

# Maggot Cultivation Business Development Strategy at the Siliwangi Unit Waste Bank

Business  
Development Strategy

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## ABSTRACT

Research on maggot farming business development strategies is still relatively limited. This research is important because it provides recommendations for business strategies that can maximize the development of the company's business. The Black Soldier Fly (BSF) larval cultivation business at the Siliwangi Unit Waste Bank has the potential to grow bigger. Business strategy provides sustainable planning to manage resources comprehensively and identify conditions for achieving future business success and gaining maximum profit. This research was conducted at the Siliwangi Unit Waste Bank, Bogor City, which was selected purposively because the BSF larval cultivation activities there have the potential to be developed further. This research uses quantitative and qualitative data sourced from primary and secondary data. Primary data were collected through surveys and direct observations by researchers, while secondary data were obtained from institutional reports, journals, books, news articles, and other library sources. Internal environment (IFE) and external environment (EFE) analysis were conducted to identify factors that could influence business success. The results of this analysis were used in the Internal-External Matrix (IE) which produced three main strategies: Growth, Stability, and Reduction Strategies. These strategies are the basis for developing the maggot cultivation business at the Siliwangi Unit Waste Bank.

**Keywords:** Organic Waste Bank, Maggot, Business Development Strategy, SWOT

## ABSTRAK

Penelitian ini tentang strategi pengembangan bisnis budidaya maggot masih relatif terbatas. Penelitian ini penting karena memberikan rekomendasi strategi bisnis yang dapat memaksimalkan pengembangan bisnis perusahaan. Bisnis budidaya larva Black Soldier Fly (BSF) di Bank Sampah Unit Siliwangi memiliki potensi untuk berkembang lebih besar. Strategi bisnis memberikan perencanaan berkelanjutan untuk mengelola sumber daya secara menyeluruh dan mengidentifikasi kondisi untuk mencapai kesuksesan bisnis di masa depan serta mendapatkan keuntungan maksimal. Penelitian ini dilakukan di Bank Sampah Unit Siliwangi, Kota Bogor, yang dipilih secara purposive karena kegiatan budidaya larva BSF di sana memiliki potensi untuk dikembangkan lebih lanjut. Penelitian ini menggunakan data kuantitatif dan kualitatif yang

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bersumber dari data primer dan sekunder. Data primer dikumpulkan melalui survei dan observasi langsung oleh peneliti, sedangkan data sekunder diperoleh dari laporan institusi, jurnal, buku, artikel berita, dan sumber pustaka lainnya. Analisis lingkungan internal (IFE) dan eksternal (EFE) dilakukan untuk mengidentifikasi faktor-faktor yang dapat mempengaruhi kesuksesan bisnis. Hasil analisis ini digunakan dalam Matriks Internal-Eksternal (IE) yang menghasilkan tiga strategi utama: Strategi Pertumbuhan, Stabilitas, dan Pengurangan. Strategi-strategi ini menjadi dasar pengembangan bisnis budidaya maggot di Bank Sampah Unit Siliwangi.

**Kata kunci:** Bank Sampah Organik, Maggot, Strategi Pengembangan Usaha, SWOT

## INTRODUCTION

West Java is the fourth largest waste producing province in Indonesia. In 2022, waste production in West Java reached 1.11 million tons (KLHK, 2023). The centers of waste production in West Java in 2022 are in several regencies/cities such as Bandung City, Bogor City, Cimahi City, and Sumedang Regency (SIPSN, 2023). Bogor City is the second largest waste contributor in West Java. According to SIPSN data, the volume of waste in Bogor City reaches 736 tons per day or equivalent to 268.64 thousand tons per year in 2022. Based on its source, the largest waste produced by West Java province in 2022 comes from household organic waste, which is 72.05%, followed by market waste of 9.61%, public facilities of 6.03%, commerce of 3.93%, offices of 1.96%, areas of 3.92%, and others of 2.49% (SIPSN, 2023). Waste is the remains of discarded goods that have no economic value because they can cause environmental pollution and disrupt the sustainability of nature. According to its nature, waste can be classified into two, namely organic and inorganic waste. Organic waste is waste that is biodegradable or easily decomposed by bacteria that come from the remains of living things. Organic waste usually comes from households such as vegetable waste, fruit waste, meat waste, food waste and so on (Febriadi, 2019). While inorganic waste is waste that is non-biodegradable or difficult to decompose by microorganisms in the soil (Hayat & Zayadi, 2018). Inorganic waste usually comes from objects such as plastic, cans, styrofoam, glass, metal, iron, glass, ceramics, leftover clothes and so on.

