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# Business Development Formulation Using Business Model Canvas On B-Magg Environmentally Friendly Fish Pellets

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## Abstract

B-Magg as catfish feed with animal protein sources from Maggot BSF, this product was created because of the problem of the accumulation of organic waste and the high cost of fish feed, especially catfish. This business is also still classified as a household scale, so business development is needed for this study aims to design and visualize the B-Magg business development model using the Business Model Canvas (BMC) approach. This research uses a qualitative descriptive method with data collection techniques in the form of observation, interviews, and documentation studies. The results showed that B-Magg has the advantage of being able to reduce catfish farmers' production costs by 25.1%, environmental sustainability through organic waste processing, and contribution to community empowerment. Through the nine elements of BMC, the business is comprehensively mapped, ranging from customer segments, value propositions, distribution channels, customer relationships, to cost structures and revenue sources. B-Magg also contributes to the achievement of Sustainable Development Goals (SDGs) such as SDGs 8, 11, 12, 14, and 17 (Rahman et al., 2022). This research recommends strengthening multi-stakeholder cooperation and developing production capacity as long-term sustainability strategies.

## Keywords
Business Model Canvas1, Busines Development2, B-Magg3, and Maggots4.

## 1. Introduction
Indonesia is now facing a waste emergency situation, where based on data from the Ministry of Environment and Forestry's National Waste Management Information System (SIPSN) in 2024, the amount of waste generated by Indonesia reached 33,772,048.92 tons per year, with a management level that only reached 58.6% (SIPSN, 2025), this condition indicates that waste management is not optimal because more than 40% of waste is still unmanaged. One type of waste that dominates is organic waste, which is 63.37% of the total waste generation (SIPSN, 2024). This condition is also exacerbated by the higher population growth rate and the lack of community participation in managing waste from the source. In fact, the President of the Republic of Indonesia directly instructed the Coordinating Minister for Infrastructure and Regional Development and the Minister of Public Works (PU) to find an optimal solution regarding waste management (Metrotv.com, 2025). The accumulation of waste has triggered various social problems, environmental pollution and threatens public health (Gandhy et al., 2025).

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At the regional level, Bogor City is the largest contributor of waste in West Java, with a generation of 284,631.60 tons per year or about 779.81 tons per day. Of the total amount, as much as 40% of it is food waste (SIPSN, 2025). This condition also has an impact on the Galuga Temporary Landfill (TPAS Galuga) which is getting heavier and it is only a matter of time until the Galuga TPAS can no longer accommodate waste. This condition also encourages the Bogor City and Regency Governments to innovate, including processing waste into electricity and fertilizer through cross-regional collaboration (Sekretariat Daerah Kabupaten Bogor, 2025). This effort is the right step, but if only the government moves without any efforts to manage waste from the source, this solution will be less effective. Thus, a macro approach is not enough, there needs to be participation from the community, especially housewives and youth groups in waste management from the source. Based on these problems, a product emerged that helped process waste, especially organic waste into economically valuable products with the help of Maggot BSF, namely B-Magg, an environmentally friendly catfish feed using maggot animal protein sources that replace fishmeal.

Maggot is an organism that will turn into a fly with the Black Soldier Fly (BSF) or also known as the black soldier fly. This fly has a short life cycle, fast growth and is able to decompose 80% of organic waste, both vegetables, fruits, and food waste. Maggot has a crude protein content of 36.6%, lauric acid 49.18% with a high protein content making maggot an alternative feed for fisheries (Hardini & Gandhy, 2021). This product was made because of the problems experienced by catfish farmers, namely the high price of feed and the slow growth of catfish and the accumulation of organic waste, especially in Bogor City. The use of maggot as a protein source was chosen because maggot can reduce 80% of organic waste by bioconversion and has a high protein content so that it can accelerate the growth of catfish. This is reinforced by research conducted by (Hardini & Gandhy, 2021) which found that financially catfish cultivation using maggot supplementary feed is much more profitable than using 100% pellets, and if cultivating catfish with maggot can reduce 25% of production costs.

