

Turmeric Kombucha, a fermented drink combining the anti-inflammatory properties of turmeric, represents a promising product of functional beverage market. In order to successfully bring Turmeric Kombucha to market, it is essential to evaluate its commercialization potential. This involves assessing the Business Model Canvas (BMC) and financial feasibility metrics. This study aims to determine the feasibility and strategies for successfully commercializing Turmeric Kombucha for development a business plan with scale up the production of Turmeric Kombucha. The result indicate that Turmeric Kombucha has a viable business model with 9 elements.

Based on financial shows that Net Present Value (NPV) of \$ 13,405,417.62, an Internal Rate of Return (IRR) of 71.42 %, a Payback Period (PP) of 0.59 years, and Break-Even Point (BEP) metrics of 3,173 units and \$ 4,914.46. The analysis shows strong financial viability and significant growth potential for Turmeric Kombucha, supported by sustainable and efficient supply chain partnerships. The features and characteristics of the obtained results in this study, namely:

a) high consumer interest from health-conscious individuals over 18 years old;

b) health benefits of Turmeric Kombucha include hepatoprotective, immunomodulatory, antidiabetic, and antioxidant properties;

c) key resources include efficient production processes, user-friendly equipment, and adequate human and financial resources.

The practical application of these results involves strategies for scale up of market expansion, quality standardization, and supply chain enhancement. Customer relationships are fostered through direct and indirect distribution channels such as marketplaces, word-of-mouth, and retail stores

Keywords: business model canvas, commercialization, financial feasibility, scale up, Turmeric Kombucha

UDC 001.895

DOI: 10.15587/1729-4061.2024.308550

FINANCIAL FEASIBILITY: DEVELOPING AND COMMERCIALIZING TURMERIC KOMBUCHA WITH THE BUSINESS MODEL CANVAS

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Received date 16.07.2024

How to Cite: Mustaniroh, S. A., Zubaidah, E., Koentjoro, M. P., Rohmah, W. G., Prabaningtias, N., Sofia Alfian, A. M. (2024).

Accepted date 23.09.2024

Financial feasibility: developing and commercializing Turmeric Kombucha with the business model canvas.

Published date 30.10.2024

Eastern-European Journal of Enterprise Technologies, 5 (13 (131)), 86–96. <https://doi.org/10.15587/1729-4061.2024.308550>

1. Introduction

Innovative, health-conscious products have proliferated in the beverage market in recent years, and kombucha is becoming more and more well-liked. Rich in organic acids, vitamins, and enzymes, kombucha is a fermented beverage created from tea and sugar that is fermented by a mixed culture of acetic acid bacteria and yeast [1]. A special kind known as Turmeric Kombucha was created in Indonesia and contains turmeric due to its high curcuminoid concentration, which has significant anti-inflammatory, antioxidant, anti-cancer, and immune-stimulating effects. Compared to non-fermented beverages, this combination intensifies the drink's flavor, color, and health advantages, increasing its potency as an immunomodulator and hepatoprotective agent [2–7]. The numerous benefits contained in Turmeric kombucha present a significant marketing potential for the product. Turmeric Kombucha, being an organic product, results in minimal side effects when consumed. This aligns

with the public's growing health consciousness, which favors the consumption of natural products.

In the United States, kombucha first became popular in the late 1990s and by 2015, it was the best-selling fermented beverage, bringing in \$180 million [8]. The growing knowledge of kombucha's health advantages among consumers has propelled the market's growth. The market has noticed a shift towards flavored kombucha, with the most widely used flavors being coconut, herbs, and spices. Nearly thirty varieties of kombucha are currently available, and new ones like ashwagandha and turmeric are constantly being introduced [8]. The popularity of kombucha among the public aligns in Indonesia with the increasing consumer awareness of health. Consumers are becoming more selective in choosing natural, organic, and chemical-free products. Additionally, the trend of functional beverages is also growing among consumers. Turmeric kombucha, being a functional and natural beverage, thus holds significant market potential.

For products like Turmeric Kombucha to be financially viable and in line with strategic business objectives, they must be profitable. Analysis of the financial viability of functional beverages is crucial to guaranteeing their success in light of the increased consumer interest in them [9]. These studies support strategic planning, product development alignment with overarching business goals, and the assurance that the market demand and health benefits will result in the venture financially successful [10].

The development of Turmeric Kombucha has strategic relevance in addressing the increasing consumer interest related to the growing awareness of health products, including functional drinks like Turmeric Kombucha, which offer high antioxidant benefits. Product innovation in the beverage industry that features unique flavors, is healthy, free from preservatives, and organic, which undergoes fermentation processes to support a healthy back-to-nature lifestyle. In addition, rhizomes are a local wisdom material that has cultural value and a long history of use as traditional herbal medicine. The development of Turmeric Kombucha supports the local industry by utilizing abundant local raw materials, while also adding economic value to these materials. The development of Turmeric Kombucha is a relevant strategy with great potential in responding to changing consumer behavior that is increasingly concerned with health and natural products, as well as providing economic benefits for the functional beverage industry. In addition, the scale-up development from research results requires a thorough analysis of the business plan and financial feasibility regarding product innovation Turmeric Kombucha to become a commercially viable product ready for the market, as well as a sustainable and profitable product in the functional beverage industry.

A financial viability analysis also sheds light on the best ways to segment the market, position competitors, and set prices. Establishing competitive rates and attaining market penetration require a thorough understanding of consumer preferences and willingness to pay [11]. Businesses can visualize and strategically plan their models, which cover customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure, with the aid of tools such as the Business Model Canvas (BMC). Finding possibilities and gaps is made easier with this methodical approach, particularly for specialized goods like Turmeric Kombucha [12, 13]. It also helps identify target consumers demographics, such natural remedy seekers and health enthusiasts, and makes sure that products are distributed effectively through the right channels, like health food stores and internet marketplaces [10].