The types of waste produced in Indonesia are dominated by organic waste. Generally, most organic waste comes from households, markets, restaurants, factories, hospitals, hotels, etc. The composition of organic waste in Indonesia in 2022 was recorded at 66.23%, while inorganic waste was 27.15% and other types of waste were 6.62%. Of the total organic waste produced, 39.85% came from households and markets 16.19%. The type of household waste that is mostly generated is food waste. Activities that can be carried out to minimize the problem of organic waste are managing waste so that it can produce economic value. Waste management is the activity of sorting, collecting, transporting, and processing it into a product. Waste management must be carried out continuously. Therefore, reducing organic waste can be done by utilizing decomposer creatures called maggots. The method of reducing waste using Black Soldier Fly larvae is called the bioconversion method. Bioconversion is the decomposition of organic waste through a decomposition process with the help of living organisms into simple energy. Currently, the city of Bogor only has one active Final Disposal Site (TPA) for waste, namely the Galuga TPA located in Cibungbulang District, Bogor Regency. This TPA is very limited and inadequate and is far from the city center. This causes high waste transportation costs, waste collectors, garbage trucks, and operational costs are also limited. Therefore, not all waste is processed or even transported to the Final Processing Site (TPA). This causes waste to pile up and spread everywhere.

Processing organic waste into feed for Black Soldier Fly (BSF) larvae is one solution to reduce the volume of waste generated in Bogor City to the Galuga TPA. The Siliwangi Waste Bank Unit (BSU) is one successful example in managing organic waste generated by the community using BSF larvae. The volume of organic waste that can be processed by the Siliwangi Waste Bank Unit ranges from 700 to 800 kg per day. So that

in 1 month the organic waste that can be processed reaches 22 tons. Maggots have a high protein content, so they can be used as a source of protein in animal feed, especially fish (Herawati et al., 2020). The advantages of maggots compared to other protein sources are that they are easy to obtain and do not have an expensive price. In addition, maggots have a protein content of 43-64%, this value is able to meet the protein needs of livestock and can be a substitute/alternative to other protein sources (Makinde & Makinde, 2015). Judging from the cultivation process, BSF is easy to do and does not require special technology, so it can be developed for mass production. Previous research conducted by Hardini & Gandhi (2020) and Haetami et al. (2021) and (Aini et al., 2018) focused on the aspect of maggot cultivation.

Research that discusses the strategy for developing maggot cultivation businesses is still relatively small. This research is important because it will provide recommendations for business strategies carried out by the company so that it can maximize the development of the company's business. BSF larvae cultivation business at Bank Sampah Unit Siliwangi has the potential to grow bigger. Strategy in business can provide sustainable planning to manage resources as a whole as well as direct and identify conditions with the aim of achieving success in business activities in the future and getting maximum profit. Another benefit obtained is helping business actors in making decisions when facing obstacles or challenges that are being faced both internally and externally.