B-Magg is produced in Bogor City, precisely on Jalan Tawakal Kavling 11A. RT 003 RW 006, Bubulak Village, West Bogor District, Bogor City, West Java. Currently, the B-Magg business is still on a household scale with a total of 300 kg of pellets produced per month and a turnover of Rp. 3,000,000 per month. Given that this business is still in the MSME category, efforts are needed to develop this business further, so that it can provide even greater benefits. One of the efforts that can be made to create a strategic planning model is to use the Business Model Canvas (BMC). BMC is a framework that is used with the aim of compiling, identifying, and describing the business model of a company holistically (Dito et al., 2023; Rizan et al., 2023). BMC can provide benefits for MSMEs to be able to design, develop, and explain business models, because BMC can provide an understanding of the business, make strategic planning, identify opportunities and threats, make product development plans and customer service, and so on.

The use of BMC is also proven to have a significant impact, such as research conducted by (Rahayu et al., 2022), where the results of this study are solutions that can be used by business owners to be able to compete with similar competitors by expanding market reach on channel elements, attending business development training (value proposition), and increasing labor and opening new branches (key resources). In addition, there is also research from (Maddinsyah et al., 2020), which produces information that requires strategy development, strategy planning, organizational alignment, implementation, and monitoring and learning. Furthermore, research from (Mičieta et al., 2020), where the results of this study indicate that the application of the proposed solution can help companies achieve their goals and further development. Furthermore, research from (Sibalija et al., 2021) where BMC can be used in a health environment and can be considered further to develop the business. Based on the results of previous research, it is known that BMC can be used to develop business. For this reason, the purpose of this research is to design and visualize the development of business design using the Business Model Canvas (BMC) approach for B-Magg products of environmentally friendly catfish pellets.

## 1.1 Objectives

Based on the background that has been stated previously, it is known that B-Magg is a business that is on a household scale that needs to be improved because this business is not only oriented towards sales but on sustainability, for this reason the purpose of this study is to describe and design and visualize business design development using the Business Model Canvas (BMC) approach for B-Magg products environmentally friendly catfish pellets.

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# 2. Literature Review

## 2.1. Business Model Canvas (BMC)

Business model canvas or abbreviated as BMC is a framework that serves to design, identify, and visualize a business model or business (Harap et al., 2024). BMC itself consists of nine key elements that are interconnected so as to create a basic structure of the business model which is then visualized into a format that is easier to understand. By designing BMC, businesses can create business models that are more focused, innovative, and adaptive to market changes because the key elements of the business have been identified and structured (Harap et al., 2024). BMC itself consists of nine key elements that are combined to form a comprehensive framework. These key elements are customer segments, value proposition, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure. BMC elements have their own meaning, namely:

1. Customer Segments
   Market segments are groups of customers that are selected because they have the potential to choose products/services (Razabillah et al., 2023). A good understanding of who will become a potential customer is fundamental in a business (Dito et al., 2023). This is very important considering that products are made because of the problems experienced by consumers, and products are the solution to these problems (Gumilang et al., 2024). By knowing who the purpose of this product is, the company can develop marketing tactics that are suitable and attractive to each of these segments, so as to increase the chances of business success to attract customers and increase sales (Rizan et al., 2023). One analysis used to identify customer segments is through demographic analysis, which classifies the market based on demographic categories, such as age, gender, education level, income. In addition to demographics, markets can also be grouped by geographical, such as regions in a region and about social status (Dito et al., 2023).

2. Value Proposition
   Value proposition or also known as the main value is one of the important things in business, because there is no business that does not have competitors and to distinguish itself from competitors, a unique and different value is needed (Rahayu et al., 2022). Considering the value proportion is the most important element because it can make customers distinguish a product from the unique benefits and added value offered by a product (Rizan et al., 2023). The value proportion is a brief explanation in the form of a message with the aim of answering the question of why customers should use the products or services offered by a business. A clear and effective value proposition allows companies to build a strong brand and win competition in the market (Dito et al., 2023). The purpose of creating a value proportion is to help identify product benefits, facilitate the delivery of value messages to customers, help understand market segmentation.

