

COMMERCIALIZATION OF HYDROGEL FERTILIZER SLOW RELEASE BASED ON ORGANIC WASTE, MICROBES, AND MYCORRHIZAL FOR FLORICULTURE

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Abstract: Floriculture production and productivity are increasing approximately 27% per year. However, its productivity still faces problems such as unfulfilled nutrients, which overcome by fertilization. Organic fertilizers from banana weevils, tofu pulp, palm liquid waste, and rice water can continuously release macro and micronutrients and increase soil microbes' diversity. Currently, no fertilizer can collect all these benefits, so is present. This activity aims to commercialize Cobio by optimizing the use of organic waste, microbes, and mycorrhizal that compete in the market. The method used is quantitative descriptive as a reference in conducting four stages: the market opportunity projection, the production stage, the marketing and distribution stage, and the evaluation stage. Data obtained after achieving sales targets in July - August 2021 and further September - October 2021 with total products sold reaching 1.263 pcs. In achieving this target, Cobio utilizes social media and marketplaces to communicate with consumers. One of which is WhatsApp Business as a marketing channel with the most significant sales figure of 918 pcs. Cobio's sales distribution has also reached 13 provinces in Indonesia show public interest in this product. Cobio has an R/C value of 1,59, which indicates its future sustainability prospects.

Keywords: commercialization, floriculture, hydrogel, mycorrhizal, organic waste

Abstrak: Produksi dan produktivitas florikultura meningkat sekitar 27% per tahun. Namun, produktivitasnya masih menghadapi permasalahan yakni tidak terpenuhinya unsur hara yang dapat diatasi dengan pemupukan. Pupuk organik dari bonggol pisang, ampas tahu, limbah cair aren, dan air cucian beras dapat menyumbangkan hara makro dan mikro secara kontinu, serta mampu meningkatkan diversitas mikrob tanah. Saat ini, belum ada pupuk yang mampu menghimpun seluruh manfaat tersebut sehingga hadirlah Cobio. Tujuan kegiatan ini adalah mengkomersialisasikan Cobio dengan mengoptimalkan sumber daya limbah organik, mikroba, dan mikoriza yang mampu bersaing di pasar. Metode yang digunakan adalah deskriptif kuantitatif sebagai acuan dalam melakukan empat tahapan mulai dari tahap proyeksi peluang pasar, produksi, pemasaran dan distribusi, serta evaluasi. Data target penjualan produk pada Juli - Agustus 2021 dan keberlanjutan penjualan pada September - Oktober 2021 dengan total produk terjual mencapai 1.263 kemasan. Dalam mencapai target tersebut, Cobio menggunakan media sosial salah satunya WhatsApp Business dan marketplace salah satunya Shopee sebagai sarana pemasaran dan komunikasi sebagai saluran pemasaran dengan angka penjualan terbesar sebanyak 918 kemasan. Distribusi penjualan Cobio juga telah mencapai 13 provinsi di Indonesia yang menunjukkan ketertarikan masyarakat terhadap produk ini. Cobio memiliki nilai R/C sebesar 1,59 yang menunjukkan prospek keberlanjutan ke depannya.

Kata kunci: florikultura, hidrogel, komersialisasi, limbah organik, mikoriza

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INTRODUCTION

Indonesia is the country with the largest diversity of floriculture or ornamental plants in the world with a total of 25% of the total number of flowers in the world (Kusmana and Hikmat, 2015). Based on data from the Directorate General of Horticulture, Ministry of Agriculture in 2017, the production and productivity of floriculture on average increased by about 27% per year. The results of the study by Simbolon et al. (2021) show that public interest in floriculture is very high with variations in the types planted quite widely. This has implications for the increasing demand for floriculture in Indonesia.

On the other hand, the maintenance of floriculture in the community is still faced with various problems both due to disease and unfulfilled nutrients for plants. An increase in nutrients in the soil and plants can be done by fertilization (Fauziah et al. 2018). However, the continuous use of inorganic fertilizers can make the soil hard, prone to erosion, and salinization, so the elements P and N are water-purified and volatilized by air (Pahalvi et al. 2021). Inorganic fertilizers in the form of liquid and powder are relatively fast released so that they are easily washed and not absorbed by plants. In addition, the price of inorganic fertilizers is getting more expensive and fertilizer raw materials are dwindling (Lestari and Muryanto, 2018).