The BMC functions as a strategic blueprint that guides Turmeric Kombucha in planning and executing long-term strategies in a structured and sustainable way. It provides a comprehensive view of key components that support well-informed and targeted decision-making crucial for successful business growth. BMC facilitates the creation of product development and marketing strategies, enabling the brand to appeal to the appropriate consumer segments aligned with evolving market innovations. Adjustments to BMC elements allow the business to swiftly respond to shifts in consumer preferences or competitive pressures, thereby enhancing product competitiveness and meeting market demands.

Turmeric Kombucha offers businesses a lucrative opportunity since the worldwide market for functional beverages is ex-

pected to increase dramatically due to rising consumer awareness and demand for products that promote health [14, 15].

Therefore, it is imperative to conduct research and development aimed at refining the recipe, manufacturing process, and marketing approach for Turmeric Kombucha. This research is important because it advances our knowledge of the health advantages and commercial viability of such products, ensuring that they can live up to customer expectations and support industry development and public health.

2. Literature review and problem statement

The study's findings on the nutritional and practical advantages of Turmeric Kombucha in [5–7]. The highly prospective range of sustainable substances includes emphasizes the beverage's hepatoprotective, immunomodulatory, antidiabetic, and antioxidant qualities of Turmeric Kombucha producing a varied formula. Research indicates that the fermentation process improves the beverage's profile of bioactive compounds, positioning it as a viable option for consumers who prioritize their health. The limitations of this study still require further clinical trials to maximize benefits through procedural mechanisms for consumers reinforced by the commercialization analysis of the business potential of Turmeric Kombucha as a functional health drink.

The study by [5] provides valuable insights into the microbiological characteristics of Turmeric Kombucha, particularly the role of SCOBY in the fermentation process. It highlights the significant impact of specific yeast and bacterial strains, resulting in minimal increases in total phenols and acidity, and underscores the importance of active components and organic acids for the beverage's flavors and health benefits. However, a key limitation is the absence of a comprehensive financial analysis to assess the feasibility of scaling up production. Addressing this gap with detailed cost-benefit studies and market analysis would enhance the commercial viability of Turmeric Kombucha.

The results of the techno-economic feasibility analysis by [12] showed that the kombucha fermentation process with a return period of 4.23 years, ROI 23.64 %, and IRR 16.48 %. The limitations of this analysis are the high and significant initial investment cost requirements of \$13.72 million and the operating cost of \$3.8 million, with an allocation of 89 % for facility and labor costs which could be an entry barrier for potential producers that supported with [16] as major limitations in kombucha production. To overcome this gap, sensitivity analysis is needed by increasing the number of fermentation units and mechanizing the process to reduce costs. In addition, increasing the economic scale in production is expected to significantly improve the financial survival of the process, as a basis in business commercialization analysis.

These weaknesses often stem from gaps in comprehensive business model development and a lack of detailed analysis using tools such as the BMC. As [17] reported that often emphasize the nutritional profile and fermentation process but lack depth in market segmentation and demand forecasting, crucial for a robust business model. is the insufficient focus on comprehensive market analysis.

Research of [10] shows primarily focus on the technical aspects of kombucha fermentation without addressing the financial implications of scaling production such as cost structure, revenue streams, and profitability projections.

The BMC provides a structured framework to analyze and develop business models comprehensively. However, many studies on fermented beverages and curry kombucha do not utilize this tool effectively. The BMC covers nine essential components: customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure. As [15] discuss customer segments and value propositions but overlook key partnerships and cost structure, leading to an incomplete analysis. The analysis of recent journals on the business model development for fermented beverages and curry kombucha reveals several weaknesses, including inadequate market analysis, limited financial viability focus, absence of comprehensive BMC analysis, overemphasis on product innovation, and lack of real-world application. Addressing these gaps through detailed BMC analysis and incorporating comprehensive market and financial evaluations will enhance the robustness and applicability of business models in this growing sector.

Studies such as those by [18] tend to focus extensively on product development, with insufficient attention to market entry strategies and scalability. The weakness is that research focuses on product innovations such as Turmeric Kombucha but ignores other important business model elements such as distribution channels, customer engagement strategies, and a fully integrated revenue model in the Business Model Canvas.

Many studies focus on technical and production aspects but lack comprehensive financial models that detail the cost structures, revenue streams, and profitability of kombucha production. [19] demonstrated the explore economic feasibility but may not provide a detailed financial analysis that incorporates all relevant cost factors and market dynamics. The small-scale production can be financially viable, careful consideration of cost management and market positioning is crucial for long-term success. By incorporating BMC analysis into the evaluation of kombucha and curry kombucha development, researchers and businesses can address these weaknesses and gain a more comprehensive understanding of financial feasibility. BMC helps in evaluating the supply chain and raw material costs within the context of the overall business model. This includes understanding supplier relationships, cost structures, and how supply chain dynamics affect financial feasibility.

3. The aim and objectives of the study

The aim of this study is to develop a business plan and determined whether scale up the production of Turmeric Kombucha production is financially feasible. This will enable decision makers to comprehend the product's market potential and commercial feasibility, which will help the functional beverage industry achieve sustained company growth.

To achieve this aim, the following objectives are accomplished:

- create a BMC for Turmeric Kombucha that outlines key components to provide a holistic view of the business model and operational strategy, including value propositions, customer segments, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure;

- conduct a thorough financial feasibility analysis that includes cost estimation (production, marketing, distribu-

tion), revenue projections, break-even analysis, and profitability forecasts and assessment of financial viability using metrics such as IRR, NPV, and payback period.