3. Channels
   Channels are a company's efforts to communicate with consumers and their partners by focusing on the methods and processes of reaching customers by looking at their distribution channels (Adwiyah et al., 2021). Another opinion says that distribution is a company's effort to deliver its products or services to customers, with good distribution channels that can help companies reach potential customers effectively and efficiently (Harap et al., 2024). Thus, the distribution channel is an effort made by the company to connect and communicate the company's products and values to its market segmentation, so that appropriate and responsive media are needed to reach potential consumers.

4. Customer Relationship
   Relationship with customers is an element that explains the type of relationship the company has with the customer segment it will reach, the goal is to retain customers and consumers make repeated purchases so as to create consumer loyalty (Warnaningtyas, 2020). Relationships with customers are also related to paying attention to customer feedback and maintaining open communication, so that companies can evaluate their services and maintain customer satisfaction (Harap et al., 2024). There are several strategies to retain customers and maximize relationships with customers, namely relationship, retention, referral and recovery or known as 4R (Dito et al., 2023).

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a. Relationship. It is a strategy to build customer relationships by getting closer to customers, improving the quality of communication with customers, and striving to better understand and serve customers in order to gain consumer trust.
b. Retention. Is a strategy to maintain customer loyalty in the long term.
c. Referral. Where is the strategy to spread good and positive information about a product that comes from the satisfaction of its users or customers, this is related to Word of Mount (WOM).
d. Recovery. Because not all services provided can be accepted by all consumers, it is necessary to have feedback to be an evaluation material for the company, so that it can provide the best service for its consumers.

5. Revenue Streams
The source of revenue represents the revenue from all business activities obtained (Sibalija et al., 2021). Sources of revenue have the aim of understanding how companies generate revenue from selling products or services to their customers (Harap et al., 2024). Sources of income are needed as learning about how businesses identify and optimize potential sources of income which are expected to later develop effective business strategies by looking at the income sources of income in the business (Rizan et al., 2023).

6. Key Resources
Key resources are one of the nine elements in BMC which discusses the entire list of resources that should be owned and carefully planned by a business or company because they are related to business keys (Dito et al., 2023). Key resources have several assets including physical assets, financial assets, intellectual assets, and human assets (Rizan et al., 2023). With the identification of key data sources, business actors will get many benefits in the form of knowledge about the main resources that must exist in a business, starting from what resources will be needed in the business, in what way to get the necessary resources where later it will have an influence on the entire business model (Rizan et al., 2023).

7. Key Activities
Key activities refer to actions and processes that should be carried out by a business to produce and provide value to customers (Rizan et al., 2023). Key activities are also the activities of business people to be able to optimize their business planning with satisfactory results (Dito et al., 2023). Key activities include all activities carried out by the company both from product or service development to delivery to the end customer (Harap et al., 2024).

8. Key Partnership
Key partners refer to strategic relationships or collaborations formed by companies with external parties related to the business in order to optimize business operations, reduce risks, or obtain additional resources. According to (Harap et al., 2024), key partners can be raw material suppliers, distribution partners, technology partners, or strategic alliances that provide access to capabilities or markets that cannot be reached independently. This collaboration is important in the modern business era that demands efficiency, scalability, and rapid response to market changes. The existence of key partners allows companies to transfer non-core activities to more skilled parties, increase competitiveness, and expand market reach. Massa et al. (2021) also emphasize that successful partnerships are formed on the basis of trust and common vision (Rizan et al., 2023).

9. Cost Structure
Cost structure is the last but very important element in BMC (Figure 1), because this section describes all the costs incurred by the company to carry out its operations (Harap et al., 2024). The cost structure consists of fixed costs, variable costs, economies of scale, and economies of scope, etc (Sibalija et al., 2021). Understanding the cost structure thoroughly helps companies design operational efficiency strategies and maintain profitability. Companies should be able to map which costs are significant and how they affect marketing, production, and customer service strategies (Rizan et al., 2023).

