



PRODUCT DEVELOPMENT STRATEGY FOR ESSENTIAL OIL MADE FROM JASMINE, CANANGA FLOWERS, AND ROSES IN BANJAR REGENCY OF SOUTH KALIMANTAN

Heri Soedarmanto ¹, Rabiatul Adawiyah ¹, Nur Diana ², Evy Setiaati ³,
Yuniati ⁴, Fauzia Ayu Nurhany ⁴

⁽¹⁾ Lecturer of Mechanical Engineering at Politeknik Negeri Banjarmasin

⁽²⁾ Farmers of jasmine, Cananga flowers, and roses

⁽³⁾ Center for Standardization and Industrial Services – Banjarbaru

⁽⁴⁾ Agricultural Extension Center– Karang Intan

Abstract

Some residents of Banjar Regency, South Kalimantan Province, Indonesia depend on ornamental plants as their livelihoods; they plant jasmine (*Jasminum sambac*), roses (*Rosa* spp.), and Cananga (*Cananga odorata*). Each flower produces a distinct scent. Floral scents are commonly used as aromatherapy because the scent is calming and relaxing. Some floral scents even can bring a healing effect. Floral scents are composed of all the volatile organic compounds (VOCs), or aroma compounds, emitted by floral tissue (for example, flower petals), commonly referred to as floral essential oil. Floral essential oil has complex chemical compounds. This study analyzes the product development strategy for essential oil made from jasmine, Cananga, and roses in Banjar Regency, South Kalimantan Province, Indonesia. We had four villages as the study sites, namely Jingah Habang Ilir, Jingah Habang Ulu, Pandak Daun, and Loktangga. Data were collected through observations, interviews, documentation, recording, and Focus Group Discussion (FGD). The product development strategy covers many aspects: market-segment strategy, price strategy, market potential strategy, and market growth strategy.

Keywords: product development, floral essential oil

Introduction

Indonesia is rich in horticultural crops. Vegetables, fruits, flowers, ornamentals, and lawn grasses are examples of horticultural crops. Ornamental plants refer to plants grown for the display of aesthetic features. Each ornamental plant has its aesthetic features. Some are grown for their beautiful flowers; others are loved for the leaves, scent, overall foliage texture, fruit, stem and bark, and so on. Ornamental plants have gained much popularity these days, and it has turned into a promising agribusiness sector. There has been a sharp increase in demand for ornamental plants, yet the demand can only be partially met. This gap between supply and demand happens because farmers cultivate the plants conventionally, and the plants have a low quality (Fitriadi & Triatmoko, 2021).



Banjar Regency, South Kalimantan Province, Indonesia, has developed centers of flower cultivation. Red roses, jasmine, and Cananga are flowers grown in Bincau and Labuan Tabu Village of Martapura District, located 5 kilometers from the regency capital. Other centers are Karang Intan, Jingah Habang, and Pandak Daun Village of Karang Intan District. The five villages have excellent potential for jasmine, Cananga, and roses as ornamental plants, balanced with the high demand for ornamental plants from the regency and other areas (Mahyudi & Husinsyah, 2021) (Lestari & Hanafie, 2019). The high demand is due to the culture and social institutions, such as using jasmine for bridal make-up and other traditional rituals. Thus, white jasmine has excellent potential as a business commodity that will open vacancies for the local people.

Some residents of South Kalimantan depend on ornamental plant businesses for livelihood. The beautiful colors of the flowers and the distinct scent they produce are the additional value for flowers. Flowers are often found in many social activities. The choice of flowers to be used depends on the activity. Red flowers dominate the Chinese New Year celebration. Weddings will take many colors of flowers—white, purple, yellow, or red. A funeral is a place for white flowers. Flowers are taken not only for their beautiful and various colors. Their scent is also the reason for people love them. Flowers have distinct scents depending on the species; even one species may have different scents, like white and red roses. It has been a common practice throughout human history to use floral scents as aromatherapy because the scent is calming and relaxing. Some floral scents even can bring a healing effect. The distinct scent comes from the floral essential oil.