4. Materials and methods

4. 1. Object and hypothesis of the study

Object of the study is commercializing Turmeric Kombucha. The subject of this research is developing a comprehensive Business Model Canvas (BMC) a small-scale production effort of Turmeric Kombucha beverages and conducting an in-depth financial feasibility analysis, including cost estimation, and profitability assessments using metrics like NPV, BEP, IRR and payback period. The hypothesis of this study suggests that the business plan for scaling up the development of Turmeric Kombucha is feasible both technically and financially.

This research operates under the following assumptions: the project duration is 3 years, with a fixed production capacity throughout. The prices of raw materials and utilities, as well as the number of workers, remain unchanged. Machinery and equipment with a one-year economic lifespan must be repurchased each year at the original cost. Furthermore, the daily production capacity is set at 50 liters of turmeric kombucha per batch.

A Business Model Canvas (BMC) for Turmeric Kombucha was created as part of this work's simplifications, offering a broad overview of the essential business elements without getting into the nuances of the industry. For the purpose of expediting the evaluation and excluding the possibility of uncontrollable outside influences, the financial feasibility analysis also employs conventional assumptions for cost, revenue, and profitability indicators (NPV, BEP, IRR and payback period).

4. 2. Turmeric Kombucha process

Referring to [5] the making of Turmeric Kombucha begins with the process of drying and grinding turmeric. After becoming turmeric powder, it is put into a tea bag then brewed in boiling water and added with sweetener (10 % sugar). After boiling, the turmeric solution is put into a sterile jar and left at room temperature before adding the starter. Then incubation is carried out for 12–14 days at room temperature. Making Turmeric Kombucha has its own advantages, because in its manufacture there is a preliminary process in the form of drying the rhizome which can reduce its water content and increase the nutritional components in it according to the weight of a unit weight. In addition, the addition of turmeric to kombucha can increase its functional value and health benefits when compared to kombucha in general (black tea kombucha).

4. 3. Data collection

The research methodology is a quantitative analysis that integrates empirical findings from structured and valid data processing by 2023. Quantitative analyses are carried out to identify 9 elements in BMC, cost needs data and production of Turmeric Kombucha. The objects in the study are producers of Turmeric Kombucha. The determination of respondents was carried out by purposive sampling, i.e. sample determination technique with consideration of the understanding and experience of the selected party related to the research object. The number of respondents 2 consists of owners and production

team that understand about the management of the enterprise unit. Type of data required in this study:

1) BMC analysis related to operational 9 elements in Turmeric Kombucha production including value propositions, customer segments, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure in the business model in Table 1.

BMC is a business model that will be carried out by an enterprise in a visual form with the hope that the entrepreneur can easily understand the potential of the enterprise and be able to create added value on the product to meet the needs of the consumer. The BMC mapping was carried out by identifying 9 BMC elements through observations. The results of the BMC mapping showing the condition of the existing BMC are inserted into the canvas;

2) financial feasibility analysis relating to production operational costs (fixed, variable), mark up, interest rate and economic life as the basis in the calculation of IRR, NPV, B/C and period payback. The use of software for Financial Feasibility analysis through Microsoft Excel Program 2023.

Net present value (NPV). Net present value (NPV) is a method used to determine the current and future value of assets or cash. NPV measures the difference between cash inflows (revenues) and cash outflows (expenses) discounted to present value using a specific discount rate. The NPV calculation formula is as follows:

$$NPV = \sum_{t=1}^N \frac{Rt}{(1+i)^t}, \tag{1}$$

where N – number of periods; t – cash flow time; R – cash flow at time t ; i – interest rate (%).

Table 1

The operational variables for BMC analysis (current existing conditions)

BMC elements	Operational definition
Customer segments	Customer segments divide customers into several relevant groups (demographic, geographical and psychographic)
Value proposition	The advantages or value offered by the company to the targeted consumers or customers such as innovation for Turmeric Kombucha
Channels	The media used to convey and deliver the value proposition of the product to customer segments
Customer relationships	The type of relationship a company builds with customers (direct and indirect)
Revenue streams	The company's sources of revenue to operate the business from sales of product
Key resources	The most essential assets needed to operate the business model such as production, human resources and capital
Key activities	The key activities carried out by the company to generate value proposition such as supply chain, production and marketing
Key partnerships	The company's relationships with several parties or key partners essential to realizing the value proposition between supplier, manufacturer
Cost structure	The cost structure incurred by the company to operate the business

The investment criteria based on the NPV value are as follows:

1. $NPV > 0$, the business proposal provides profits so it is feasible.

2. $NPV < 0$, the business proposal is detrimental and therefore not feasible.

3. $NPV = 0$, business proposal with no profit and no loss.

Break even point (BEP). Break event point (BEP) is the break-even point where total income is equal to total expenditure. BEP indicates the number of units that must be sold or the sales value that must be achieved for the company to avoid losses. The BEP value can be calculated using the following formula:

$$BEP(Q) = \frac{FC}{P - VC}, \tag{2}$$

$$BEP(Rp) = \frac{FC}{1 - \frac{VC}{P}}, \tag{3}$$

where BEP – zero point between income and expenses; FC – fixed costs (IDR/\$); VC – variable costs (IDR/\$); P – selling price per unit (IDR/\$); Q – number of units.

Internal rate of return (IRR). Internal rate of return (IRR) is a method used to determine the rate of return in the future that is the discount rate that makes the net present value (NPV) of a project's or investment's cash flows equal to zero. The IRR value can be calculated using the following formula:

$$IRR = i_1 + \frac{NPV_1}{(NPV_1 - NPV_2)}(i_2 - i_1), \tag{4}$$

where IRR – rate of return on capital;

NPV_1 – NPV with a positive value;

NPV_2 – NPV with a negative value;

i_1 – positive NPV interest rate;

i_2 – negative NPV interest rate.