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Figure 1. Busines Model Canvas Outline

### 2.2. Circular Economy

Circular economy, is one approach in economics that aims to reduce waste by maximizing resource utilization by keeping products, materials, and resources circulating in the economy for as long as possible (Mukhlishin, 2024). Waste can be managed through several activities such as limiting waste generation, recycling waste, and reusing waste, or termed 3R (reduce, reuse, recycle) (Bahtiar & Kamelia, 2023). Maggot itself is a form of circular economy utilization, because it helps process waste, especially organic waste that has no economic value, into products with economic value. B-Magg utilizes maggot as a source of protein for catfish pellet products that are environmentally friendly, so this business also applies the circular economy and applies green entrepreneurship.

### 2.3. Green Entrepreneurship

Green entrepreneurship is a business practice that focuses on creating, developing, and implementing innovative solutions that promote environmental friendliness and sustainability (Mondal et al., 2023). Green Entrepreneurship can assist in the environmental and economic development of a business, and aims to achieve economic benefits by minimizing negative impacts on the environment and contributing to sustainable development (Mukhlishin, 2024). B-Magg is also a part of green entrepreneurship considering that this business also prioritizes sustainability, especially environmental sustainability.

## 3. Methods

This type of research is descriptive research, using qualitative data. The object of this research is business development variables, and the location of this research is Jalan Tawakal Kavling 11A, RT 003 RW 006, Bubulak Village, West Bogor District, Bogor City, as the production location of B-Magg. The types and sources of data used in this study are primary data obtained directly from stakeholders by observation and interviews, and secondary data obtained from related literature both books, articles, journals (Gumilang et al., 2024). The data collection method used in this research is determined purposively or intentionally where the information is selected based on certain criteria, namely stakeholders in B-Magg. The data that has been obtained is then analyzed using the nine elements in the Business Model Canvas (BMC). The output of this research is a business improvement strategy for B-Magg in the form of BMC where the results of this research can be the basis for B-Magg to be able to develop its business (Widyowati et al., 2021).

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## 4. Data Collection

The data used for this research was obtained from observations to the B-Magg production site directly to monitor the production process of B-Magg pellets. In addition to observations, data collection is also carried out by conducting interviews to obtain valid data used to identify 9 components in BMC. In addition, literature studies were also carried out to find data from the best publications both books and journals (Gandhy et al., 2025; Gumilang & Patra, 2024).

## 5. Results and Discussion

B-Magg is a social enterprise initiative that carries a circular economy-based business model with a focus on the production of environmentally friendly catfish feed from Black Soldier Fly (BSF) Maggot. Initially, this business emerged from unrest due to the accumulation of high organic waste and the cost of fish feed in the freshwater aquaculture sector, especially in Minapolitan areas such as Ciseeng, Bogor Regency. B-Magg comes as an innovative solution that not only reduces the production costs of fish farmers, but also provides added value from organic waste, especially from Hotels, Restaurants and Canteens (HORECA). With an orientation towards the principle of sustainability, B-Magg not only offers quality products in the form of high-protein catfish pellets from BSF maggots, but also integrates elements of education, training, and multi-stakeholder collaboration in its production chain.

Currently, this business is on a household scale, with a capacity of 300 Kg per month and a turnover of Rp. 3,000,000 per month. With the main target market in the Ciseeng Minapolitan area (Figure 2), by processing organic waste into feed with high economic and nutritional value, B-Magg contributes to the achievement of several Sustainable Development Goals (SDGs), including SDGs 8 (Decent Work and Economic Growth), SDGs 11 (Sustainable Cities and Settlements), SDGs 12 (Responsible Consumption and Production), SDGs 14 (Life Below Water), and SDGs 17 (Partnership for Sustainable Development) (Rahman et al., 2022).


Figure 2. Busines Model Canvas of B-Magg

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### 5.1 Customer Segments

In accordance with the product, the main customer segmentations of B-Magg pellets are:

1. Catfish farmers in the Minapolitan area, especially Ciseeng, Bogor Regency.
2. Farmers Groups and Women Farmers Groups who also cultivate catfish, one of the problems that occur in Farmers Groups that cultivate catfish is the high cost of feed, then B-Magg Pellets can be a solution to the problem.
3. Fish feed sellers and distributors are also included in the target market because they can help distribute B-Magg products to more customers.

