cost plus the added value of the land or land for the warehouse depending on the value of the land in the local area. The investment costs used for the procurement of warehouses and offices that in the analysis are not considered in depreciation and are calculated at the beginning of the investment (year 0). In addition, the procurement of fixed assets is also used. The investment cost for the construction of warehouses and offices in the self-planting scenario is IDR4,738,464,000, while the partnership scenario is IDR4,699,264. The inflow of money in the development of cabbage exports consists of receipts from the sale of products from cabbage exports and the salvage value of investment goods at the end of the project. The revenue structure is obtained from 300 containers or a cabbage export volume of 22.5 tons in each period/year at a price of IDR15.624/kg.

The criteria for financially feasible investment are then seen based on the value of NPV, Gross B/C, Net B/C, IRR and PP. The calculation of investment criteria considers the value of the discount rate (dr) using Bank Indonesia's interest rate in 2023 of 6.4 percent.

Table 5. Summary of analysis of the profitability of investment in AIM.

Criteria	Indicator "Feasible"	Self-Planting Scenario	Partnership Scenario
NPV	>0	503.342.490	612.819.752
Gross B/C	≥1	1.64	2.72
Net B/C	≥1	31.93	20.08
Profitability index	≥1	24.92	32.47
IRR	≥ Discount rate	18.7%	28,2%
Payback period	< Economic life business	7.39	2,21

The partnership scenario is better than self-planting scenario. Other indicators also show the same thing. The Gross B/C value is 2.72, meaning that the cost incurred in a sugar processing plant with a capacity of production of one Indonesian Rupiah (IDR) provides a benefit of IDR 2.72. Likewise, the Net B/C indicator is more than 1, both criteria indicate that this investment project is feasible and profitable to implement. If the company finances the investment with its own capital, it can be calculated that the internal rate of return (IRR) is high and far exceeds the discount rate used, which is 6,4 %. The payback period generated by this project is quite fast, which is 2,21 years. So, AIM can focus its business through partnering with farmers as the main choice. Both parties benefit from the partnership activities carried out.

5 Conclusion

Based on the purpose of the study, it can be concluded that the business model by partnership with local farmers is one of the best business models that can provide more profits for AIM in carrying out vegetable export activities. Based on the results of the investment criteria, this scenario also provides a larger NPV, Gross B/C and Net B/C value and has the shortest payback time compared to the self-planting scenario.

In the future, AIM was suggested to initiate conducting partnerships with farmers so that farmers could be more controlled in cultivation, and the AIM could run a business without any problems related to the quality, quantity and continuity of the number of raw materials exported to Taiwan. For business sustainability, it is important for AIM to maintain the rights and obligations between AIM and farmers such as timely payment from vegetable purchases, intense farmer assistance so that the business model with partners can be mutually beneficial for both parties.

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