Payback period (PP). Payback period (PP) is a calculation used to determine the return period for the investment value that has been issued. The PP calculation formula is as follows:

$$PP = \left(t + \frac{b-c}{d-c} \right) \times 12 \text{ months}, \tag{5}$$

where PP – investment return period; t – last year in which the cumulative cash flow has not reached the initial investment value; b – initial capital; c – total cash flow for the n -th year; d – total cash flow for year $n+1$.

The operational variables for BMC analysis presented in the Table 1.

5. Results of developing and commercializing Turmeric Kombucha with the business model canvas

5.1. The business model of Turmeric Kombucha production

BMC focused to the comprehensive strategy for bringing Turmeric Kombucha to market, emphasizing the importance of partnerships, efficient production processes, and a clear understanding of customer segments and channels to ensure the product's commercial success. Table 2 demonstrates target segment of Turmeric Kombucha. These segments represent consumers who convenience and wellness for Turmeric Kombucha.

Table 2

Target segment of Turmeric Kombucha

Segment	Description	Key characteristics
Health enthusiast	People who care about a healthy lifestyle, thus preferring natural products that can enhance physical fitness	<ul style="list-style-type: none"> – they choose natural ingredients for consumption; – they maintain a healthy diet; – they are interested in probiotic products and avoid high-calorie drinks
Consumer trends	The younger generation follows trends and social media, and enjoys trying new and interesting things	<ul style="list-style-type: none"> – active on social media and very much in tune with trends; – enjoys trying unique and interesting food/drinks; – open to new products that offer new experiences
	They usually have a busier lifestyle, so they need practical and healthy products to consume	<ul style="list-style-type: none"> – busy and often on the go; – looking for practical healthy alternatives to consume; – interested in premium and innovative products
Functional beverage seekers	Consumers looking for beverages with specific functions, such as supporting the digestive system, boosting energy, or balancing the body's microbiome	<ul style="list-style-type: none"> – focus on the specific benefits of the product, such as probiotics or detoxification; – consume functional beverage products as part of a health routine; – loyal to products that provide real benefits

According to Fig. 1, the BMC for Turmeric Kombucha illustrates a well-structured approach to product development and market strategy. The value proposition highlights Turmeric Kombucha's health benefits, such as hepatoprotection, immunomodulation, and antioxidant properties, appealing to health-conscious consumers aged 17 and above. Customer segment based on demographic and psychographic aspects among the upper-middle class who are concerned about a healthy lifestyle. Customer relationships are nurtured through direct sales channels like websites and marketplaces, as well as indirect channels such as partner stores. Key activities involve fermentation processes, utilizing SCOBY enzymes to enhance the functional benefits of turmeric. Key partners, including suppliers of raw materials and distributors of finished goods, are integral to the supply chain. The main of key resources needed to run a turmeric kombucha business include production room, equipment and maintenance, as well as raw materials and human resources.

Analysis of BMC were providing a holistic view BMC the business model and operational strategy. These outcomes of analyzing the 9 elements of the Business Model Canvas as illustrated in Fig. 1.

The comprehensive strategy outlined in the BMC for Turmeric Kombucha aims to successfully bring the product to market by emphasizing the unique value propositions. These include the combination of kombucha's probiotic benefits with turmeric's anti-inflammatory properties, a distinct flavor profile, the utilization of natural and organic ingredients, and a dedication to sustainability through eco-friendly production processes and packaging.

Fig. 1 shows that managing customer relationships involves actively engaging on social media, providing responsive customer support, implementing loyalty programs with discounts and rewards, and organizing community-building activities such as workshops and tastings. Revenue streams consist of product sales, subscription services, bulk orders from businesses and health clubs, and collaborations with other health and wellness brands.

The used of channel marketing channels are conventional and social media is aimed at expanding market share. The plan is to establish partnerships with several stores such as pharmacies, restaurants, and cafes. The cost structure is designed for efficiency, balancing fixed costs like maintenance with variable costs for raw materials and revenue streams focus on product sales. This BMC framework provides a comprehensive overview of Turmeric Kombucha's strategic approach to market penetration and competitive positioning.

In addition, Key Resources requires essential for the business such as production facilities equipped with brewing and bottling equipment, a skilled workforce for production, marketing, and distribution, a dependable supply chain for organic turmeric and other ingredients, and financial resources for expanding operations. Key activities include brewing, fermenting, and bottling the kombucha, ensuring quality control, conducting marketing campaigns, overseeing distribution, and dedicating resources to research and development.

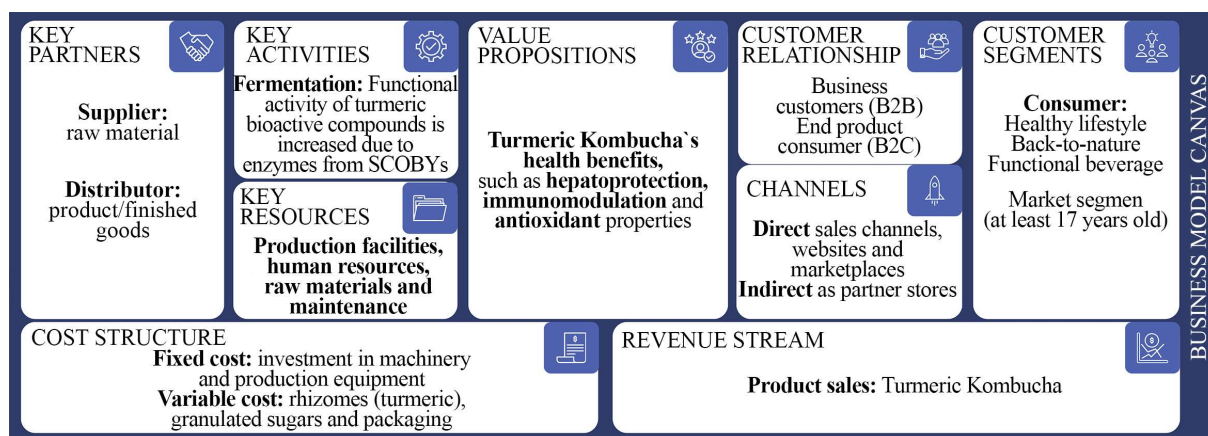


Fig. 1. Commercialization of Turmeric Kombucha with BMC

5. 2. Comprehensive financial feasibility analysis for Turmeric Kombucha: Cost projections, Breakeven point and Profitability evaluation (IRR, NPV, Payback period)

