GARLIC BUSINESS MODEL DEVELOPMENT STRATEGY: CANVAS MODEL BUSINESS APPROACH

Widyastutik[*)*)1], Dewi Setyawati[*)***)], Farida Ratna Dewi[**)***)], Sri Retno Wahyu Nugraheni[*)***)]**

[*)]Department of Economics, Faculty of Economics and Management, IPB University
Jl. Agatis, IPB Dramaga Campus 16680 Bogor, Indonesia
[**)]Department of Management, Faculty of Economics and Management, IPB University
Jl. Agatis, IPB Dramaga Campus 16680 Bogor, Indonesia
[***)]International Trade Analysis and Policy Studies, Faculty of Economics and Management, IPB University
Jl. Agatis, IPB Dramaga Campus 16680 Bogor, Indonesia

Article history:

Received
13 June 2022

Revised
13 July 2022

Accepted
24 July 2022

Available online
29 July 2022

Abstract: Garlic is one of the commodities developed in the country as an effort to achieve self-sufficiency and reduce imports. This study aims to identify the existing business models in the garlic production centers and develop garlic ideal business models using Business Model Canvas (BMC) approach. The others purpose is to identify the critical points of existing business models and formulate policy recommendations for developing garlic business models to support production. The study used primary and secondary data. The primary data was obtained from a survey conducted in 2021 at garlic production centers with purposive sampling methods such as Karanganyar Regency, Boyolali Regency, and Magelang Regency. The analysis shows that key partner elements, customer segments, and channels are the critical point. Thus, to develop the garlic business model, it is necessary to carry out synergy and collaboration of stakeholders (key partners) to overcome critical activities, essential resources, customer segments, partnerships, channels, and value co-creation. As a result, it will improve garlic farmers' cost structure and revenue stream, so garlic production can increase to meet domestic needs.

Keywords: BMC element, business model canvas, collaboration, garlic, synergy

Abstrak: *Bawang putih merupakan salah satu komoditas yang dikembangkan dalam negeri sebagai upaya mencapai swasembada dan mengurangi impor. Penelitian ini bertujuan untuk mengidentifikasi model bisnis yang ada di sentra produksi bawang putih dan mengembangkan model bisnis ideal bawang putih dengan pendekatan Business Model Canvas (BMC). Tujuan lainnya adalah untuk mengidentifikasi titik-titik kritis dari model bisnis yang ada dan merumuskan rekomendasi kebijakan untuk mengembangkan model bisnis bawang putih untuk mendukung produksi. Penelitian ini menggunakan data primer dan data sekunder. Data primer diperoleh dari survei yang dilakukan pada tahun 2021 di sentra produksi bawang putih dengan metode purposive sampling seperti Kabupaten Karanganyar, Kabupaten Boyolali, dan Kabupaten Magelang. Analisis menunjukkan bahwa elemen mitra utama, segmen pelanggan, dan saluran adalah titik kritis. Dengan demikian, untuk mengembangkan model bisnis bawang putih perlu dilakukan sinergi dan kolaborasi pemangku kepentingan (key partner) untuk mengatasi critical activities, essential resources, customer segment, partnership, channels, dan value co-creation. Akibatnya, akan meningkatkan struktur biaya dan aliran pendapatan petani bawang putih, sehingga produksi bawang putih dapat meningkat untuk memenuhi kebutuhan dalam negeri.*

Kata kunci: *elemen BMC, business model canvas, kolaborasi, bawang putih, sinergi.*

[1] Corresponding author:
Email: widyastutik@yahoo.com

INTRODUCTION

Indonesia is the largest garlic importer in the world, with an average import volume of 509.62 thousand tons/year, or 24.39% of the total world production (Ministry of Agriculture, 2020). This volume meets more than 95% of the domestic requirement for consumption and industry in the country. Purba et al. (2021) stated that the demand for garlic imports increased following an exponential trend.

The most significant part of Indonesian garlic import comes from China, contributing 99.53%. The other 0.47% came from India, Taiwan, Malaysia, Vietnam, and other countries (Ministry of Agriculture, 2017). This condition is in line with the 2014-2018 average garlic production data sourced from FAO, where China is the world's largest garlic producer, with an average production contribution of up to 79.25% or 21.34 million tons. Other garlic-producing countries are India (5.72%), Bangladesh (1.43%), South Korea (1.44%), and Egypt (1.04%). The increase in the Value of production in China can be caused by the crucial role of the government in the agricultural sector, along with high-quality human resources and increased economies of scale (Sugiartiningsih and Ikram, 2020).

In developing the garlic commodity in Indonesia, the government has made a road map to meet domestic consumption needs, reduce imports, and increase garlic independence. Several areas developed as national garlic development centers include Magelang, Wonosobo, East Lombok, Malang, Temanggung, and several other location centers (Ministry of Agriculture, 2017).

Production and harvesting areas of garlic in Indonesia fluctuated with an increasing trend from 1981 to 2019 (Figure 1 and Figure 2). In 2019, Central Java Province had the highest contribution to national garlic production, 40.73%, with a land area of 43.07%. The second highest contribution was from the Province of Nusa Tenggara, with a production of 34.29% and a land area of 22.57%. Other significant production contributions in Java were East Java (7.81%) and West Java (7.54%). Contributions for outside Java came from North Sulawesi Province (2.13%) and West Sumatra Province, which continued to increase (2.10%).

Although there is an increasing trend, there is a decrease in production caused by: (1) white root rot disease attack by a fungus that has an endemic impact on plants, (2) very low incentive for selling garlic, high production facility costs, (3) competition with cheap imported garlic, (4) excessive use of inorganic fertilizers and pesticides resulting in resistance to several pests and diseases (Ministry of Agriculture, 2020).