### 5.2 Customer Relationship

Good communication with customers is key in increasing loyalty and expanding market reach. As a form of implementation, B-Magg implements an active communication strategy to build close relationships with customers with this approach, B-Magg seeks to create sustainable and mutually beneficial relationships for both parties. The ways that are done are by:

1. Providing active communication channels, which takes the form of providing active media for discussions either in person or online.
2. Establishing regular communication both directly and through online media, where the form is to provide access to interact regularly to get the latest information about products and consultations related to their use.
3. B-Magg provides education and training programs aimed at increasing customer awareness and understanding of the benefits of organic waste management and maggot cultivation.

### 5.3 Chanels

B-Magg utilizes various distribution channels to reach customers, with this omnichannel approach, B-Magg can improve marketing efficiency and product distribution to various regions The channels are:

1. E-commerce platforms such as Shopee, given the era of digitalization and the shift in consumer behavior towards digital encourages the provision of e-commerce platforms.
2. Social media such as Facebook and Instagram, social media can be used to create branding, besides that on social media, especially Facebook, there are forums or communities of catfish farmers that can be used to help market products and increase brand awareness to attract more potential customers.
3. Fish farming communities and organizations are also an effective channel in introducing this product directly to those who are active in the fishing industry.

### 5.4 Value Proposition

B-Magg as an innovative catfish feed with animal protein sourced from BSF maggot has advantages compared to fish pellet products in general, with a circular economy-based business model, B-Magg contributes to reducing organic waste and creating a more environmentally friendly feed solution. In addition, B-Magg will also have an impact on SDGs 8 relating to Decent Work and Economic Growth, because this business will open new jobs that help empower the surrounding community and turn worthless organic waste into high economic value. In addition, this business also has an impact on SDGs 14 relating to life under water, by helping to reduce the use of fishmeal which pays less attention to fish life due to overfishing (Rahman et al., 2022). Explicitly, the advantages of B-Magg are as follows:

1. It has a high protein content so that it can increase fish growth more optimally, this is evidenced by research conducted by (Hardini & Gandhy, 2021).
2. The use of this feed as a substitute for conventional pellet feed can also reduce production costs by up to 25.1%, making it an economical solution for fish farmers. This has also been researched by (Hardini & Gandhy, 2021) where if farmers use 50% BSF maggot, and 50% conventional feed will reduce production costs by 25.1%.
3. Maggot-based feed is proven to contain 49.18% lauric acid which can improve the health and productivity of catfish so that it can accelerate growth and increase cultivation productivity. lauric acid.

### 5.5 Key Activities

B-Magg carries out a series of key activities in its business operations. These operations will impact SDG 11 on sustainable Cities and Communities, as the business contributes to better waste management and creates circular economy solutions that support environmental and community sustainability.

1. Collecting organic waste from Hotel, Restaurant and Café Owners or from the Environmental Agency which will later be used as a feed source for BSF maggots.

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2. Cultivating Maggot BSF, in this second key activity the collected waste will be given to maggot BFS and will decompose for 3 days.
3. Processing BFS Maggot into feed, after about 14 days the maggot will change from egg to pupa or adult maggot which will then be harvested and processed into catfish pellets containing animal protein from maggot.
4. Product Packaging, The next process is product packaging into 5 kg per sack.
5. Marketing the Product, after the product is packaged, the product will be marketed through E-Commerce Shopee and Social Media Facebook, Instagram and offline sales. In addition, education on the benefits of using maggot as fish feed continues to be carried out to increase customer awareness of more sustainable solutions.

### 5.6 Key Resources

B-Magg has various key resources that support the sustainability of its business operations, these key resources are:

1. Feed consumed by BSF maggots to accelerate growth and production and increase the protein content of the maggots.
2. Complete maggot pellet production equipment such as BSF maggot cultivation sets, flour milling machines, pellet molding machines and ovens are important assets for smooth maggot cultivation.
3. A strategic and controlled cultivation location is needed so that production can run optimally and efficiently, besides that a strategic location is needed to minimize pest attacks in the form of rats, lizards and complaints from local residents.
4. The expertise of human resources in maggot processing is a key factor in ensuring that the quality of the products produced meets the standards of market needs.