The analysis of financial feasibility analysis is to assess the viability and potential profitability of Turmeric Kombucha Business. Table 3 shown strong financial analysis in 1 year for Turmeric Kombucha with a solid profit margin, manageable production costs, and a quick break-even point.

Table 3
Cost projection and financial analysis in 1 year for Turmeric Kombucha

Code	Description	Value	
		IDR	\$ (\$)
A	Production capacity ¹	–	–
B	Fixed cost	–	–
B1	Investment cost ²	28,960,000	1,879.06
B2	Depreciation	3,750,000	243.32
B3	Maintenance	1,910,000	123.93
	Total Fixed cost (B1+B2+B3)	34,620,000	2,246.30
C	Variable cost	–	–
C1	Raw material cost ³	523,080,000	33,939.78
C2	Labor cost	144,000,00	9,343.37
C3	Utility	9,240,000	599.53
	Total variable cost (C1+C2+C3)	676,320,000	43,882.69
D	Overhead cost	–	–
D1	Marketing cost	1,500,000	97.33
D2	Administrative cost	1,000,000	64.88
D3	Quality cost	2,500,000	162.21
–	Total overhead cost (D1+D2+D3)	5,000,000	324.42
E	Total production cost (B+C+D)	715,940,000	46,453.41
F	Cost of production per unit (E/A)	14,915	0.97
G	Mark Up (30 %*F)	9,695	0.63
H	Selling price (F+G)	25,000	1.62
I	Break Even Point per unit ⁴	3,173	0.21
J	Break Even Point per value ⁴	79,330,889	5,147.35
K	Revenue	1,200,000,000	77,861.40
L	Value Added Tax (10 %)	120,000,000	7,786.14
M	Depreciation	3,750,000	243.32
N	Equity Before Tax (EBT)	1,076,250,000	69,831.94
O	Income tax ⁵	–	–
O1	5 % * 50,000,000	2,500,000	162.21
O2	25 %*(N–50,000,000)	153,937,500	9,988.16
	Total income tax (O1+O2)	156,427,500	10,149.72
P	Equity after tax (EAT or Net Profit) (N–O)	919,812,500	59,681.57

Note: ¹ – 48.000 unit (bottle @volume 250 ml); ² – production room, machines (gas stove, fermenter, dehumidifier, rhizome slicer, dry rhizome chopper), equipment (pot and glass jar), utility (electricity, water, LPG gas); ³ – Turmeric rhizome, tea bags, boiled water, starter granulated, sugar bottle; ⁴ – based on formula in section 4; ⁵ – based on government regulation in Indonesia that the income tax rates are tiered according to the tax value and income.

In order to evaluating the financial sustainability of the Turmeric Kombucha beverage venture, we were considered measures like Internal Rate of Return (IRR), Net Present

Value (NPV), and Payback Period (PP). Table 4 is a breakdown of the financial analysis’s findings using the given information. Assess financial viability using metrics such as IRR, NPV, and payback period.

Table 4
Financial feasibility analysis of Turmeric Kombucha drink business

No.	Description	Value	
		IDR	\$ (\$)
1	Production cost	715,940,000	44,351.70
2	Fixed cost	34,620,000	2,144.67
3	Non-fixed cost	676,320,000	41,897.28
4	Production capacity per year (bottles)	48,000	–
5	Variable cost per bottle	14,090	0.87
6	Cost of production per unit (per bottle)	14,915	0.92
7	Mark up	9,695	0.60
8	Selling price (per bottle)	25,000	1.55
9	BEP (bottle)	3,173	–
10	BEP	79,330,889	4,914.46
11	NPV	2,163,947,643	13,405,417.62
12	IRR	71.46 %	–
13	PP	0.59 month	–

Based form the financial analysis of Turmeric Kombucha underscores its strong viability as an investment opportunity. With an annual production cost of IDR 715,940,000 (\$ 44,351.70) and an impressive annual production capacity of 48,000 bottles, the business model demonstrates efficiency and profitability. The calculated variable cost per bottle at IDR 14,090 (\$ 0.87) supports a competitive selling price of IDR 25,000 (\$ 1.55), yielding a healthy mark-up. Furthermore, the break-even point of just 3,173 bottles, combined with a remarkable net present value (NPV) of IDR 2,163,947,643 (\$ 13,405,417.62) and an internal rate of return (IRR) of 71.46 %, highlights the product’s potential for rapid financial returns and sustainable growth. Overall, these financial indicators position Turmeric Kombucha as a lucrative venture in the functional beverage market.

The financial analysis of Turmeric Kombucha underscores its viability as a promising investment opportunity in the expanding functional beverage market. With a robust annual production cost of IDR 715,940,000 (\$ 44,351.70) and a capacity to produce 48,000 bottles, the business model showcases operational efficiency and strong profitability. The variable cost per bottle, calculated at IDR 14,090 (\$ 0.87), supports a competitive selling price of IDR 25,000 (\$ 1.55), yielding a healthy mark-up that enhances revenue potential. This competitive pricing strategy aligns well with market trends, as consumers increasingly seek functional beverages that offer health benefits at affordable prices.