## **LITERATURE REVIEW**

Maggots are larvae of the Black Soldier Fly which have a protein content of 40-50%. In its use, maggots can be given as fish feed in a fresh state or after being floured. However, the use of maggots cannot be used as the only feed, but must be combined with commercial feed (Herawati et al., 2020). The Black Soldier Fly itself is a type of fly that provides many benefits for humans and animals. Maggots in dry form contain 41-42% crude protein, 14-15% ash, 31-35% ether extract, 0.60-0.63% phosphorus, and 4.8-5.1% calcium (Amandanisa & Suryadarma, 2020). Maggots have a protein content of 43.23% and complete amino acids (Aini et al., 2018). The Black Soldier Fly is a fly (Diptera) which belongs to the Stratiomyidae family. This fly can be found in tropical and subtropical regions (46° N - 42° S) (Kroeckel et al., 2012). Its life cycle consists of five phases, namely eggs, larvae, prepupae, pupae and adults which lasts around 38-41 days. Adult female flies will lay eggs around five to eight days after emerging from the pupa and can generally lay up to 500 eggs per fly. The eggs will hatch into larvae in approximately 4.5 days ( $\pm 105$  hours). Maggots are organisms that come from black soldier fly eggs and are one of the decomposing organisms because they consume organic materials to grow (Hardini & Gandhi, 2021). BSF larvae have a high growth rate and optimal feed conversion and can utilize various types of materials as food sources, including organic materials that have undergone decomposition such as kitchen waste, vegetable and fruit waste, food processing waste, livestock waste to livestock manure (Fahmi, 2015).

The existence of various changes and increasing competition in business encourages companies to create strategies to adapt to existing changes. Strategy is basically a tool to achieve a goal (Shaw, 2012). In addition, strategy can be translated as a very important instrument to achieve competitive advantage in business (Ali & Anwar, 2021). Strategic Management is the art and science of formulating, implementing, and evaluating cross-functional decisions, which enable a company to achieve its goals. In achieving its business goals, a company must be able to combine various elements in management strategies such as management, marketing, R&D, production, and information systems. This is very important, because by achieving an integrated organization, the company will find it easier to achieve its business goals in increasingly fierce competition. The use of strategic management also allows companies to achieve their business development, by using resources effectively and efficiently (David, 2011). In implementing it, there are 3 stages that must be carried out in making strategic management carried out by the

company, the first is Strategy Formulation, which is the initial stage in strategic management which contains the development of vision & mission, internal and external analysis, setting long-term goals, and creating, evaluating, and choosing strategies. Then Strategy Implementation, including setting short-term (annual) company goals, motivating employees, allocating resources, preparing budgets, creating effective organizational structures, and so on. And the last is Strategy Evaluation, which is the final stage of strategic management, which aims to re-measure external and internal factors, measure performance, and take corrective actions.

According to David (2011), in carrying out business development, there is a process that explains the flow of creating company strategy management which takes the following form:

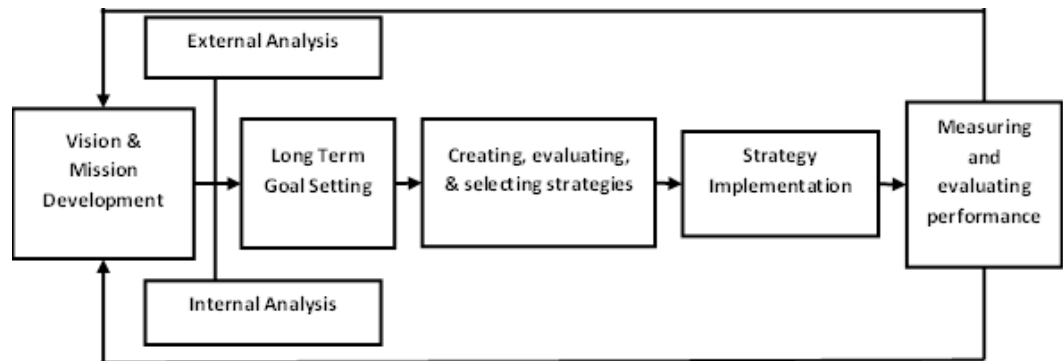


Figure 1. Corporate Strategy Management Process (David, 2011)

SWOT stands for internal environment strengths and weaknesses, and external environment opportunities and threats. SWOT analysis is an analysis tool that identifies various factors both internal and external to formulate a company's strategy. This is done by maximizing strengths and opportunities, but at the same time also minimizing weaknesses and threats (Rangkuti, 2015). SWOT analysis is based on strengths and weaknesses which are part of the company's internal, and opportunities and threats which are part of the company's external. There are 4 types of SWOT analysis strategies that are made based on these factors, namely: SO (strengths - opportunities), ST (strengths - threats), WO (weaknesses - opportunities) and WT (weaknesses - threats). From these various factors, the company can find out the various factors that the company is facing. This allows the company to develop various strategies that are in accordance with the factors faced, so that it can handle every company problem effectively and efficiently.