The results of collaborative research from the Ministry of Agriculture through the Balitbangtan (2021) identified the major problems with local garlic, namely (1) low productivity, (2) small cloves and bulbs challenging to peel so that they are less attractive to consumers; (3) Performance or physical appearance is not good; (4) low production efficiency; (5) relatively low prices; and (6) less competitive on the market. A study on the feasibility of garlic farming at various output price levels shows that the correct selling price for the consumption of garlic is Rp15,000.00/kg and Rp53,000.00/kg for seedlings. If the selling price exceeds the mentioned price, farming profits will be lower than the Regency/City Minimum Wage (UMK). Thus, it will not be attractive to farmers (Kiloes and Hardiyanto, 2019).

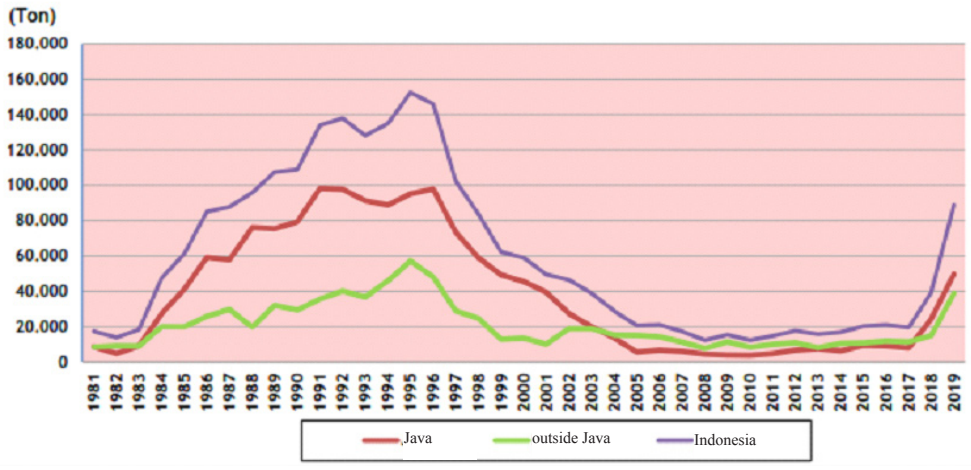

Figure 1. Development of Garlic Production in Indonesia 1981-2019 (Ministry of Agriculture, 2020)

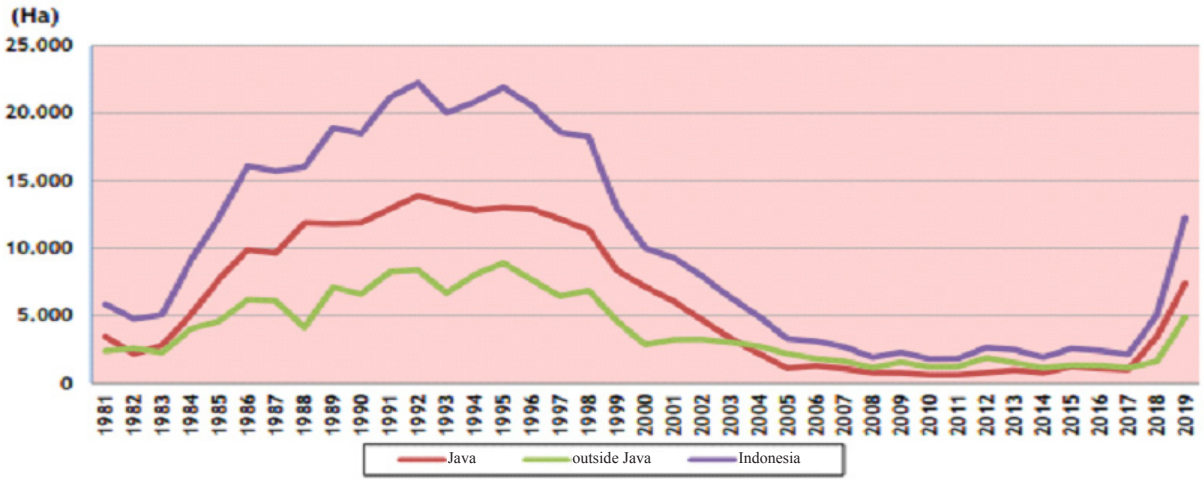

Figure 2. Development of Garlic Production in Indonesia 1981-2019 (Ministry of Agriculture, 2020)

Garlic farming development strategies can be found in several studies, one of which is Sopian and Trimo's (2020) research. The research showed that the garlic development strategy in Ciwidey District, Bandung Regency, to increase garlic production was to expand the planting area, empower farmer groups and grow seed breeders to provide the need for quality garlic seeds (Sopian and Trimo, 2020). Meanwhile, Mahananto et al. (2021) showed that several efforts could be made to overcome the problem of garlic marketing in the Tawangmangu Regency. Efforts that can be made are maintaining and improving the quality of garlic, optimizing the institution of farmer groups to build systems with consumers without intermediaries, optimizing the role of extension workers and the government in the development and marketing of garlic, maintaining consumer trust with good farmer group management, and optimal utilization of technology such as collaborating with agricultural e-commerce.

In 2019, Indonesia could not achieve self-sufficiency in garlic because the estimated consumption was more significant than the completed production. Policy strategies to achieve garlic self-sufficiency include expanding planted areas, increased productivity, and price stabilization policies (Hadianto et al. 2019). One of the price stabilization steps that can be taken is market operations. The time needed to return the price of garlic in the field to the regular price set by the government is 50 days or almost two months from market operations (Kemala, 2020). Based on the explanation above, farmers still face many problems developing garlic. Critical points, mainly production and marketing problems, remain from upstream to downstream.

Previous research has primarily focused on the technical aspects of farming and marketing. It is still rare to find a discussion on garlic in several central locations that are more comprehensive regarding farming aspects, business models, and development strategies.