Furthermore, the break-even point of just 3,173 bottles indicates a quick recovery of initial investments, enhancing the perceived financial stability of the venture. The calculated net present value (NPV) of IDR 2,163,947,643 (\$ 13,405,417.62) signifies substantial profitability over time, while the impressive internal rate of return (IRR) of 71.42 % indicates a highly attractive investment yield. Such metrics not only highlight the potential for rapid financial

returns but also indicate sustainable growth prospects that resonate with the growing consumer trend towards health-oriented products. As consumer preferences shift towards beverages that promote health and wellness, investing in Turmeric Kombucha positions stakeholders to capitalize on this lucrative market segment, ensuring both financial success and alignment with evolving consumer demands.

6. Discussion of commercialization for Turmeric Kombucha with the Business Model Canvas and financial feasibility

Fig. 1 offers a visual overview of the Business Model Canvas (BMC), incorporating key components like value proposition, customer segments, and revenue streams. These elements are essential for aligning the operational plan with the financial objectives. The customer segments in the BMC are based on the market segmentation and potential target markets outlined in Table 2. From Table 2, the preferences and behaviors of potential turmeric kombucha consumers are identified. These insights into customer behavior directly shape the BMC (illustrated in Fig. 1), where target markets and customer segments are central components. The Business Model Canvas (BMC) for Turmeric Kombucha effectively integrates its health benefits, such as hepatoprotective and immunomodulatory properties, with the growing demand for functional beverages [20]. This is appealing to key customer segments, including health-conscious consumers and young buyers influenced by trends who are looking for health-boosting beverages [21]. However, study [21] focused on consumer trends aged 18–35, our results suggest that a broader market, including mature consumers with high health consciousness, has greater potential in the long term. The value proposition is built around a natural beverage offering that supports health, aimed at those seeking practical yet innovative health solutions [22]. Direct and indirect sales channels, including online platforms and retail partners, play a crucial role in reaching these consumers, ensuring market accessibility.

The financial analysis in Table 3 and Table 4 demonstrates the results of applying the BMC, especially in terms of revenue generation. These tables provide a detailed financial performance breakdown, helping determine whether the business model is feasible in practice. With strong financial indicators such as a low break-even point and a high internal rate of return (IRR) of 71.46 %, Turmeric Kombucha proves itself to be a scalable and profitable venture in the growing functional beverage market. This result shows that financially, the turmeric kombucha business is feasible to be developed.

By analyzing Fig. 1 alongside Tables 2–4, it becomes clear that the BMC (Fig. 1) establishes the business strategy, the target segments (Table 2) confirm product demand, and the financial analysis (Tables 3, 4) assesses the business's economic viability. Collectively, these elements offer a comprehensive view of the market strategy and financial prospects for the Turmeric Kombucha business.

The Turmeric Kombucha represents an innovation in herbal beverages, packaged in a practical and modern way to reach a broader market and provide added value. The appeal of kombucha lies in its bioactive content [5], such as in Turmeric Kombucha the active content is tetrahydrocurcumin, ferulic acid, curcumin glucuronidation, cyclophenyl, acetic acid, glucuronic acid, and d-saccharide-1,4-lactone

acid which are formed during the kombucha fermentation process [6]. Research indicates that the kombucha market experienced an annual growth rate of up to 23 % during the period 2014–2018 and is projected to reach \$ 3.5–5 billion by 2024 [4]. These results indicated that, in addition to health benefits, the development of the kombucha market is also supported by financial feasibility analysis.

In developing industrial-scale production, kombucha beverage businesses need to consider and pay attention to manufacturing technology, physicochemical properties, and by-products produced [10]. BMC, by fastidiously analyzing key assets, exercises, and organizations, businesses can streamline operations, improve productivity, and fashion vital organizations together, in this way strengthening their competitive position within the showcase [12]. The outcome of utilizing BMC is a comprehensive overview of the business landscape, providing a foundation for formulating the business development strategy. Selecting the appropriate strategy necessitates thorough analysis to the decision-making. A business model allows organizational actors to describe the rationale behind organizational formation and value creation [18]. Mapping a corporate business model using BMC can comprehensively describe the current state of an organization in a simple manner and measurable [18]. Any element of BMC can serve as a starting point for the development of a new business model.

The value proposition of Turmeric Kombucha lies in its functionality as a product containing hepatoprotective, immunomodulators, antidiabetics, and high antioxidant properties content, contributing to human health can recognized to branding of product. The profile of antioxidants and bioactive compounds, offers substantial health benefits, which can enhance its market appeal and consumer trust. Branding a product with these health benefits can positively influence consumer perceptions, leading to repeat purchases and increased brand loyalty. Moreover, a strong brand image serves as a competitive advantage in the market, facilitating better market penetration and positioning. The Turmeric Kombucha represents an innovation in herbal beverages, packaged in a practical and modern way to reach a broader market and provide added value. The value proposition is the value offered by business actors consisting of a combination of certain products (finish goods or services) that provide customer segments' needs. The primary function of the product is to provide nourishment, emphasizing the development and control of natural, chemical-free products. The value proposition identifies products and services that create value for customers [18].

The Turmeric Kombucha market segment is diversified into two groups: business-to-consumer (B2C) and business-to-business (B2B). The B2B application involves selling products to various dining establishments, offices, stores, and resellers. Geographically, the primary marketing focus extends Indonesia. The target market based on age includes customers aged 17 and above, that typically exhibit greater awareness of health, back to nature and healthy lifestyles. To date, no one has presented a specific market segment analysis discussing B2B and B2C. The study by [23] only discusses the market segment from direct shoppers to individual users.

Customer segmentation is the process of categorizing consumers into sub-groups based on their needs, characteristics, and behaviors [18]. Customers of this product are primarily lifestyle-oriented, paying more attentive to health.