The potential of fertilizer raw materials sourced from organic waste can be utilized to improve the quality of soil and plants. Organic waste that is widely found in the community includes banana weevils, tofu pulp, rice water, and palm liquid waste that can be processed into organic fertilizers. West Java is the second largest banana production center in Indonesia as much as 1.13 million tons (BPS, 2018). Banana production is directly proportional to waste products such as banana weevil. Banana weevils contain microbes such as *Bacillus* sp., *Aeromonas* sp., *Aspergillus niger*, *Lactobacillus* sp., *Saccharomyces*, *Actinomycetes*, *Acetobacter acetic*, photosynthetic microbes, and cellulolytic microbes that remodel organic matter and have functioned as a bio-activator (Indrasah et al. 2018).

Other organic waste such as tofu pulp, rice laundry water, and palm liquid waste can also be utilized optimally. According to Sunarsih et al. (2018), waste dregs tofu with bio activators can be used as organic fertilizers in plants. Lalla (2018) also stated that rice

laundry water has a real effect on the increase in crop height. Fertilizers from palm liquid waste fermented with microbes can produce high nutrients (Nurcahyo et al. 2015).

Currently, there are several fertilizer products on the market with various shapes and sizes. For example, Mikrohara GA as a liquid fertilizer to increase the growth of leaves and flowers, MAP as a granular fertilizer to stimulate initial growth, Micro Hydro Plus in the form of hydrogel provides micronutrients only. However, there is still no organic fertilizer with similar benefits and forms that prioritize the practicality of use, fertilizer content, and raw materials used.

By observing the occurrence of problems in the provision of organic fertilizers and remembering potential resources, organic waste-based fertilizer products with hydrogel form can be the solution. Hydrogels are polymers capable of absorbing and releasing water (Zamani et al. 2010). Hydrogels act as superabsorbents in slow-release fertilizers that provide benefits such as increasing fertilizer efficiency and retention, reducing the rate of fertilizer loss, stimulating better nutrient absorption, supplying nutrients sustainably, and reducing fertilization frequency (Rabat et al. 2016; Konzen et al. 2017). Fertilizers made from organic waste are also enriched with mycorrhizal to optimize the absorption function of soil nutrients. Mycorrhizal inoculation in plants is able to increase the vegetative growth of plants and increase the number of flowers and the inflorescence (Crisan et al. 2017; Noor et al. 2019; Vosnjak et al. 2021).

The combination of the above resources forms a product developed by the Student Creativity Program (PKM) in the field of entrepreneurship name "Cobio". Cobio has promising business opportunities and can compete with competitors in the same field. This activity aims to commercialize new products in the form of high-competitive fertilizers by utilizing organic waste, microbes, and hydrogel-shaped mycorrhizal for floriculture.

METHODS

Data collection and processing were carried out from June 1st to October 9th, 2021, in Bogor, Indonesia. Primary data obtained from respondents were targeted to determine the craze in caring for ornamental plants

and preferences for fertilizers by the public with some criteria based in Indonesia with an age range of 20 – 40 years. The respondents consist of 55 respondents obtained through disseminating questionnaires through Google Form. The top-down Total Available Market (TAM), Served Available Market (SAM), and Share of Market (SOM) approaches are also done using secondary data, namely the number of productive age population to determine the target population, the number of consumers that can be reached, and the target consumers who can be served.

The methods in this activity are summarized with a quantitative descriptive approach as a reference at the projection stage of market opportunities, production, marketing and distribution, and the stage of evaluation and development of business.