In this study, the Business Model Canvas (BMC) becomes an approach for garlic development. Osterwalder and Pigneur (2009) designed a model to facilitate business actors and decision-makers to create, evaluate, and manage their business models. This model is depicted on a canvas to visualize ideas, logical thinking, and frameworks. The nine elements of the canvas consist of [1] Customer segments, [2] Value co-creation, [3] Channels, [4] Customer relationships, [5] Revenue streams, [6] Key resources, [7] Key activities [8] Key partners, [9] Cost structure.

Specifically, this research aims to; identify the performance of the existing business model for garlic production centers, develop an ideal garlic business model with the BMC approach, and identify the critical point of the existing perfect business model, and formulate policy recommendations for developing garlic business models in support of production.

METHODS

The research was conducted at garlic-producing centers in Central Java Province, namely Karanganyar Regency, Boyolali Regency, and Magelang Regency. It lasted from September to December 2021. The types of data used are in the form of primary and secondary data. Primary data to determine garlic farming and marketing performance are sourced from a sample of farmer and

trader respondents. The secondary data, sourced from BPS, the Ministry of Agriculture, and related agencies, are used to complete the required information.

The data collection technique was carried out through interviews and in-depth interviews with respondents consisting of 40 farmers and 7 (seven) garlic traders at the sampling locations. The sampling technique was purposive, considering the small number of garlic farmers, processors, and traders in the sample locations. In addition, a literature study of previous research and other supporting data and information was carried out. Data analysis was carried out with descriptive qualitative using the BMC approach. Several previous studies have used BMC as a business model in both agriculture and the processing industry, such as for agribusiness companies that offer horticultural products-vegetables and fruits (Luthan et al. 2019), Agrofarm Cianjur (Hikmawati and Mukti, 2019) and agro-industry fresh milk in rural areas (Sangadah et al. 2021).

The use of BMC in the coffee value chain shows the process of developing a social innovation mission in profit organizations (Mulyati and Indrawan, 2021). Furthermore, the strategy formulation will be obtained by analyzing the gap between the existing and ideal conditions in the BMC.

In summary, the framework for developing a garlic business model can be seen in Figure 3. Existing conditions are seen by using nine elements of BMC. Meanwhile, an ideal BMC is also created and will be juxtaposed with the existing conditions to see the existing gaps. This gap becomes a critical point and the basis for strategic recommendations.

The initial hypothesis of this study is that there are still critical points in the development of garlic in Indonesia related to production and marketing. Thus, a strategy is needed to overcome those critical points.

RESULTS

Identification of Existing Business Models for Garlic Production Centers

Customer segments

Currently, garlic is not only used to fulfill consumption but is also directed as seeds to support self-sufficiency. Thus, it has not been focused on downstream processed products. Therefore, the segmentation of garlic customers can be divided into two: customer segmentation for consumption and seeds.

The following will describe the garlic marketing chain to market the products to these market segments. The marketing chain of garlic for consumption is supplied from local and outside farmers, purchased by collectors, then to wholesalers, enters the wholesale market, and then distributed through retailers to final consumers. Meanwhile, the garlic marketing chain for seeds comes from local seed breeders and importers, then spread to cultivation farmers through collector traders (Figure 4).

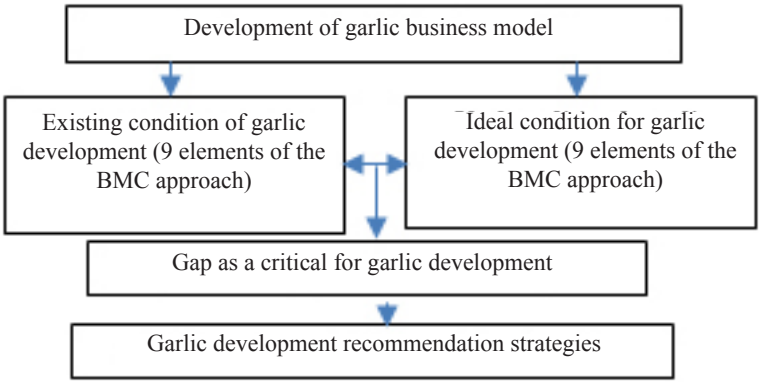

Figure 3. Research framework

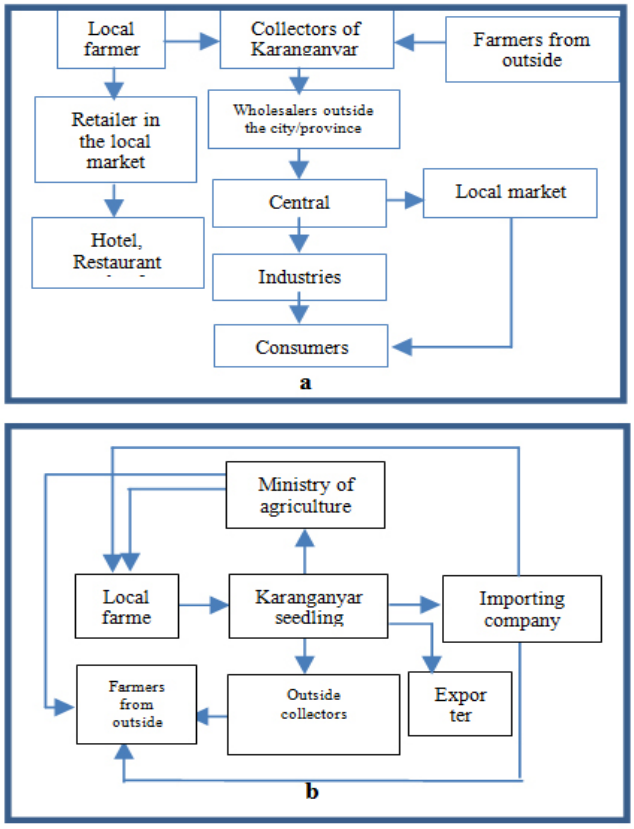

Figure 4. Garlic Marketing Chain for Consumption (a) and Seeds (b)

At the Agroayuningtani Farmers Group in Selo, Boyolali Regency, the harvest is still used to fulfill seeds, so there are no marketing transactions. Seed marketing in Karanganyar and Magelang regencies is segmented into three groups: [1] independent or independent farmers. [2] farmers in the government's APBN program, [3] farmers who partner with importers in the Horticultural Product Import Recommendation (RIPH) framework, where the government requires importers to plant an equivalent of 5% of the amount to be imported.