Research conducted by (Hardini & Gandhi, 2020) discusses the calculation of the cost of production of maggot cultivation. The selling price obtained is greater than the cost of production incurred. Thus, maggot cultivation activities are recommended to be carried out, because they will generate profits for maggot cultivation business actors. Research (Hardini & Gandhi, 2021) discusses the efficiency of production costs in catfish cultivation by providing additional maggot feed. The results of the study obtained stated that providing additional maggot feed in the catfish cultivation process can reduce the feed costs incurred by catfish farmers. Thus, the profits obtained will increase. Further research conducted by the author's team discusses the strategy for developing maggot cultivation businesses. This research theme is important to discuss so that maggot cultivation business actors can maximize the development of the business being carried out. By understanding the opportunities and threats as well as the strengths and weaknesses that exist, the results of the maggot cultivation business activities carried out will be better.

## **METHODS**

This research was conducted at the Siliwangi Unit Waste Bank, Bogor City, which was selected purposively because the Black Soldier Fly (BSF) larvae cultivation activities there have been ongoing and have the potential to be further developed. This study uses quantitative and qualitative data sourced from primary and secondary data (Sugiyono, 2013). Primary data were collected directly by researchers through surveys and observations to answer research questions and objectives. Meanwhile, secondary data were obtained from research or information that had been published by other parties, such as institutional reports, journals, books, news articles, and other library sources. Primary data were collected through interviews with the managers of the Siliwangi Unit Waste Bank and the Head of the Maggot Cultivation Unit at the Bogor City Environmental Service. This information is used to understand the conditions of internal and external factors that affect the BSF larva cultivation business. This data then becomes the basis for formulating a business development strategy. The maggot cultivation business development strategy at the Siliwangi Unit Waste Bank begins with conducting an internal (IFE) and external (EFE) environmental analysis. The IFE and EFE analysis aim to identify internal and external factors that can affect business success. The results of this analysis are then used to group strategies into the Internal-External (IE) Matrix, which consists of nine cells. The main strategies produced are Growth Strategy (Cells I, II, IV), Stability Strategy (Cells III, V, VII), and Retrenchment Strategy (Cells VI, VIII, IX). Companies can implement four different strategies based on their position in the SWOT quadrant, namely SO (strengths - opportunities), ST (strengths - threats), WO (weaknesses - opportunities), and WT (weaknesses - threats). The outputs of this research include the publication of scientific articles as mandatory outputs and the presentation of papers at scientific meetings as additional outputs.

## **RESULTS**

Business development strategies are carried out by formulating, implementing, and evaluating company activities to achieve the expected targets. To formulate a maggot cultivation business development strategy at BSU Siliwangi, Bogor City, an analysis is first carried out to facilitate the formulation of various new strategies. This study uses a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) by grouping each problem into a table. The SWOT analysis aims to formulate a strategy by combining the strengths and weaknesses of the company with the opportunities and threats that the company will face. The research conducted formulated alternative strategies for developing maggot cultivation businesses at BSU Siliwangi, Bogor City. Based on external and internal factors that have been identified. The external environment consists of opportunities and threats while the internal environment is strengths and weaknesses. To formulate the strategy to be used, it must be connected to the strategy obtained from the IE matrix.

SWOT analysis is a systematic identification of various factors to formulate a business strategy. This analysis is based on logic that can maximize strengths and opportunities and minimize weaknesses and threats. This analysis is based on the assumption that an effective strategy will maximize strengths and opportunities while minimizing weaknesses and threats. Strengths are the conditions of strength that exist in an organization, project or existing business concept. The strengths analyzed are components found in the organization, project or business itself, namely what strengths a business has. By understanding these strengths, companies can increase their business strengths so that companies can survive in the market and continue to grow. Weaknesses are conditions that indicate weaknesses in an organization, project or business. The weaknesses evaluated are factors in a business/business, namely all factors that are unfavorable or detrimental to business development. Opportunities are situations where there are factors that are beneficial for the progress of a business in the future. This condition can come from sources outside the organization, project, or business concept, such as competitors, policies. Threats are unfavorable situations in a

company. Threats are the main obstacles for a company to achieve its goals. Some examples of threats are the growth of new competitors, slow market growth, increased bargaining power of major buyers or suppliers, and changes and updates to regulations. Threat analysis aims to thoroughly evaluate the sources of threats that can have a negative impact on the business. In a SWOT analysis, threats are still possible.