### 5.7 Key Partner

B-Magg establishes partnerships with various parties to support its business operations. All of the following Key Partners can have an impact on SDGs 12 relating to Sustainable Consumption and Production, because from the beginning of production to harvest will leave no waste (Zero Waste), and SDGs 17 relating to Partnerships to Achieve Goals, because to overcome the accumulation of organic waste requires Pentahelix collaboration, and that collaboration is created in this business (Rahman et al., 2022). The partners of B-Magg are:

1. Owners of Hotels, Restaurants, and Cafes (HORECA) in the city of Bogor will produce organic waste in the form of food waste and will be processed as raw material for BSF maggot cultivation.
2. The Bogor City Environment Office participates in supporting the sustainability of this business through policies related to organic waste management, and can also become a supplier of organic waste.
3. Bank Sampah Unit (BSU) in Bogor City, one of which is BSU Siliwangi, which is a partner in business, considering that BSU Siliwangi can be a partner in business in terms of waste suppliers and related to maggot production.
4. Catfish Feed Sellers and Catfish Farmers are also partners in this business, considering that they are one of the main market segments and can help with marketing and distribution of B-Magg products to end customers.
5. The environmental care community also plays an important role in educating the public about the benefits of maggot cultivation as a waste reduction solution.
6. Farmer groups and women farmer groups that cultivate maggot can also be part of the maggot-based fish feed production and distribution chain and become partners for the socialization of organic waste management.

### 5.8 Revenue Streams

Sources of income in the B-Magg business come from various things, namely:

1. Sales of catfish feed distributed directly or through e-commerce and social media.
2. Sales of Kasgot from Maggot BFS cultivation, kasgot itself is a substitute product, where kasgot is the digestive residue produced by BSF maggot larvae which can be used as an organic fertilizer that can increase soil fertility or planting media.
3. Pre-sale of BSF maggot pupae to farmers who want to cultivate their own.
4. The maggot cultivation training service is also an additional source of income by offering education to private companies or individuals who are interested in starting a business or need education on organic waste management.

### 5.9 Cost Structure

The cost structure of the B-Magg business consists of the following costs:

1. Production costs that include organic waste management, maggot cultivation, and feed production.
2. Marketing costs are also an important component as digital marketing and distribution strategies require the right investment for the product to be widely recognized.

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3. Labor costs also need to be taken into account to ensure a smooth production process and daily operations.
4. Community training and education, B-Magg also allocates funds from profits to increase their participation in maggot cultivation as an additional source of income.

## 6. Conclusion

Based on the results of the analysis conducted using the nine main elements of BMC, a comprehensive picture of the B-Magg business model based on a circular economy and focused on environmental sustainability is known. B-Magg has main customer segmentations such as catfish farmers in the Ciseeng Minapolitan Area, farmer groups, and feed distributors. The value proposition offered by B-Magg is not only in the form of feed cost efficiency and increased fish growth, but also a contribution to the reduction of organic waste through the utilization of BSF maggot as the main ingredient of feed. In supporting the delivery of value to customers, B-Magg utilizes digital distribution channels such as e-commerce and social media, and establishes customer relationships that are educative and communicative. B-Magg's main activities include organic waste collection, maggot cultivation, feed production, and customer education. The entire process is supported by key resources such as production equipment, strategic locations, and HR expertise. To strengthen the value chain, B-Magg builds partnerships with various parties, such as HORECA actors, the Environmental Agency, Bank Sampah Unit, and environmental care communities. Sources of income are obtained from the sale of feed, maggot, maggot pre-pupae, and cultivation training. Meanwhile, the cost structure consists of production, marketing, labor, and community training costs. With this BMC approach, it can be concluded that the B-Magg business model has fulfilled the main elements of modern business planning, and has great potential to be further developed to increase the scale of the business and its contribution to the achievement of the Sustainable Development Goals (SDGs), especially SDGs 8, 11, 12, 14, and 17.

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