For areas that have not yet carried out post-harvest processing, the market for the processing industry is a potential market segment. However, there are often problems with the purchase price mismatch. This condition shows that garlic products in the survey locations are not yet competitive.

Value co-creation

Domestic garlic is weak in size and price compared to similar imported products. However, local garlic products have good quality and higher allicin content than imported garlic. With these advantages and competitive prices, it can create higher Value under ideal conditions, mainly if cultivated organically like in Boyolali Regency.

Channels

Marketing fresh garlic for consumption and seeds is still conventional through sales in the market. Social media such as WhatsApp has been used to communicate and promote. High shipping costs constrain online marketing through marketplaces and websites. Online marketing is also tricky because of concerns about not being able to meet the quantity desired by consumers when garlic is needed in large quantities.

Customer relationships

Garlic farmers, in general, have made several efforts to maintain relationships with consumers or customers/ partners, such as: Provide quality assurance of local garlic seeds and products; Comply with the rules of cooperation agreements with importing companies that implement RIPH regulations and government programs; Communicate with other parties and customers in a friendly and informative manner; Receive suggestions for improvement both in terms of quality and service; Provide after-sales service through returns if the product is not suitable.

Revenue streams

The income obtained by cultivation farmers comes from the sale of garlic for fresh garlic, processed garlic for consumption, and seeds. Apart from selling garlic, farmers also get income from intercropping production before the harvest. In Boyolali Regency, there is additional income from training related to garlic planting conducted by the Agroayuningtani Farmer Group.

Production results are usually differentiated based on grading, affecting the price and designation in an area of 1000m^2 (Table 1). Grades A, B, and C are grades used for seedlings. Meanwhile, grades D and E are for consumption and sold through wholesale or traditional markets.

Table 1. Percentage of yield based on grade and price comparison of dry stored garlic with garlic seed prices

Grade	Percentage (%)	Dry storage price (Rp)	Fresh harvest price	Seed price (Rp)
A	30	19.000	9.000	30.000-42.000
B	50	16.000	9.000	
C	10	12.000	9.000	
D	7	10.000	9.000	For consumption
E*	3			For consumption

* Harvest before aging (rogoang)

The price for seeds is higher than for direct consumption because they must be treated for seed dormancy. Also, there is a reduction in moisture content of 40-50% for farmers who cooperate with the company, the purchase of garlic harvest by the importing company. The profit-sharing varies according to the agreement, generally 25-30% for farmers and 70-75% for partner companies.

Key resources

The key resources in developing garlic in all study locations are quality seeds, crops and machinery, labor, farmer groups, and good infrastructure.

Key activities

The key activities carried out by garlic farmers are pre-planting, land preparation and planting, maintenance, harvest, and post-harvest (cleaning, sorting, grading, drying, storage or warehousing, packaging), marketing distribution, and financial management.

In the **pre-planting** activity, all farmer respondents had met the pre-planting criteria related to the suitability of the location, variety, and treatment before planting. The types used are also adjusted; for example, for Tawangmangu Baru, both are planted at an altitude above 1000 masl, while for altitudes below that, Lumbu Kuning and Lumbu Hijau are usually used. However, the selection of varieties by farmers is also adjusted to the availability of seeds, especially when participating in programs from the government or in collaboration with importing companies.

In Karanganyar, intercropping is done with several plants in the cropping system. Garlic cultivation depends on the season, leading to non-continuous production throughout the year. Therefore, many farmers intercrop on their land to get additional business revenue for their operations. Intercropping plants include shallots, leeks, beans, chilies, cabbage, and others. The commodity was selected based on the criteria of being in the same family as garlic and having a harvest age below that of garlic.

Seeding can be done independently from the harvested tubers. After grading, the garlic bulbs used for harvested seeds are dried in the sun. After drying, the bulbs are tied and stored by hanging them for two months (insecticide is used every two months). The stored bulbs are then ready to be planted as garlic seeds. In planting garlic, no nursery is done. The seeds selected for planting are superior and quality, but there are still respondents who state that the quality of the seeds is not good. This condition is generally found in farmers who follow the APBN program and some farmers who partner with importing companies.

Land preparation, before planting, it is necessary to cultivate the land and leave it for a while. However, based on the survey, the time allotted by farmers is below the ideal time of 21 days, around 3-15 days, or after the soil is loose. The consideration for doing this is to provide crops when planted immediately and quickly. The provision of basic fertilizer in manure is carried out by looking at the average land requirement of about 15 tons/ha. The inorganic chemical fertilizers given as basic fertilizers include SP-36, Urea, NaC, NPK, Pontska, and ZA. The land is generally covered with mulch and then hollowed out. The high cost or difficulty usually constrains the farmers who do not use mulch during intercropping. The garlic planting period in Karanganyar Regency begins in February before the rainy season.

Maintenance. Embroidery was carried out at the age of 1 week after planting (MST). Farmers who did not replant a week after planting stated that only 2-3% of the seeds did not grow. However, embroidery will be carried out if the pest attacks many seeds. Weeding frequency is determined by looking at the condition of the weed growth rate, at least at the time of fertilization

and weeding. Some farmers stop weeding when the plants have entered the generative phase.