The framework of the research can be seen in Figure 1. The first stage is to conduct a market opportunity analysis to find out the market opportunities open to Cobio. After knowing the market's potential is quite a lot, then prepare all materials and production tools. Production is carried out in two cities, Pontianak and Bogor, Indonesia. Then, Cobio is packaged with practical and durable packaging. After Cobio is finished in production, quality control will be carried out to see the quality of the product that is ready to be circulated. If the quality passes the test, it can be directly marketed. Meanwhile, it will be reproduced if it does not pass the test. Marketing is done through various media owned by Cobio online and online. Then distributed throughout Indonesia through couriers or expeditions. Hopefully, Cobio can be commercialized more broadly as the sustainability of Cobio.

Production Stage

The production stage includes the provision of tools and materials as well as product manufacturing procedures. The tools used are blenders, 5 L jellies, fabrics, sieves, buckets, wood stirrers, thermometers, and molds. The materials used are banana weevils, tofu pulp, palm liquid waste, rice laundry water, MZ 2000 mycorrhizal, sodium alginate, and water.

The production process begins with the cleaning and smoothing of banana weevils, the process of printing products, and packaging. Production begins with the enumeration of 500 g of banana weevil into smaller sizes with a blender, then mixed with 500 g of tofu pulp, 500 mL of rice laundry water, and 500 g of palm liquid waste. The next process is a fermentation of the waste mixture in a cloth-covered jeriken for 5 days. Furthermore, the process of making hydrogel media is made by mixing 7.5 g of sodium alginate from *Sargassum* sp. with 1,000 mL of water.

A total of 1 g of MZ 2000 and 3 mL of processed waste mycorrhizal are inserted into a round mold 1 cm in diameter, and 3 g of MZ 2000 and 10 mL mycorrhizal are inserted into a round mold 3 cm in diameter. Hydrogels that have thickened with a temperature of 45°C are put into the mold, then the hydrogel material is left to cool. Packaging of the product is done by inserting hydrogel fertilizer and silica gel to buffer moisture. Cobio products are manufactured by Bio Eco Corporation.

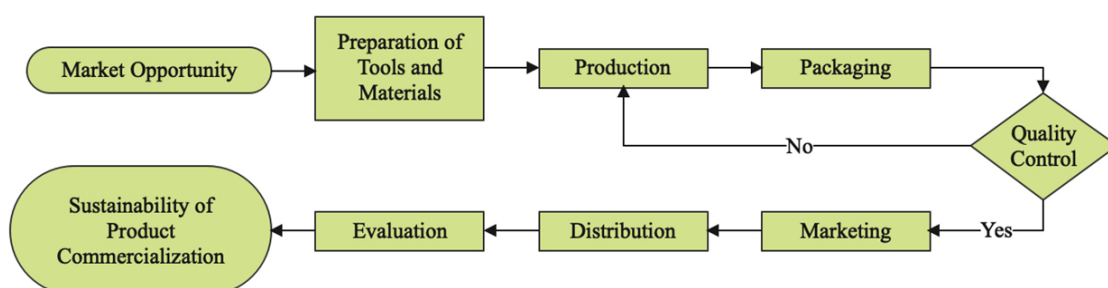


Figure 1. Flow diagram of the procedure of carrying out activities starting from the market opportunity to sustainability of product commercialization

Marketing and Distribution Stage

The marketing and distribution stage is done by analyzing Segmenting, Targeting, and Positioning (STP) and the marketing mix. Segmenting is the process of grouping the market based on the characteristics and needs of consumers. Targeting is the process of choosing the market segment to go to. Positioning is related to the design of products in order to create an impression in the memory of consumers (Palmatier and Sridhar, 2017). The marketing mix 4Ps includes aspects of product, price, place, and promotion as well as product distribution using expeditions (couriers). The 4Ps marketing mix is built around developing a marketing strategy for a physical product, given a number of factors, including what consumers are looking for, how businesses can meet their needs with a product or service, how they differ from their competitors, and more. 4Ps gives businesses greater insight and understanding, enabling them to develop more precise and ideally more effective strategies (UKEssays, 2018).

Evaluation and Business Development Stage

Evaluation is conducted through questionnaire surveys using Google Form media on consumers to find out and analyze consumer profiles, product reach, and consumer satisfaction as considerations of business sustainability. Steps in business sustainability are detailed in several stages, namely short, medium, and long term.