Floral scents are composed of all the volatile organic compounds (VOCs), or aroma compounds, emitted by floral tissue (for example, flower petals), commonly referred to as floral essential oil. Floral essential oil has complex chemical compounds. One type of essential oil may consist of thousands of single chemical compounds, each of which has a specific effect. If we separate one of the thousands of chemical compounds that make up essential oils and then mix it with different chemical compounds, the mixture will create a different effect (Julianto, 2016). Floral essential oils are basically produced or taken from the flowering parts of plants. Flowers are responsible for the same type of fragrance that their natural essential oils produce. Flowers are most widely used as perfumes and other types of fragrances (Singh et al., 2014). Due to the extensive use of flowers daily, the essential oil and fragrance industry has a bright future. This paper aims to analyze the product development strategy for jasmine, Cananga, and rose essential oils in Banjar Regency, South Kalimantan.

Method

Data were collected through observations, interviews, documentation, recording, and Focus Group Discussion (FGD). The research stages that were conducted included (1) FGD, (2) a test on the organic and aromatic compounds, and (3) a test on the floral essential oil.



In general, the data collection method was classified into four stages. *First*, we had a desk study, in which we collected and analyzed data and information from documents and reports of the authority, the Office of Crops and Horticultural Plants of Banjar Regency. *Second*, we did a direct observation of the object being studied. *Third*, in-depth interviews were done with key informants to collect detailed information and opinions. *Fourth*, FGD involved all elements of the local community, including community leaders and stakeholders.

Discussion

Analysis of the Potential of Flower Farming in Banjar Regency, South Kalimantan

Flower farming holds the potential as a profitable agribusiness commodity; this will improve farmers' welfare and income. However, flower farmers still use conventional farming methods due to a lack of technology adoption, causing low production in terms of quality and quantity (Hayati & Sugiarti, 2009). A flower-arranging business is a side job that can increase the local people's income. Most flower farmers have a main job as rice farmers. Because they can only plant rice once a year, they need additional sources of income. Thus, they choose the flower-arranging business as a solution. Most flowers from Banjar Regency are used in traditional rituals or ceremonies so they can have added value (Ariffulah et al., 2022).

The locals have long planted flowers; however, many problems arise, including price fluctuation, limited capital, and cultivation method. The most significant potential in the region is in flower production, especially roses and Cananga (Sunardi et al., 2019).

Table 1. Problems and Solutions for the Flower-Arranging Business in Banjar regency, South Kalimantan

No	Problems	Solutions
1	Fresh flowers	<ul style="list-style-type: none"> Flowers can be distilled to obtain essential oil Manufacture of diversified products from oil, such as aromatherapy, masks, body lotions
2	No packaging and all flowers are sold fresh	<ul style="list-style-type: none"> Attractive packaging with a sterile and sealed bottle; the product must have a permit for sale and is laboratory tested
3	Traditional marketing	<ul style="list-style-type: none"> Direct selling Online promotions and sales Partnership system: working with agencies or companies in marketing,



		participating in exhibitions, forming management
4	Farmers as flower producers	<ul style="list-style-type: none"> • Farmers must become a refiner in addition to becoming a producer

In Banjar Regency, the highest demand is for jasmine, followed by Cananga and roses. Prices rise on Friday, Saturday, and Sunday due to higher demand. During increased demand, the highest price for jasmine is IDR 15,000 – 25,000 per measurement unit, IDR 125,000 – 250,000 for Cananga per 1000 flower buds, and IDR 1,000 – 3,000 for roses per flower bud. On Monday, Tuesday, Wednesday, and Thursday, as well as in Safar, Muharram, and Ramadhan, prices decrease due to low demand. The price for jasmine is IDR 500 – 1,000 per measurement unit, IDR 1,000 – 10,000 for Cananga per 1000 flower buds, and IDR 50 – 100 for roses per flower bud. During the low demand, flowers are sold as they are. Thus, we proposed a solution for this problem—during the low demand, flowers can be made into essential oil.