Follow-up fertilization is carried out three times with a given dosage. The method of providing fertilizers after I, II, and III for most farmers were done by immersing them in rows between rows of plants.

Irrigation is carried out according to the plant's needs by filling, repairing beds, and repairing waterways. Usually, during the dry season, after fertilization, water is given through sufficient flooding. The early stages of growth require more water, so watering is done more often. Meanwhile, irrigation is reduced during the formation of shoots until the formation of tubers. Irrigation is stopped at the time of maximum tuber formation or about ten days before harvest.

In controlling Plant Pest Organisms, diseased plants are discarded and destroyed. If there are other varieties, they are usually given a sign so that later it will not be remixed. Most farmers still use chemical pesticides according to what is recommended in terms of time, active ingredients/types, and dose/concentration. Some farmers also use natural pesticides such as traps and biological agents.

Harvest and post-harvest. Farmers use the age indicator of the plant to harvest in addition to observing the yellowish leaf stalks, the tuber stem's hardened base, and the bulbs coming out of the soil surface. The garlic harvest period is 120-140 days after planting (DAP) for the Tawangmangu Baru variety, 112-120 DAP for the Lumbu Hijau variety, and 100-110 DAP for the Lumbu Putih variety, 105-116 DAP for the Lumbu Kuning variety (Kementan, 2018). Planting and harvesting times differ between locations. Treatments after harvest include cleaning, sorting, and grading. Farmers sell in bundles or sacks, which are calculated per kilo. Drying is done by spreading and aerating. There is a special warehouse to accommodate the harvests of farmers who partner with the company in Karanganyar.

Other activities carried out by farmers are marketing distribution and financial management. Most financial management is carried out with simple records, and the capital used by independent farmers is still dominated by personal capital. Farming planning is generally carried out for farmers who participate in partnership programs with companies and state budget funds.

Key partners

The major partners in garlic farming activities include: Seed suppliers (Farmers, apart from harvesting their produce, also obtain seeds from government programs such as the APBN program, partnerships with importers, and Bank Indonesia programs); Fertilizer Suppliers (Farmers obtain chemical fertilizers in agricultural shops, while those who receive the APBN program receive fertilizers from the government. Farmers who do not have organic fertilizer get fertilizers from around or outside the village); Landowner (Farmers who do not own land will rent from their neighbors and crooked land); Workers outside the family (In some farming activities, such as land cultivation, farmers are assisted by workers outside the family); Farmer groups (Garlic farmers are gathered in Poktan and Gapoktan as a forum for farmers to have joint discussions, counseling, regular meetings, social gathering, and the sale of crops); Local government (Extension activities and the provision of government assistance for the APBN program and several programs from the central government are in synergy with the Regional Government. Likewise, Field Agricultural Extension (PPL) is included in the critical partners of farmers. However, the existence of extension workers is not balanced with the scope of the work area and needs regeneration because it is entering retirement like in Karanganyar); Central Government (Several programs from related K/L (Ministry of Agriculture, BI), such as extension, planting area expansion program, equipment assistance, and production inputs, were received by farmers. Agencies involved in the farming process are BPSP (Seed Certification Research Center) in Semarang, Balitsa (Vegetable Research Center) in Lembang, and BPTP (Food Technology Processing Center) in Semarang); Importing companies (Farmers who partner with importing companies meet the 5% government regulation for import quotas); Traditional market (As a place to sell crops); Intermediary traders (As a place to sell the harvest before it is distributed to the next marketing chain); Banking (As a financial institution for farmers who can access capital); Academics (Universities provide information sharing (IPB) and become students' places. Internship and research programs are offered at several universities).

Cost structure

The cost structure of garlic farming in the study area is dominated by seed costs (31.85%) and maintenance prices (23.72%). The percentage of seed costs can be

higher if farmers do not receive assistance from the government from the APBN program or partnerships with importers. The third-largest percentage of costs is land preparation at the beginning (19.13%), which workers outside the family usually carry out. The complete additional cost structure can be seen in Figure 5.

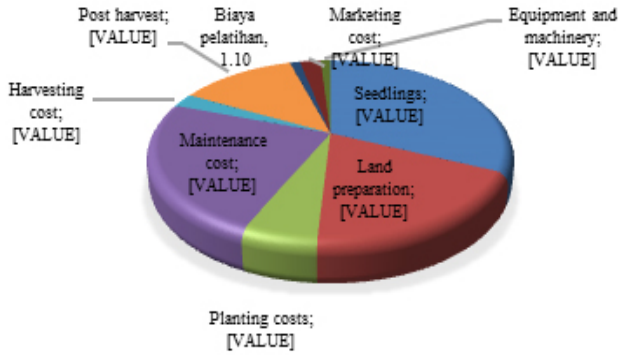

Figure 5. Cost structure of garlic farming in the study location

A sample calculation of the Agroayuningtani Farmers Group was carried out in Selo, Boyolali Regency, to observe the financial feasibility analysis. Based on the results of farming analysis assuming an interest rate of 7%, the results obtained are Net Present Value (NPV) of Rp. 209,069,765, Internal Rate of Return (IRR) 31.78%, Net Benefit/Cost (B/C) 1.5 and Pay Back Period of 2 years. Farming is feasible when the NPV is positive, the Net B/C is more than one, and the IRR is greater than the prevailing interest rate.

Ideal Business Model, Critical Points, and Policy Recommendations for Garlic Development

The design of the garlic development business model is based on the ideal BMC, as shown in Figure 6, with nine canvases that form it. Based on the ideal business model that has been prepared, there is still a gap with the existing conditions. This gap can be seen from the critical point of the garlic business model, which is shown in Table 2. This critical point indicates that there is still a need for improvements in garlic development.