RESULTS

Market Opportunity

Calculation of market opportunities using TAM, SAM, and SOM approaches on a top-down basis through literature studies. Based on data from BPS (2020), the number of people of productive age is as many as 191,088,210 people. Cobio's survey of 55 respondents obtained 88% of respondents of productive age like to care for ornamental plants and 67.3% of respondents prefer to use organic fertilizers. Thus, TAM or target population of 168,157,625 people (88% of the population of productive age) and SAM or the number of consumers that can be reached is 113,170,081 people (67.3% of TAM).

According to Destiariono (2019), the structure, conduct, and performance (SCP) analysis of the fertilizer industry is included in the perfect competition market or red ocean strategy with a market penetration rate of 0.1%. SOM highlights how many consumers can be served and made the main reference target of 113.170 people. In addition, supported by the results of the market survey that 86.7% or 26 out of 30 respondents are interested in buying Cobio products because it can solve the problems faced in caring for ornamental plants.

Marketing

Assessment is done by determining marketing strategies through target market analysis and 4Ps marketing mix to answer consumer needs.

1. STP analysis

Segmenting

Segmentation of Cobio products is a middle-class community that likes to grow crops, especially floriculture and is aware of the importance of maintaining the environment. Segmentation of geographical and psychographic criteria is a society located in Indonesia that requires multifunctional and practical fertilizer products when used.

Targeting

The target of product distribution is focused on the Business to Customer (B2C) approach to Indonesian people aged 18-60 years who have a lifestyle that likes to care for floriculture practically.

Positioning

Cobio's product positioned as a slow-release hydrogel fertilizer product with five functional benefits includes fertilizing the soil, expanding nutrient absorption areas, maintaining plant health, stimulating flower growth, and as a slow release fertilizer for soil and plants in one product. In addition, this product is practical to use because it is packaged in hydrogel form and is environmentally friendly. Cobio has an effective content to reduce floriculture problems and its effectiveness is higher compared to other products at affordable prices.

2. Marketing Mix

Product

Cobio products are functional slow-release hydrogel fertilizers packed in zip lock packaging equipped with silica gel bags (Figure 2). Ziplock packaging is chosen on the basis of practicality, economic value, and more flexibility in storing fertilizer as needed if fertilizer is still left. Silica gel bags are placed inside the packaging at the bottom to keep the fertilizer moist. Packaging is offered in two sizes, namely 500 g and 1,000 g. Cobio fertilizer is sprinkled on the soil as much as 1/3 part of the plant pot and the other 2/3 part is filled by the soil. Fertilizer can be routinely given every two months because it utilizes the potential of mycorrhizal and the content of organic matter decomposed in fertilizer.

Cobio contains macro and micronutrients that are beneficial for the growth and development of floriculture listed in Table 1 which is flattened because it has the same proportion of composition. Palm liquid limbah contains a large element C for microbial growth. Macronutrients namely N, P, K, S, and Mg are sourced from banana weevils, rice laundry water, and tofu waste. In addition, these wastes also contain micro-elements, namely Fe. Cobio nutrients are able to meet the optimum conditions of nutrients needed as recommended by Sirin (2011) which states the most optimal nutrient concentration for floriculture is N (0.0150%), P (0.0031%), K (0.0234%), S (0.0015%), Fe (0.008%), and Mg (0.003%). The ingredients in Cobio have also fulfilled Regulation of Ministry of Agriculture No. 70 on 2011 on organic soil destruction and arbuscular endomikoriza and can be continued with the registration of SNI which refers to Regulation of Ministry of Agriculture No. 1 on 2019.

Fertilizer products currently exist in the market in various forms and sizes, but Cobio comes as organic fertilizer by prioritizing the practicality of using hydrogels, fertilizer nutrient content, and raw materials used. Currently, there are no similar products with similar benefits and forms so Cobio has a great opportunity with uniqueness in terms of innovation and functional benefits of products with comparisons that can be seen in Table 2.