They have a high interest in consuming herbal beverages for health benefits. The shift from consuming packaged snacks to herbal functional beverage is expected to reduce exposure to chemicals in the body. Women dominate beverage consumers because the culture that develops in the community directs to be identical to women. The social class proves superior as a basis for segmentation than income. Although the direct application of social class theory to consumer behavior may seem limited in recent years, the concept's usefulness continues to be demonstrated [13]. The consumers' organization of purchases did not significantly influence by the social class.

Customer relationships Turmeric Kombucha are established through personal interactions via phone or personal WhatsApp messages, with the aim of enhancing consumer satisfaction and understanding consumer desires regarding products through Producer also paid attention to a friendly and loyal attitude because business customer satisfaction (sales partners) affected total product sales. In this study, more than 60 % of Turmeric Kombucha customers are sales partners. This contrasts with research by [24], which indicates that social media plays a major influence in influencing the behavior of food consumers and can be used to improve brand relationships for turmeric kombucha. Every company must establish policies governing the management of relationships with both current and prospective customers. Distribution channels are one of the elements of a business model that states the communication of an organization with its customer segments and delivers its value proposition [18].

The marketing activities of Turmeric Kombucha are online marketing using social media and offline marketing strategy, business partner cooperation, and resellers. Marketing strategy is a fundamental tool planned to achieve its goal of creating a sustainable competitive advantage and a marketing program undertaken to serve target markets through partnerships and cooperation. Cooperation plays a beneficial role in the collaboration of two components because it has a significant positive association with a sub-element of social alignment (non-economic satisfaction). Cooperation also positively correlates with both sub-elements of action alignment (coordination and economic satisfaction). The company's marketing strategy can be developed with market segmentation and market targeting. It will lead to the customers' needs and wants, so the result of the product development will satisfy each of the segments.

In this study, the number of partners Turmeric Kombucha has can positively impact of business in the future because partnerships can be a solution in dealing with marketing problems. The key partnership are supplier of raw material and distributor for selling of product. This is consistent with [25] research, which shows that building trusting relationships with vendors of premium ingredients – like organic tea and turmeric – is essential. Maintaining product integrity requires consistent quality and supply, which these partnerships guarantee.

Key Resources are a crucial asset in operational activities to make a business model work [26]. Resources in the Turmeric Kombucha production process comprises human resources, electricity and water supply, production facilities (buildings), delivery infrastructure, production equipment, raw materials, and auxiliary materials. Physical resources like production facilities, machinery, production technology, and capacity contribute to the organization's competitive advantage and yield superior organizational

performance. Inventory levels are planned by determining the optimal number of orders to minimize procurement cost [9]. The prioritize of cooperation, or intangible social concerns of a relationship by managers are more important than tangible concrete joint activities such as coordination to improve suppliers' outcomes.

In contrast, a study by [27], claimed that key production activities – like integrating digital tools and streamlining financial processes – are essential to improving the economic viability of companies catering to the bottom of the pyramid (BOP) market, which in turn promotes financial inclusion and long-term growth. Turmeric kombucha production requires a number of factors to be successful, including premium ingredients, knowledgeable workers, suitable machinery, R&D resources, and strong distribution systems. For products to be competitive in the market and of high quality, these essential resources are essential. An ideal fermentation environment requires standardized, clean facilities. This includes apparatus like pH meters, storage bins, and fermenters.

Key activities identify the main activities needed in creating a value proposition, the most crucial activities in distribution channels, customer relationships, and revenue streams. The efficacy of bioactive compounds in the rhizome increases through functional activity, facilitated by streamlined production processes and physical facilities (user-friendly equipment), supported by feasible human and financial resources. Marketing activity aims to achieve company goals by meeting customer needs and directing the goods or services flow to satisfy customer needs. Previous research showed that in order to survive in their various and dynamic markets SMEs required competitive marketing practices [9]. According to a [9] study, in addition to key production activities, it's important to integrate a number of components. These include optimizing financial processes and integrating digital tools. These components play a crucial role in enhancing the economic viability of businesses that target the bottom of the pyramid (BOP) segment, ultimately promoting financial inclusion and sustainable growth.

This is in line with a study by [9], which shows that initial investment in advanced technology equipment contributes significantly to increased output and reduced production time. In addition, the benefits of reducing long-term operational costs through reduced manual labor become an important competitive advantage.

The revenue stream source of Turmeric Kombucha is not yet diversified, purely from product sales. Revenue streams depict the flow of money from customer segments which sustains the business. The source of revenue solely originates from product sales. Revenue Streams describe the inflow of cash from customer segments. This flow of funds is what keeps a business afloat. The income or flow of funds that come in describes the organization getting income in the form of money from each customer. This flow of funds can maintain company stability and keep the organization or company alive and surviving. The marketing perspectives and revenue streams in the kombucha industry, highlighting the importance of diverse income sources for business sustainability [1].

Alternative strategies for developing the kombucha rhizome business include expanding the marketplace segment, standardizing product quality, and strengthening supply chain performance. According to [9, 18], business

development strategies in small-scale food and beverage businesses can be implemented by expanding markets, increasing productivity, using technology and establishing upstream-downstream businesses linkages.

Social media marketing and online marketplace play significant roles in business development. Effectiveness for social media marketing strategies significantly influence consumer behavior in the food and beverage industry. Engaging content, targeted advertising, and interactive campaigns foster brand loyalty and drive purchasing decisions, demonstrating the importance of a strategic approach to online marketing [19]. This strategy will lead to changes in certain elements of BMC, namely customer segments, customer relationships, and channels.