The results of the study revealed that there was a critical point (the gap between the existing and ideal conditions) in the development of a business model for garlic cultivation. Regarding key partners, customer segments, and channels, it was found that there was no collaboration between the processing industry and farmer-owned enterprises (BUMP)/ village-owned enterprises (BUMDES). Downstream has not been widely carried out by garlic farmers in production centers. Currently, farmers are focusing on developing seed breeders. Downstream garlic is found in Magelang Regency, CV Saka Bumi, which has processed garlic into powder.

At the sample study locations, one farmer group in Magelang Regency has the potential to develop downstream, considering that some equipment from Bank Indonesia has been provided. The Poktan formed the Amanah Jaya Abadi Cooperative and, in 2016, produced honey and black garlic. Black garlic contains active phenolic compounds and their derivatives as antioxidants (Agustina et al. 2020). Fried garlic and pasta have been tried for production, but there is a lack of potential market because people are still used to using fresh garlic. Education and socialization about the absence of differences between fresh and processed garlic must be done within the community. According to Sudjatini (2020), various types of garlic processing with the frying method, especially the Sinco type of garlic, do not cause changes in the antioxidant content. So, it is possible to process garlic to increase the added value and resilience of the commodity so that it can be used for a longer time without reducing its nutritional value. Several other strategies are also needed to adopt an approach to processed shallots. One of Mak Yem's processed, fried shallot products is by expanding new markets to increase sales of fried garlic, optimizing existing distribution channels in the delivery of fried garlic to consumers, utilizing social media for promotion and selling online, and carrying out precise and accurate financial records (Utami et al. 2019).

In key activities, seed availability and quality, seed certification, and climate variability are obstacles for farmers. The recommended seeds are certified by the Ministry of Agriculture's Seed Supervision and Certification Agency (BPSB). Seed breeders are still limited and focused on Java and NTB (Ministry of Agriculture, 2020). Seed breeders in Karanganyar supply seeds to importing companies which will be used by farmers in Karanganyar garlic centers and other areas.

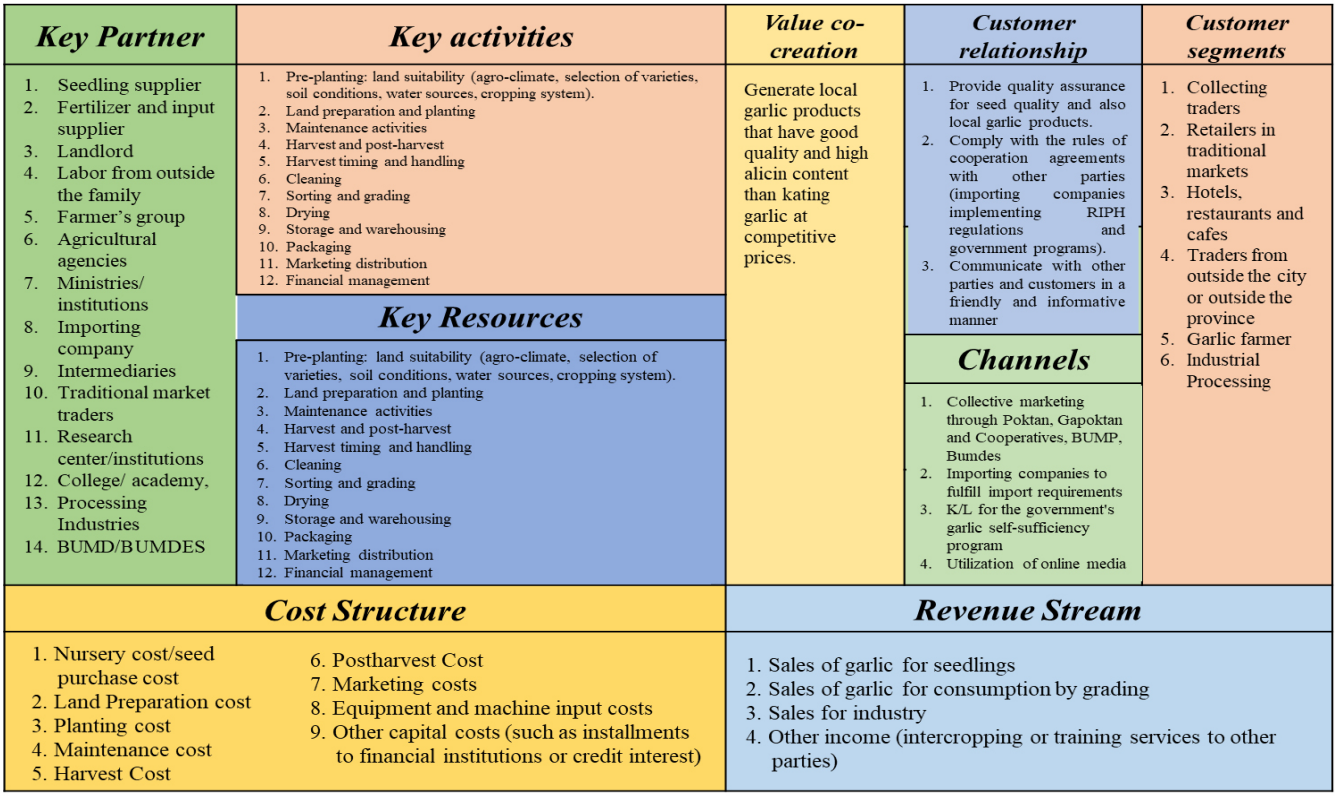

Figure 6. The ideal business model canvas for garlic development

Table 2. Garlic business model critical points

Canvas Components	Upstream
Key partners, Customer segments, Channel	Processing industries; BUMP/BUMDES
Key activities	Seedling issues (availability and quality of seedlings, seedling certification); Climate
Key resources	The unavailability of packaging and product processing technology.
Revenue stream	Product sales have not been expanded to reach efficient marketing channels.
Customer relationships	The realization of cooperation is often not following the written contract.
Value co-creation	The resulting garlic bulbs are still smaller than kating garlic; Prices are higher, so they can't compete.
Cost Structure	There is still a need to increase the allocation of cultivation technology costs.