Essential Oils

Essential oil or etheric oil is volatile, flammable, and has a distinctive odor according to the source of the oil. Essential oils are present in oil glands in plant tissues. In some fruits, the aromatic content can be dissolved in the juice. Still, in many cases, the essential oils in the fruit and leaves are stored and secreted in the oil sacs or oil glands in the epicarp adjacent to the chromoplast (receptacle intercellular). In nature, no chemical compounds provide an effect by themselves. These natural compounds combine with other chemical compounds to create perfect harmony and a distinctive smell. The main chemical compound (marker compound) determines the fragrance emitted by floral essential oils. The distinctive smell of roses is determined by its main chemical compound, namely phenyl ethyl alcohol (60-70%). In comparison, the smell of jasmine oil is determined by benzyl acetate (about 46%), methyl salicylate (24%), and Z. jasmine (20%) (Julianto, 2016).

In general, the properties of essential oils are as follows: (1) difficult to dissolve in water due to the presence of non-dipolar compounds, (2) easily soluble in organic solvents such as ether, benzene, petroleum ether, and chloroform, (3) have distinctive properties, namely odor and aroma, (4) fresh essential oil is colorless or slightly yellow in color if other colors such as brown, green, and so on due to the presence of other substances, and (5) quickly decompose and evaporate due to the presence of a double bond oxidized by oxygen from the outside. Essential oils are used in the industry as an ingredient in cosmetics, perfumes, detergents, soaps, and medicines, as well as a mixture of food and beverage ingredients (flavoring agents). The physiological function of essential oils in plant metabolism varies; for example, the fragrant smell of leaves and flowers



attracts insects for pollination. Essential oils in plant parts can also protect against insects (acting as insecticides), yet, there is no substantial evidence to support this theory. Essential oils are not pure chemical substances but consist of various mixtures of substances that have different chemical and physical properties. Essential oils can be produced through a distillation method known as hydrodistillation; they can also be made using solvents and press methods. Essential oils are beneficial for the plants themselves and human beings. Essential oil-producing plants attract insects or other animals to help pollination, they can prevent damage to plants by insects or other animals, and they act as a food reserve. For humans, essential oils can be used as ingredients in the food and beverage, cosmetic, and pharmaceutical industries.

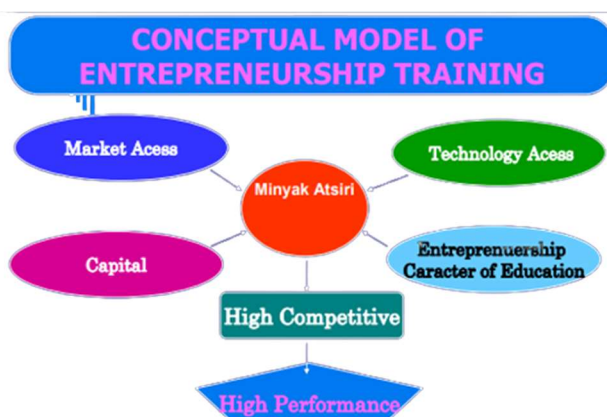


Figure 1. The Development Model for the Essential Oil Industry (Supeni et al., 2015)

Figure 1 shows the development model through an entrepreneurship scheme for the essential oil industry. The model is affected by several factors, such as market access, resources, technology, entrepreneurial characteristics, and competitiveness. The model is expected to improve the performance of the essential oil industry.

Analysis of the Business Opportunity of Essential Oils in Banjar Regency, South Kalimantan

The flower farmers in Banjar Regency have the following supporting factors: regional potential, expertise, expert support, various flower varieties, and an extensive market network. However, they also face inhibiting factors such as pesticide dependence, lack of capital, easily-spoiled flowers, and suboptimal marketing. Therefore, the government is needed to create policies that favor farmers, and educational institutions can send their experts to teach farmers the knowledge needed to manage their products and businesses so that farmers can meet market demand. The opportunities for these flower farmers include the high demand in the international



market and the absence of competitors to enter the available local, regional, and even international markets. The threat is limited production; it may hinder business sustainability.