Price

Cobio has two variations in packaging sizes. Size 500 g sold for Rp12,000 and size 1.000 g for Rp20,000. Pricing is based on the target market taking into account competitors and the cost of production (HPP). Cobio production house is located in two locations, namely in Bogor and Pontianak. Distribution of Cobio products is done through expedition services (couriers).

Promotion

Cobio promotion is done online and offline. Online promotion is done through instagram social media (@cobio.official), Facebook (Cobio ID), marketplace Shopee (cobio.official), and Tokopedia (Cobio Official). Cobio's followers on social media spread throughout Indonesia, ranging from Bogor, Jakarta, Depok, Bandung, Pontianak, and others. In addition, Cobio has also been published on digital media that can be accessed at <https://ipb.link/publikasi-cobio>.

Promotion is done through the creation of content marketing and soft-selling to the community of ornamental plant lovers on Facebook. According to Pertiwi and Gusfa (2018), content marketing affects brand awareness that can attract consumers by consistently making content relevant to consumer behavior. Soft-selling can be applied to make the product the main choice by consumers when looking for products to be purchased with the advantages that continue to be delivered (Nursatyo and Rosliani, 2018).



Figure 2. Cobio products (a) and Cobio products (b)

Table 1. Important minerals contained in local microorganisms are equivalent to Cobio

Womb	C	N	S	C/N	Fe	K	Mg	P
Banana weevil (Kesumangwati, 2015; Inrianti et al. 2019)	31.48%	1.78%	0.03%	31.5	0.04%	1.59%	14.25%	0.40%
Rice laundry water (Citra et al. 2012)	-	0.02%	0.03%	-	0.04%	0.02%	14.25%	16.31%
Palm liquid waste (Kardiyono, 2010)	78.51%	-	-	-	-	-	-	1.37%
Waste tofu (Kristin, 2018)	26.92%	1.24%	-	21.1	1%	1.34%	-	5.54%

Table 2. Comparison of Cobio fertilizer with other fertilizers

Product	Types	Use	Benefit	Price
Mikrohara GA	Fall	Once every 2-3 days	Promotes the growth of leaves and flowers	40,000/ 500 mL
MAP	Granular	1-2 months	Stimulates early growth	20,000/ 500 g
Micro Hydro More	Hydrogel	1-2 months	Provides complete micronutrients for plant growth	15,000/ 500 g
Cobio	Hydrogel	Once every 2 months	Provide macro and micronutrients for plants, increase plant resistance to pathogens and toxic compounds of heavy metals, increase the production of hormones and growing regulatory substances, and improve soil structure and aggregation through the influence of hyphae	12,000/ 500 g

Promotional strategies are also carried out through marketplaces with free shipping fee schemes, discounts on certain days, endorsements, paid to advertise, holding giveaways, and consumer satisfaction surveys. According to Sfenrianto et al. (2018), the Indonesian marketplace has a positive effect on consumer confidence so as to support purchasing decisions. Offline promotion is done by word of mouth between communities and consumers who have already purchased Cobio products. This is evidenced by the educative content uploaded on social media and testimonials provided by Cobio customers. According to Joesyiana (2018), word of mouth has a significant influence on consumer purchasing decisions on social media or marketplaces.

Place

Distribution of Cobio products is done hybrid, orders are made through social media namely WhatsApp Business, and marketplaces namely Shopee and Tokopedia. Delivery of products is done through expedition services by payment method through Cash on Delivery (COD), e-wallet, and interbank transfer.

Evaluation

The evaluation stage is conducted to review the effectiveness of commercialization of Cobio products as seen from product sales, consumer satisfaction

surveys, business sustainability analysis, business development potential, and intellectual property rights achievements.

Product Sales

The amount of Cobio sales achieved from the beginning of production to the sustainability of the current business can be seen in Figure 3. The rising sales figures are driving Bio Eco Corporation to strive to increase production capacity. Therefore, the company recruits one part-time workforce to help the production process. The company also buys supporting tools in the form of smoothing machines. The existence of these two aspects can help companies meet the growing consumer orders.

Sales began on July 11 with a Pre-Order (PO) system until October 9, 2021 with a total of 1,263 packages sold. Based on the marketing channels used, the largest sales figures were achieved through WhatsApp Business shown in Figure 4 which reached 918 packagings. This is because the largest target market is currently in the Facebook community and is done soft-selling by directing product purchases through WhatsApp Business.