The product quality significantly influences consumers' purchase decisions in online marketplaces [26]. The discerning buyers prioritize high-quality attributes, which enhance perceived value and drive purchasing behavior. This highlights the necessity for businesses to focus on quality to effectively differentiate their products in competitive markets. Consumers have become increasingly selective and discerning in their purchasing decisions, with products quality as a crucial factor influencing their choices. High-quality products have the power to attract consumers and drive purchasing decisions. This strategy necessitates the development of BMC focusing on elements such as value proposition, key activities, and key resources.

Effective cooperation among companies, suppliers, and sales partners is instrumental in enhancing the loyalty of sales partners, thus facilitating products sales. Establishing strong relationship between companies and suppliers is essential to streamline the production process. Suppliers wield significant influence within an enterprise, as companies rely on them for the provision of raw materials necessary for smooth production [26]. This strategy necessitates the development of BMC focusing on elements such as key partner and customer relationship.

The BMC model for Turmeric Kombucha presents a structured framework for product development and market strategy, with its limitations:

1) scope analysis more to operational aspects and ignore critical market dynamics, such as consumer trends and competitive pressures that can affect success;

2) scope focus for the still limited consumer segment that cares about health, can be developed to the wider segment that needs fermented beverages;

3) BMC does not take into account the potential challenges in obtaining high-quality raw materials and in consistent production quality, which is so important for customer satisfaction that it requires self-evaluation analysis involving strength, weakness, opportunities and threats with SWOT methods.

The further of theoretical research on changing consumer preferences in long-term and competitive business models on the high competition of the beverage industry requires an analysis of the effectiveness of BMC involving external parties in determining sustainability strategies.

The financial aspects of kombucha production, highlighting various revenue streams, market trends, and economic impacts, providing a comprehensive o aligns with revenue stream diversification and business sustainability [12]. Financial analysis is an important component of an eligibility assessment that aims to evaluate the survival of a business from a financial perspective. It's approached

from an investor's point of view to identify potential for recovering invested capital. The evaluation in the Turmeric Kombucha business eligibility analysis uses BEP, NPV, IRR, B/C Ratio, and P indicators that inform about financial performance and business prospects, helping stakeholders in making the right investment decisions. Financial viability analysis to evaluate the survival of commercialization of Turmeric Kombucha and identify potential financial risks during the commercialization process [9]. Financial viability analysis as a critical stage in business planning, scale up to commercialization, has a significant impact on long-term production investment [9, 10]. The results obtained from comprehensive financial investigation methods can be used as a basis for decision-making. Conducting feasibility studies is essential for risk mitigation and maximizing investment returns. By thoroughly assessing site suitability, appropriateness of use, and financial impacts, stakeholders can make informed decisions that align with their strategic goals.

Research indicates that financial performance in the beverage sector is often correlates with effective cost management and strategic pricing [19]. Turmeric Kombucha is well-positioned to capitalize on the health-conscious market segment, making it a lucrative investment opportunity in the competitive landscape of functional beverages [19].

This study differs from previous studies by incorporating detailed financial viability assessment, such BEP, NPV, IRR, B/C Ratio, and PP rather than just focusing on product development and market trends. The findings highlight competitive pricing, quick break-even points, and a clear path to profitability, making speculation engaging and economical.

The limitations in this validity analysis as a follow:

1) consumer preference factors are still not integrated where this affects purchasing decisions and sustainability market share;

2) the assumption used remains a stable market condition, not taking into account the fluctuations in the cost of raw materials or changes in consumer behavior over time, while in the very dynamic business world.

This condition becomes a gap analysis that requires theoretical research to integrate market research, consumer preference assessment. Turmeric Kombucha in the drink market comprehensively.

This research can be developed further by exploring market trends and consumer preferences for functional beverages, identifying potential distribution channels, and assessing competitive landscape dynamics. Additionally, conducting sensitivity analyses to evaluate how variations in production costs and pricing strategies impact financial outcomes will provide a more comprehensive understanding of Turmeric Kombucha's investment potential.

7. Conclusions

1. To successfully capture and expand the Turmeric Kombucha market, focus on health-conscious individuals, younger consumers, and those seeking natural remedies. This product's unique bioactive compounds and health benefits, combined with attention to consumer preferences for flavor, sustainability, and convenience, position it well in the growing functional food market. It is possible to outline that Turmeric Kombucha market, focus on both B2C and B2B segments, targeting health-conscious consumers

aged 18 and above. Highlighting the product's health benefits, including its hepatoprotective, immunomodulatory, antidiabetic, and antioxidant properties, and leveraging effective branding, consumer relationships, and strategic partnerships will be crucial for market penetration and competitive positioning.

2. The financial feasibility analysis underscores the viability of commercializing Turmeric Kombucha. With an NPV of \$13,405,417.62, an IRR of 71.46 %, a payback period of 0.59 years, and a BEP of 3,173 units at \$4,914.46, the data confirms that this venture is both technically and financially sound, supporting successful investment and strategic planning.

Conflict of interest

The authors declare that they have no conflict of interest in relation to this research, whether financial, personal, authorship or otherwise, that could affect the research and its results presented in this paper.

Financing

This research was financed by Faculty of Agricultural Technology, Universitas Brawijaya for funding Centre of Excellent Kombucha under the 2023 employment contract

“Keputusan Dekan Fakultas Teknologi Pertanian, Universitas Brawijaya, Nomor 42 Tahun 2023”.

Data availability

Data cannot be made available for reasons disclosed in the data availability statement.

Use of artificial intelligence

The article uses AI-powered grammar and style checkers to refine sentence structure, punctuation, and readability, ensuring proper English grammar and native fluency. This helps eliminate grammatical errors, maintain a professional tone, and refine native fluency.

Acknowledgments

The authors would like to express their sincere gratitude to acknowledge the Faculty of Agricultural Technology, Universitas Brawijaya, especially the Department of Agro-industrial Technology, for providing the resources and guidance necessary to complete this research. This research would not have been possible without the support of the aforementioned individuals and institutions.

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