There are two factors to identify business development strategies, namely internal (from within) and external (from outside) factors. This identification is explained as Identification of internal factors for maggot cultivation efforts at the Siliwangi Unit Waste Bank consisting of strengths and weaknesses. In terms of cultivation, BSF maggot cultivation is very easy to do. The maggot cultivation process does not require special technology so that it can be done on a household scale. Maggots can be cultivated in a box by placing media and a place for flies to lay eggs. Adult flies will lay eggs near the food source and will hatch in 2-3 days. The problem that often occurs is the high mortality rate of maggot larvae because the media is too wet, hot, and muddy. Therefore, the factors that support the successful process of maggot cultivation are the feed media, humidity and temperature of the media must be considered carefully. The humidity that is suitable for flies to lay eggs is around 60%. Meanwhile, the ideal temperature for maggot growth is 27-30 ° C and can cause death in maggots if the temperature is above 36 ° C (Sholahuddin et al., 2021). The life cycle of black soldier fly larvae consists of eggs, larvae, prepupa, pupa and finally becomes a BSF fly. The total duration of the BSF fly life cycle is 45 days. Maggot farmers harvest in the larvae phase which takes 14 days (Hardini & Gandhi, 2021). Thus, BSF larva farming business actors earn income twice a month.

Maggot residue (kasgot) is a residue from the bioconversion of organic waste that can be used as a planting medium (compost). Kasgot has been widely applied to plants such as mustard greens, red chilies, red spinach, etc. The use of kasgot as a planting medium is considered to have a positive effect on plants. In addition, kasgot can improve soil nutrients that have been partially damaged due to the use of chemical fertilizers. Organic fertilizer (compost) is the result of the decomposition of organic waste materials into simpler materials so that they are easily absorbed by plants. Kasgot organic fertilizer has a high nutrient content such as N, P, and K. According to (Hernahadini, 2022), the application of kasgot of 100 grams/3kg of soil provides the highest growth in mustard greens. Height growth is measured from the stem to the highest leaf tip. In addition to strength, the internal factor (weakness) of the maggot cultivation effort at BSU Siliwangi is the Unstable Maggot Protein Content. The protein in maggots is determined by the media used during maintenance. The feed media greatly influences the quality of nutrients produced by maggots (Maulana et al., 2021). The high nutrient content in the media is proportional to the nutrients produced by maggots. Therefore, providing media that has a high protein content produces maggots that are rich in protein. Based on research (Hanifah & Rohayat, 2023), the appropriate media for maggot growth is tofu dregs.

Tofu dregs waste is obtained from tofu production waste. Tofu waste contains high protein of 23.55%, fat 5.54%, carbohydrates 26.92%, ash 17.03%, crude fiber 16.53%, and water 10.43%. The results of weight and length obtained with tofu dregs treatment resulted in a weight growth of 98.85 grams higher than coconut dregs, mustard greens waste, and banana peels. This is because the water content in the media is appropriate and tofu dregs have a soft texture so that they are easily digested by maggots. Therefore, in order for the protein in maggots to be stable, the cultivation media must be selected based on complete nutritional content. Bioconversion by maggots can destroy organic waste faster, is odorless, and produces organic compost and its larvae (maggots) can be a source of protein feed for fish and livestock. Maggots can decompose organic waste 2 to 5 times their body weight in 24 hours. However, the volume of feed that is not balanced with the number of BSF maggots being cultivated can cause an unpleasant odor. Therefore, farmers need to pay attention to the volume of feed given with the number of maggots being cultivated.