Apart from companies and the government, collectors outside the city/province also buy seeds which are then sold to farmers outside the area, such as Medan, Bali, and Lombok. Institutional strengthening of seed breeders and facilitation of production facilities and seed sources still needs to be done. Climatic variability is also a limiting factor in production because the agro-climate of garlic requires being at an altitude of more than 800 meters above sea level. It is also necessary to develop community service activities to transfer knowledge to direct farmers, for example, Community Partnership Program activities with the output achievement of increasing partner knowledge and skills related to the seedling and certification process as well as the application of garlic cultivation following GAP (Student et al. 2019).

Regarding essential resources, because downstreaming has not yet been developed, the technology for packaging and product processing has not been widely found. Even in Selo, Boyolali Regency, they have not done product marketing, so they have not been in touch with traders or other end consumers. This condition will affect the revenue stream to expand product sales to an efficient marketing channel. In customer relationships, the requirements for the realization of cooperation often do not follow the contract. Meetings for routine monitoring and evaluation for RIPH recipients and

field verification need to be increased to find out the truth of the realization of planting and producing garlic (Ministry of Agriculture, 2021).

The gap in Value co-creation, namely local garlic bulbs produced, is still smaller than imported kating garlic. Garlic consumer preferences are influenced by price, size, aroma, moisture, and color (Mulia, 2021). However, when viewed from the quality, the taste of local garlic is not inferior. This condition can be seen from its sharper smell compared to imported garlic. Garlic bulbs contain more than 100 secondary metabolites, the organosulfur compound allicin's most significant component, which accounts for 70–80% of the total thiosulfinate (Moulia et al. 2018).

The price of local garlic is higher than that of imported garlic. Thus, it is not competitive. According to Indonesian Garlic and Tuber Vegetable Business Actors (Pusbarindo), the average garlic production cost in all centers is around Rp110 million-Rp125 million per hectare with average productivity of garlic which is very low, only 6.5 tons-7, 5 tons per ha. This product is deficient compared to China's productivity, which reached 38-50 tons per 1.2 ha. Increasing productivity (Nasution and Alamsyah, 2022) is necessary to increase profits. Several efforts can be made to improve cultivation technology, such as using superior variety seeds, increasing plant population per hectare, water and nutrient management, and integrated pest control so that productivity can reach more than 30 tons/hectare (Bardono, 2020).

A business entity can be developed to ensure fair risk-sharing for farmers to support the development of a sustainable garlic business model. Noor et al. (2021) examined the risks faced by garlic farmers, especially for the use of seeds. The highest Risk Priority Number is pest attack, infertile plants due to excessive weeds, disease attack, overcrowded plants, and uncertain climate and weather.

Business entities with the principle of "equality" are businesses where farmers are the owners. Thus, BUMP (Farmer-Owned Enterprises) is one of the company's role models for farmers' ownership (shares). The BUMP that has existed in Brebes to oversee shallot farmers is PT Brebes Sinergi Inovatif. In this business model, Farmer-Owned Enterprises (BUMP) combines cooperatives established by farmer group (poktan)/ farmer group association (gapoktan). Poktan and Gapoktan contribute to Farmer-Owned Enterprises in the form of principal, mandatory, special savings, or reserves for the SHU portion, which is Poktan/Gapoktan shares to BUMP. BUMD or BUMDES can also be an alternative, as it was done in East Java BUMD in collaboration with local seed breeders to become seed suppliers (Ismail, 2019).

Strategies to deal with price fluctuations due to supply and demand shocks can be strengthened by optimizing the Warehouse Receipt scheme and integrating with the industry. The strategy of integration with the processed industry by forming a BUMP is the ultimate goal of various initiatives and existing partnership models such as a horticultural village (initiated by the Directorate General of Horticulture of the Ministry of Agriculture); contract farming and business cooperation (undertaken by the Ministry of Agriculture for young farmers through the YESS program; Closed-loop horticulture agribusiness (initiated by the Coordinating Ministry for the Economy), Development of a Volatile Food Business Model (initiated by Central Bank of Indonesia) all of which are aimed at the corporate area.

Managerial Implications

Developing a garlic business model requires good synergy from all relevant stakeholders. Based on the critical point, the efforts that farmers must do are (1) implementing all aspects of intensive farming from upstream to downstream and (2) implementing managerial aspects such as production management to improve garlic quality and human resource management by increasing self-capacity. Marketing management by changing marketing patterns focused on customer satisfaction, increasing collaboration with intermediaries, and implementing financial management with financial records according to standards.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the analysis, in the location of the sample, there is still a critical point between the existing conditions of cultivation and processing of garlic with the ideal standard. The ideal garlic business model uses the BMC model which consists of all nine canvas elements in the study area. The critical point in implementing a business model is on the canvas of crucial partners,

customer segments, and channels. The garlic business model development strategy is prepared to focus on synergy and collaboration of key partners. Synergy and cooperation are needed to facilitate various critical points found in crucial activities and each fulfillment of key resources (key resources) of farmers and actors in the garlic development agribusiness system.

Recommendations

The garlic business model development strategy is prepared to focus on synergy and collaboration of key partners. Synergy and cooperation are needed to facilitate various critical points found in crucial activities and each fulfillment of key resources (key resources) of farmers and actors in the garlic development agribusiness system.

REFERENCES

Agustina E, Andiarna F, Hidayati I.2020. Uji aktivitas antioksidan ekstrak bawang hitam (black garlic) dengan variasi lama pemanasan. *Al- Kauniyah: Jurnal Biologi* 13(1): 39–50.