The distribution of Cobio has now reached several islands in Indonesia listed on Figure 5, including Sumatra, Java, Kalimantan, and Sulawesi, especially in

The Greater Jakarta (Jakarta, Bogor, Depok, Tangerang, and Bekasi). This shows that online promotional channels through social media and marketplaces are effective.

Consumer Satisfaction Survey

The consumer satisfaction survey was conducted on 100 selected respondents as the representatives both for the size of 500 g or 1,000 g. This survey is targeted at respondents who have made a purchase once to more than twice. Most respondents by occupation were Self-Employed (30 respondents), Housewives

(26 respondents), Students / Students (13 respondents), State Civil Apparats (11 respondents), and Others (20 respondents) with the majority of the income of Rp1,500,001 - Rp3,000,000. Consumer profiles based on age level can be seen in Figure 6.

Based on the results of the consumer satisfaction survey yang terdiri dari 4 tingkatan, 64 consumers expressed “very satisfied”, 23 consumers expressed “satisfied”, 9 consumers expressed “quite satisfied” and 4 consumers expressed “not satisfied” which can be seen in Figure 7.

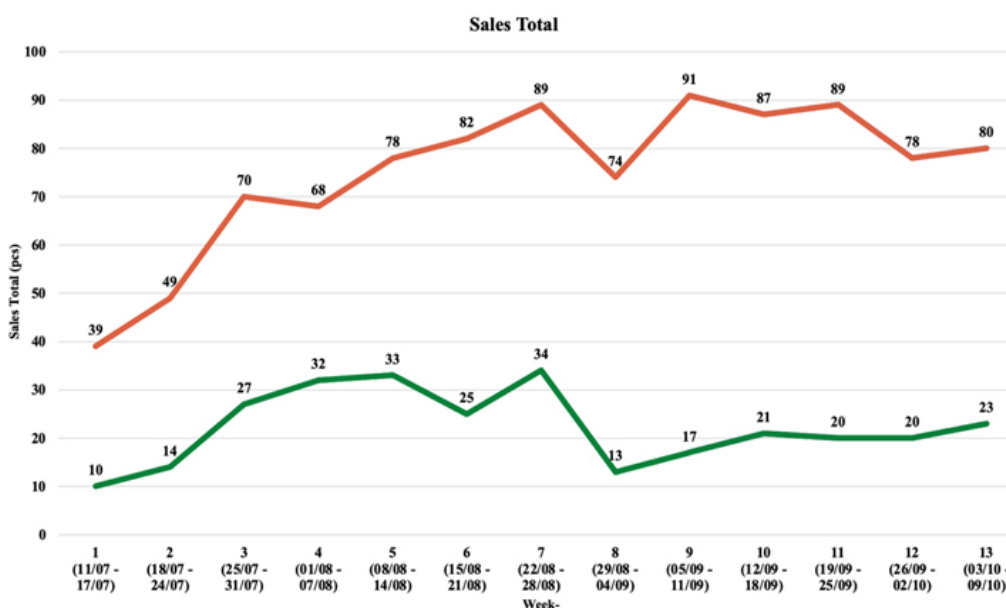


Figure 3. Cobio sales graph of 500 g (-) and 1,000 g (-)