Identification of external factors in maggot cultivation efforts at BSU Siliwangi, Bogor City consists of opportunities and threats. Maggot cultivation in Indonesia has great opportunities due to high waste production. Maggots are one of the bioconversion agents of organic waste. Waste in Indonesia is dominated by organic waste. One of the provinces that produces waste is West Java, amounting to 1.11 million tons per year in 2022. The waste comes from household organic waste as much as 72.05%, market waste 9.61%, public facilities 6.03%, trade 3.93%, offices 1.96%, areas 3.92%, and others 2.49% (SIPSN, 2023). The types of household organic waste consist of kitchen waste such as food scraps, fruit and vegetable scraps, etc. The availability of very abundant organic waste is an opportunity in the development of maggot cultivation for feed ingredients. The Siliwangi Unit Waste Bank obtains organic waste from hotels in the city of Bogor. Currently, hotels that have collaborated to accommodate organic waste consist of Fave Hotel, Ibis Hotel and Santika Hotel. The waste collection process is carried out at night from 20.00 to 04.00 in the morning. The volume of organic waste from hotels can be increased if the maggot production capacity at BSU Siliwangi can be increased.

One of the causes of environmental damage is waste. Waste consists of two types, namely organic waste (easily decomposed) and inorganic waste (difficult to decompose). Organic waste if left alone can cause a bad smell and produce methane gas. Therefore, the solution to overcome the problem of organic waste is to utilize maggots as a bioconversion agent. According to Dewi & Sylvia (2022), maggots can reduce organic waste by 70-80%. Thus, the use of maggots can provide a solution to the problem of organic waste produced, especially in households, markets, restaurants, etc. In this case, each community is invited to start sorting waste in their respective homes and utilizing waste as a medium for maintaining maggots.

Feed is one of the biggest components in the success of livestock farming. The growth and survival of livestock are determined by the quality of the feed provided. Feed must have good nutrition in order to produce optimal growth. Currently, the cost of commercial feed is very high. The cost of feed for fish farming takes up 70-75% of production costs. This causes farmers to tend not to get additional profits because they have to meet high feed costs (Purnamasari et al., 2023). Therefore, maggots are currently used as an alternative to fish meal. Maggots have been widely used as animal feed. In addition to the high nutritional content (protein), the costs incurred in fish farming using maggots are relatively cheaper than commercial feed. According to Dewi & Sylvia (2022), the use of maggots is considered more economical and saves feed costs by 50% of commercial feed costs. In addition, the application of maggot feed as animal feed can generate additional profits for farmers. In addition to opportunities, there are several threats faced in maggot cultivation efforts at BSU Siliwangi, Bogor City, namely predators that often appear due to the implementation of BSF maggot cultivation consisting of ants, rats, sparrows, geckos and lizards. Prevention of the emergence of predators needs to be done properly, because it can affect the volume of harvest produced from each cycle of BSF larval cultivation. Routine sanitation around the biopond can prevent the arrival of predators such as rats and geckos, so that maggot growth is maximized.

Maggots harvested by the Siliwangi City of Bogor Waste Bank Unit (BSU) are mostly Fresh Maggots. If not handled properly and quickly, the quality of the live maggots can quickly decline or die. This causes the market that can be served to become narrower because it is limited by the delivery or distribution time of fresh maggots from BSU Siliwangi City of Bogor to consumers. The SWOT analysis strategy can be analyzed based on the IE matrix, namely Quadrant I, SO Strategy (Strengths-Opportunities). The SO strategy is a strategy that uses internal strengths to take advantage of the company's external opportunities. Then Quadrant II, WO Strategy (Weakness-Opportunities). The WO strategy is used to improve internal weaknesses by taking advantage of the company's external opportunities. The third is Quadrant III, ST Strategy (Strength-Threats). The ST strategy is a strategy that utilizes internal strengths

to avoid external threats. The last is Quadrant IV, WT Strategy (Weakness-Threats). The WT strategy is a strategy to minimize weaknesses and avoid external threats.