Product Development Strategy

The following strategies are suitable to implement in Banjar Regency, South Kalimantan:

1. Production strategy

Indonesia's essential oils have comparative and competitive advantages. The oils have entered the export expansion stage; the industry has become a net exporter country in Singapore. The quality of Indonesia's essential oils needs to be improved to expand the export market and maintain competitive advantages. In addition to producing high-quality essential oils with vacuum technology, we will also help farmers to create TEFA (Teaching Factory) as a form of Vocational Product Downstreaming (*Hilirisasi Produk Vokasi*). We will also have a PBL (Project-based Learning), in which our institution will maintain the relationship with the farmers and the local government.

The products to be developed in the near future include jasmine syrup, essential oils, cream or body scrub with floral scents, balm with floral scents, massage oil with floral scents, rose or jasmine tea, and fish feed (the waste from Cananga distillation will be mixed with other ingredients into fish feed and this will be the pioneer for such a product).

2. Downstream strategy

We help farmers through our Vocational Product Downstreaming (*Hilirisasi Produk Vokasi*). Downstreaming is a strategy to increase the added value of commodities. With downstreaming, in the future, the exported commodities will no longer be in the form of raw materials but in semi-finished goods or finished goods. Downstreaming and TEFA (Teaching Factory) will help to create entrepreneurs. We will work with our students from Politeknik Negeri Banjarmasin, the farmers, and the stakeholders. All the efforts are expected to boost the economy, especially the creative economy, as new small and medium enterprises emerge. Cooperation with the local government will assist further development of the business. A stable supply chain will also be built to ensure product availability at a fair price.

3. Pricing Strategy

When the price for fresh flowers decreases due to low demand, we will turn them into essential oils and their derivatives (cream or body scrub, balm, massage oil, and so on) to increase farmers' income.

4. Potential-market Strategy



Potential markets include local, national, and international ones. We will have our students and alumni as marketers of the products within the entrepreneurship scheme, exhibitions held by polytechnics around Indonesia, and fairs held by the local and central governments and the Ministry of Education.

5. Market-growth Strategy

The downstream sector has factories that manufacture essential oils, while the upstream sector has flower gardens and farmers that will provide the raw materials for the factories to create an upstream-downstream chain. The chain will create a harmonious economic value, including increasing the local people's incomes through partnership. Market growth is estimated to be promising. In addition to making derivatives, we will also have the product legal for sale and safe for use. The local people of South Kalimantan are big fans of fragrance. Our students will help with digital marketing and social media marketing. The growth of middle-class income families worldwide is also a supporting factor for the market growth of essential oils and their derivatives.

Conclusion

The product development strategy for the essential oils made from jasmine, Cananga, and roses in Banjar Regency, South Kalimantan, covers several aspects. The *first* is the production strategy. The product will become TEFA (Teaching Factory) as a form of Vocational Product Downstreaming (*Hilirisasi Produk Vokasi*). Through our PBL (Project-based Learning), our institution will maintain relationships with the farmers and the local government. The *second* is the pricing strategy. When fresh flowers' prices decrease due to low demand, they will be turned into essential oils and their derivatives. The *third* is the market-potential strategy. Potential markets include local, national, and international ones. Our students and alums can become marketers of the products. We will also encourage entrepreneurs to join exhibitions held by polytechnics around Indonesia and fairs held by the local and central governments and the Ministry of Education. The *fourth* strategy is the market-growth strategy. The integrated upstream-downstream chain will create a harmonious economic value, including increasing the local people's incomes through partnership. Our students will help with digital marketing and social media marketing. The growth of middle-class income families worldwide is also a supporting factor for the market growth of essential oils and their derivatives.

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UJoST

Universal Journal of Science and Technology

e-ISSN: 2962-9179



Vol. 2 No. 1 (2023)

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