Balitbangtan. 2021. R*iset Pengembangan Inovatif Kolaboratif (RPIK) bawang putih di Provinsi Bali.* Denpasar: Balitbangtan.

Bardono S. 2020. Teknologi inovatif budidaya bawang putih. Http://Technology-Indonesia. Com/ Pertanian-Dan-Pangan/Inovasi-Pertanian/ Teknologi-Inovatif-Budidaya-Bawang- Putih/. [24 Dec 2021]

Hikmawati N, Mukti GW.2019. Model bisnis agrofarm Cianjur (Studi kasus kelompok Tani Agro segar pada P4S Agrofarm Cianjur, Desa Ciherang, Kabupaten Cianjur, Provinsi Jawa Barat). *Jurnal Ilmiah Mahasiswa Agroinfo Galuh* 6(1):54-68

Ismail, E.H. 2019. Jawa Timur berharap BUMD menjadi pemasok benih bawang putih. Https:// Www.Republika.Co.Id/Berita/Pwe1iz453/Jawa-Timur-Berharap-Bumd-Menjadi-Pemasok-Benih-Bawang-Putih. [Nov 2021].

[Kementan] Kementerian Pertanian. 2017. *Pengembangan Bawang Putih Nasional*. Jakarta: Direktorat Perbenihan Hortikultura Direktorat Jenderal Hortikultura Kementan.

[Kementan] Kementerian Pertanian. 2020. *Outlook Bawang Putih Komoditas Pertanian Sub Sektor Hortikultura.* Jakarta: Pusat Data dan Sistem Informasi Pertanian Kementan.

[Kementan] Kementerian Pertanian. 2018. *Buku Saku Budidaya Bawang Putih.* Jakarta: Direktorat Sayuran Dan Tanaman Obat Direktorat Jenderal Hortikultura Kementerian Pertanian.

[Kementan]. 2021. *Laporan Kinerja Direktorat Jenderal Hortikultura Tahun 2020*. Jakarta: Kementan.

Kemala N. 2020. Kajian operasi pasar komoditas bawang putih di Provinsi Jambi. *Jurnal MeA (Media Agribisnis)* 5(2):95–101

Kiloes AM, Hardiyanto NFN. 2019. Kelayakan usahatani bawang putih di berbagai tingkat harga output. *Jurnal Hortikultura* 29(2): 231–240.

Luthan MZ, Winandi R, Rifin A. 2019. Analisis pengembangan model bisnis kanvas perusahaan hortikultura PT. XYZ. *Forum Agribisnis: Agribusiness Forum* 9(2):185–199.

Mahananto, Kartikasari RD, Suprapti E, Sutarno. 2021. Alternatif strategi pemasaran bawang putih di kecamatan tawangmangu. *Jurnal Ilmiah Agrineca* 21(2): 91–96.

Moulia MN, Syarief R, Iriani ES, Kusumaningrum HD, Suyatma NE.2018.Antimikroba ekstrak bawang putih. *PANGAN* 27(1):55–66.

Mulia S. 2021. Analisis tingkat konsumsi dan preferensi konsumen bawang putih segar di Kota Medan [tesis]. Medan: Program Studi Magister Agribisnis Fakultas Pertanian, Universitas Sumatera Utara.

Mulyati H, Indrawan D. 2021.Inclusive business models in coffee value chain: Comparing practical evidence between East Java and North Sumatera. *Jurnal Manajemen & Agribisnis* 18(2):122–130.

Nasution DD, Alamsyah IE. 2022. Cerita petani bawang putih: Produktivitas stagnan. biaya produksi tinggi. https://www.republika.co.id/ berita/r6dclz349/cerita-petani-bawang-putih-produktivitas-stagnan-biaya-produksi-tinggi [24 Dec 2021]

Noor HF, Kusnandar, Irianto H. 2021. Analisis risiko pada usahatani benih bawang putih di Kabupaten Karanganyar, Jawa Tengah. *PANGAN* 30(3):199–216.

Osterwalder A, Pigneur Y. 2009. *Business Model Canvas. (T. Clark, Ed.)*. New Jersey: John Wiley & Sons, Inc.

Purba P, Yuliarti E, Sukiyono K. 2021. Analysis of garlic import demand trend in Indonesia. *Indonesian Journal of Agricultural Research* 4(3):166–173.

Sangadah HA, Machfud, Anggraeni E. 2021. Business

model development of a fresh milk agro- industry in rural areas. *Jurnal Manajemen & Agribisnis* 18(2):131–143.

Sugiartiningsih, Ikram S. analisis perkembangan nilai produksi bawang putih di Indonesia dan China periode 1991-2016 serta kontribusi pemerintah dalam mewujudkan swasembada bawang putih. *JAFTA* 2(1): 23-38.

Sudjatini. 2020. Pengaruh cara pengolahan terhadap aktivitas antioksidan ekstrak bawang putih (Allium Sativum l.) Varietas Kating dan Sinco. *Agrotech: Jurnal Ilmiah Teknologi Pertanian* 3(1).

Sopian SA, Trimo L. 2020. Strategi pengembangan usahatani bawang putih di Kecamatan Ciwidey Kabupaten Bandung. *Jurnal Pemikiran Masyarakat Ilmiah Berwawasan Agribisnis* 6(2):794-802.

Siswadi E, Yusuf C, Sukri MZ, Firgiyanto R. 2019. Pengembangan sentra agribisnis bawang putih di Kecamatan Sukapura Kabupaten Probolinggo. *Jurnal Pengabdian Masyarakat J-Dinamika* 4(2):153-158.

Utami MKD, Fajeri H, Septiana N. 2019. Strategi pengembangan usaha bawang goreng (studi kasus pada Bawang Goreng Mak Yem). *Frontier Agribisnis* 3(4):60–67.