**Table 1.** SWOT Matrix Alternative Strategy for Maggot Cultivation Business Development at the Siliwangi Waste Bank Unit (BSU) in Bogor City

Internal Factors	Strength (Strength-S)	Weakness (Weakness-W)
	Maggot cultivation is easy to do	Maggot Protein Content Is Unstable
Maggot Harvest Cycle is Relatively Fast	Bad Smell Impact of Maggot Cultivation	
External Factors	Maggot cultivation produces organic fertilizer (kast)	
Opportunity (Opportunity-O)	Strategy SO	Strategy WO
Abundant Maggot Feed Availability in Bogor City	Increasing the production capacity of the Maggot cultivation business at BSU Siliwangi, Bogor City	Conducting ongoing research to obtain the right feed formulation for maggots.
Solusi Permasalahan Limbah Organik	Utilization of Maggots as a source of protein in animal feed production	Conducting promotions to livestock farmers to use maggots as feed in the livestock farming process.
Cheaper Animal Feed Costs Using Maggots	Maximizing organic waste produced by the community for maggot cultivation.	
Threat (Threat-T)	Strategy ST	Strategy WT
Natural Predators	Processing Fresh Maggots into Dried Maggots and Maggot Flour.	Carrying out routine and scheduled sanitation in the Maggot cultivation process
Fresh Maggot Quality Quickly Deteriorates	Looking for the right long distance delivery solution for fresh maggots.	

Strategy is taking advantage of opportunities by utilizing internal strengths. The strategy used is to increase the production capacity of the Maggot cultivation business at the Siliwangi BSU in Bogor City. The current maggot production capacity at the Siliwangi Waste Bank Unit (BSU) is 100 kg per day. The total organic waste that can be processed per day is 800 kg. The availability of abundant organic waste in the city of Bogor allows for an increase in maggot production capacity. The availability of maggot harvest containers in the city of Bogor which reaches 1 ton per day means that the additional harvest can be absorbed by the market. The steps that need to be taken by the Siliwangi Waste Bank Unit (BSU) manager are to prepare land, equipment and tools for maggot cultivation as well as sources of organic waste for the maggot feed produced. The land prepared for business development needs to pay attention to the impact of the aroma of maggot cultivation on the surrounding environment, so it is necessary to pay attention to the distance from the maggot cultivation location to residential areas. Additional equipment and cultivation equipment can be allocated from the profits from cultivation and applying for loans to investors or financial institutions. Sources of organic waste in Bogor City can be done by cooperating with hotels in Bogor City. With the assistance of the Bogor City Environmental and Forestry Service, access to obtain additional organic waste from hotels in Bogor City.

Maggot Harvest Cycle is Relatively Fast, maggots can be harvested after 14 to 17 days after the eggs hatch. The better the nutritional content used, the faster the maggots can be harvested (Purnamasari et al., 2023). This situation allows BSF farmers to earn income twice in one month. This causes the cash flow in the maggot cultivation process to be faster than the organic waste cultivation process using worms (vermicompost) or turning organic waste into compost (composting). Thus, maggot cultivation business activities become more attractive. Maximizing Organic Waste Produced by the Community for Maggot Cultivation. Efforts to solve the problem of organic waste in Indonesia by converting organic waste into organic fertilizer, bioethanol, and bioenergy.

Waste processing not only aims to reduce the amount of waste but can also generate economic value from waste.

BSF (Black Soldier Fly) maggots are planted as animal or fish feed to convert organic waste into bioenergy, which is currently popular. Black Soldier Fly (BSF) larvae have many advantages, such as reducing organic waste and becoming fish feed because they have antimicrobial and antifungal substances. Maggots contain around 45-50% protein and between 24-30% fat (Mabruroh et al., 2022). Organic waste can be used as a medium for maggot cultivation. Currently, many people do not have awareness, especially in sorting waste. The waste is simply mixed together so that the waste is difficult to decompose, causing soil, air, and environmental pollution. Therefore, the community needs to be trained in sorting their own household waste and cultivating maggots using the kitchen waste produced as a medium for maggot maintenance. However, this is certainly not easy because in maintaining maggots requires a large location, far from residential areas because it will cause an unpleasant odor, and several other obstacles. Therefore, the community can deposit waste to the Waste Bank and will receive incentives. Organic waste from the Waste Bank is then handed over to maggot farmers. Large-scale maggot farmers can utilize community waste as a feed medium.