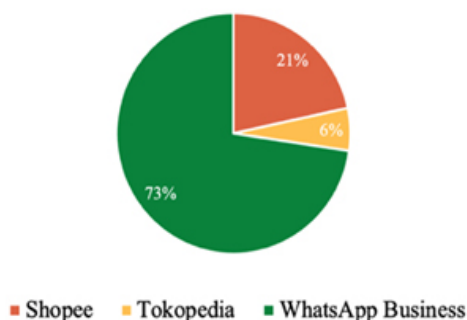


Figure 4. Graph of cobio sales based on media

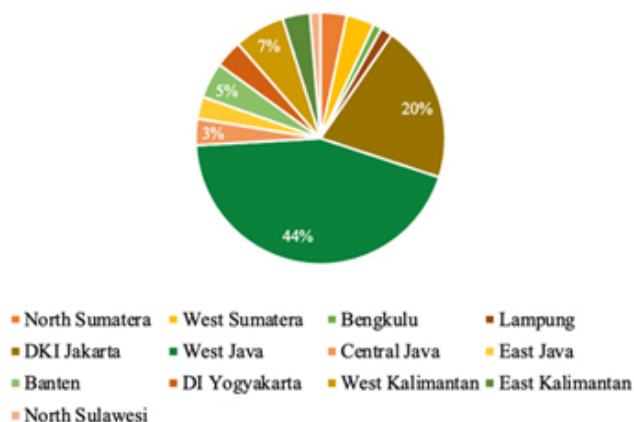


Figure 5. Cobio scope graph by consumer distribution region

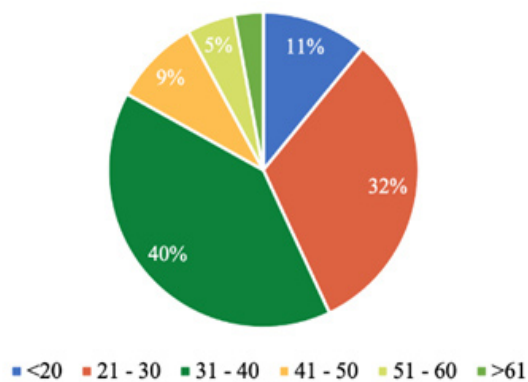


Figure 6. Cobio consumer graph by age level

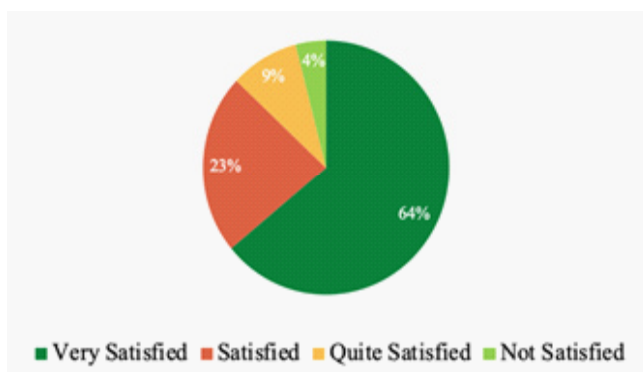


Figure 7. Cobio consumer satisfaction graph

Business Sustainability Analysis

Based on the results of financial calculations, Cobio is a business with promising prospects in terms of sales projection data and financial analysis that has been done in Table 3. Financial analysis was conducted over a period of 4 months with a total production of 974 pcs of 500 g packaging and 289 pcs of 1,000 g packaging.

The R/C indicator shows a calculation of 1.59 which means one million rupiahs issued will get a receipt of one million five hundred and ninety thousand rupiahs. If the R/C is more than one, then the business is worth developing with a return on capital for 24 days. The analysis shows Cobio has promising prospects with the cash flow projections on Table 4.

Business Development Potential

Cobio products have good prospects in terms of presentation, packaging, texture, and benefits as a

functional organic fertilizer supported by the results of satisfaction surveys by consumers so that it can be the initial capital in developing this business. Cobio supports the 8th, 12th, and 15th, Sustainable Development Goals (SDGs), namely jobs and economic growth, sustainable consumption and production, and safeguards the terrestrial ecosystem as Cobio adds new jobs and utilizes untapped organic waste optimally.

Sustainability of Cobio is also reviewed from various strategies that can be applied consists of short, medium, and long-term strategies. Short-term strategies will be projected over the next 1 - 2 years including the creation of floriculture fan communities, permanent business partners for the provision of raw materials, marketing throughout Indonesia, as well as certification in accordance with the Indonesian National Standard (SNI) and product patents to maintain consumer confidence in Cobio.

Medium-term strategy will be projected over the next 3 - 5 years includes the establishment of CV / PT, development of product differentiation, expansion of business partners and cooperation programs with government and private agencies, and export marketing to the Southeast Asia region. Another strategy is to develop other waste-based product innovations for floriculture so that it can help solve environmental problems.