WO strategy reduces internal company problems by utilizing existing opportunities, the strategy used is to conduct ongoing research to obtain the right feed formulation for maggots. To obtain the right feed composition, ongoing research needs to be carried out so that the optimal feed formulation for maggot growth is produced. Research on feed composition can be carried out by the Siliwangi Unit Waste Bank in collaboration with tertiary institutions. The research results obtained can be applied directly by the Siliwangi Unit Waste Bank Manager to increase the effectiveness and efficiency of the maggot cultivation business carried out. The second strategy is to carry out promotions to livestock farmers to use maggots as feed in the livestock cultivation process. The use of maggot-based feed is currently growing. Farmers are starting to utilize quality feed at lower prices. Therefore, more and more farmers are looking for feed sources that have high nutrition so that they can still produce good meat quality. Maggots are equipped with high nutrition making them a choice for farmers. Thus, promotion and education are very important to be given to farmers to increase understanding of the impact of maggot feed on livestock. One of the benefits of using maggot-based feed can reduce feed production costs. In addition, maggots are classified as cheap and affordable feed but have quality.

The ST strategy utilizes strengths to avoid external threats, the strategy used is to process fresh maggots into dried maggots and maggot flour. Most of the maggot production produced by the Siliwangi Unit Waste Bank is in the form of live maggots (fresh maggots). The price obtained for each kilogram of live maggots is IDR 5,000. One strategy that can be carried out to increase the added value obtained from maggot cultivation business activities is to process them into derivative products that have a higher economic value. Dry maggots are one of the derivative products that can be focused on by the Siliwangi Unit Waste Bank manager. The price per kilogram of dry maggots is IDR 45,000. Thus, the profits obtained by the cultivators will increase if further processing is carried out into derivative products such as dry maggots (Apriyanto et al., 2023). Maggot flour is also an alternative derivative product that can be produced by the Siliwangi BSU manager. However, additional investment in a flouring machine is needed to process dry maggots into maggot flour. The second is to find a solution for long-distance delivery of fresh maggots. Maggots on a production scale are used to meet high market demand. For this reason, the distribution of fresh maggots over long distances can be done by providing special packaging equipped with sufficient air circulation. Live maggots need oxygen to live, so packaging that lacks air circulation can cause maggot death. In addition, cooling technology can be added to maintain the freshness of maggots.

The WT strategy reduces weaknesses and tries to avoid existing external threats, the strategy used is to carry out routine and scheduled sanitation in the maggot cultivation

process. Environmental conditions around the BSF maggot cultivation site need to be considered so that the quality of the maggots is better. A clean biopond will make maggots live comfortably and maggot fertilizer is also easier to separate (Kusumaningsih, 2024). Routine sanitation will also reduce unpleasant odors around the biopond and prevent the arrival of predators such as rats and lizards, so that maggot growth is maximized.

## CONCLUSION

Internal Factors of BSU Siliwangi Maggot Cultivation Business consist of Strengths and Weaknesses. Strength elements consist of Maggot cultivation is easy to do, Maggot Harvest Cycle is Relatively Fast, Maggot Cultivation Produces organic fertilizer (kascot). Weakness elements consist of Unstable Maggot Protein Content, Unpleasant Aroma Impact of Maggot Cultivation. External Factors of BSU Siliwangi Maggot Cultivation Business consist of Opportunities and Threats. Opportunity elements consist of Abundant Maggot Feed Availability in Bogor City, Solutions to Organic Waste Problems, Cheaper Animal Feed Costs Using Maggots. Threat elements consist of Natural Predators in BSF maggot cultivation, and Quickly Damaged Fresh Maggot Quality. Recommended alternative strategies consist of Increasing the production capacity of the Maggot cultivation business at BSU Siliwangi Bogor City, Utilizing Maggots as a source of protein in animal feed production, and maximizing organic waste produced by the community for maggot cultivation. Carrying out promotions to livestock farmers to use maggots as feed in the livestock cultivation process.

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