Long-term strategy will be projected over the next >5 years is the establishment of a factory with the latest technology facilities, business development with IoT support, innovation in various aspects of production, distribution, marketing, and export marketing to various continents in the development of other waste-based products for floriculture and other crops.

Intellectual Property Rights

Cobio has filed for patent registration on August 20, 2021, to protect innovation products that have been created with patent application number P00202106523 with the invention title "Composition and Process of Making Slow-Release Hydrogel Organic Fertilizer Based on Organic Waste and Mikoriza".

Table 3. Cobio's financial analysis deals with business viability

Financial analysis	
Sales	974 packs (500 g) and 289 packs (1,000 g)
HPP	Rp6,730.00 (500 g) and Rp 15,121.00 (1,000 g)
Income	Rp17.468.000.00
Profit	Rp6,542,700.00
BEP Unit	145 packs (500 g) and 105 packs (1,000 g)
BEP Rupiah	Rp1,734,136.00 (500 g) and Rp2,034,720.00 (1,000 g)
R/C Ratio	1,59
PP	0.2 (24 days)

Table 4. Cobio's cash flow projections over the next 3 years

Bio Eco Corporation			
Cash Flow Projections			
Information	Year 1	Year 2	Year 3
Cash inflows			
Capital	Rp10,000,000		
Cobio Sales 500 g	Rp36,000,000	Rp46,080,000	Rp58,982,400
Cobio Sales 1.000 g	Rp18,000,000	Rp23,040,000	Rp29,491,200
Total cash inflows	Rp64,000,000	Rp69,120,000	Rp88,473,600
Cash outflow			
Tool Cost	Rp5,000,000		
Cost of Raw Materials	Rp20,000,000	Rp25,600,000	Rp32,768,000
Transportation Costs	Rp850,000	Rp1,088,000	Rp1,392,640
Marketing Costs	Rp1,500,000	Rp1,920,000	Rp2,457,600
Labor Costs	Rp6,000,000	Rp7,680,000	Rp9,830,400
Cost of Electricity and Water	Rp500,000	Rp640,000	Rp819,200
Other Costs	Rp1,000,000	Rp1,280,000	Rp1,638,400
Depreciation Expenses	Rp200,000	Rp256,000	Rp327,680
Total cash outflow	Rp35,050,000	Rp38,464,000	Rp49,233,920
Net cash flow	Rp28,950,000	Rp30,656,000	Rp39,239,680
Early-year cash balance	Rp8,500,000	Rp37,450,000	Rp68,106,000
Year-end cash balance	Rp37,450,000	Rp68,106,000	Rp107,345,680

Manajerial Implication

Based on the results of identifying the characteristics of Cobio target consumers to the decision to purchase fertilizer products, problems experienced by consumers who like floriculture, as well as the response from the respondents related with marketing mix, resulting in several strategic recommendations for Cobio based on priority, (1) using organic waste as fertilizer; (2) increase the amount of educational content on social media, especially on Instagram and WhatsApp Business; (3) utilizing the marketplace, especially Shopee and Tokopedia; and (4) target and form floricultural communities.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Cobio is the first slow-release hydrogel product available in the market by optimizing organic waste and has been successfully commercialized by Bio Eco Corporation with a total product sales of 1.263 packagings. Product sale have reached 13 provinces in Indonesia and the majority of consumers are aged between 31 - 40 years old. The most optimal marketing media is *content marketing* and WhatsApp Business is the most widely used marketing channel for bookings. Based on business sustainability analysis, Cobio deserves to be developed with an R / C value indicator of 1.59 in terms of financials.

Recommendations

Cobio's sustainability prospects are very large in terms of raw material availability, market demand, and consumer satisfaction. Before reaching a wider market, an SNI test is needed to ensure the quality of Cobio. In addition, Research and Development (R&D) and Quality Control are needed to ensure optimal product quality reaches consumers. Furthermore, it is necessary to establish partners with raw material suppliers to ensure resource availability and improve production technology when massively produced.

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