



The Efficacy Strategy of the Launching New Variety Product: Case Study Bagong Canned Gudeg a Traditional Foods from Yogyakarta

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Abstract

Nowadays, culinary industries significantly enhance capacity product diversification to endorse economic development. This significant change appears to unlock the product's positioning in the market through various foods industries. Also, R & D results often become a solution for fostering the movement of creative industries to appear. Food canning technology has enough potential to be developed as an appropriate production process, increased market share, attractive packaging that consumers prefer, and an affordable price. In the case study, we used the trademark Bagong with five tastes as product industry as traditional foods from Yogyakarta. The purpose of this paper conducted to find the efficacy strategy for launching the product Bagong Canned Gudeg. As one of the flagship products of traditional food with a high taste derived from the recipes of ancestral people of Yogyakarta based on the development of technology R & D results. The method performed with qualitative data using Test Product Preferences (Organoleptic Test) to understand consumers' level of Bagong Canned Gudeg with 5 product variants on various attributes, market segmentation, and in-depth interviews have engaged in the business canned gudeg owner and company management with 74 respondents from Bandung, Bogor, and Yogyakarta area. This study indicates that based on the marketing analysis results, the products developed worthy of being marketed and received positive results from the consumers (respondents).

Keywords— Bagong Canned Gudeg; Case Study; Efficacy Strategy; Launching New Product; Traditional Foods.

Abstrak

Industri kuliner saat ini memiliki makna yang signifikan dalam meningkatkan diversifikasi kapasitas produk, khususnya untuk mendukung pengembangan ekonomi. Perubahan signifikan ini muncul untuk membuka kunci dan posisi produk di pasar melalui berbagai industri makanan dan juga hasil litbang yang sering menjadi solusi untuk mendorong pergerakan munculnya industri kreatif. Teknologi pengalengan makanan memiliki potensi yang cukup untuk dikembangkan sebagai proses produksi yang tepat, meningkatkan pangsa pasar, kemasan menarik yang disukai konsumen dan harga yang terjangkau. Studi kasus kami menggunakan merek dagang Bagong dengan lima rasa sebagai produk industri sebagai makanan tradisional dari Yogyakarta. Tujuan dari penulisan ini dilakukan untuk mengetahui strategi efikasi untuk meluncurkan produk Bagong Canned Gudeg sebagai salah satu produk unggulan makanan tradisional yang memiliki cita rasa tinggi berasal dari resep-resep leluhur masyarakat Yogyakarta berdasarkan pengembangan pemanfaatan teknologi litbang. Metode yang dilakukan dengan data kualitatif telah dianalisis menggunakan Uji Preferensi Produk (Tes Organoleptik) untuk mengetahui tingkat favorit konsumen gudeg Bagong Canned dengan 5 varian produk pada berbagai atribut, segmentasi pasar dan wawancara mendalam dengan pemilik bisnis gudeg kaleng tersebut. Di samping itu juga wawancara dilakukan dengan manajemen perusahaan, serta dengan 74 responden dari wilayah Bandung, Bogor, dan Yogyakarta. Hasil studi ini menunjukkan bahwa berdasarkan hasil analisis pemasaran yang dilakukan, produk yang dikembangkan layak untuk dipasarkan dan mendapat hasil positif dari konsumen (responden).

Kata kunci— Gudeg Kaleng Bagong; Studi Kasus; Strategi Keberhasilan; Peluncuran Produk Baru; Makanan Tradisional.

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I. INTRODUCTION

The creative industry field of culinary became outstanding when we talked about Indonesia's food industries. Coverage areas with significant populations resulted in various variations in the apparent foods that became the region's hallmark. One product that became a pre-eminent area in Yogyakarta is called *gudeg*. This kind of food combines the main ingredients of the young jackfruit, *kretek*, *tempeh*, and thick coconut milk (*Areh*). *Gudeg* cannot stand saved for a long time. As a traditional food, *gudeg* has become one top destination culinary products in Yogyakarta that sustains itself in the dominant middle inside of the market. Also, an attraction for consumers or tourists from outside the region. A definition of traditional food can be elaborated in a general way from the dimensions that make it up; however, the details in the period, the delimitation of the place and the allowed practices have to be specified by the culture that produces them (Aquino et al., 2021). Traditional foods became one of the ancillary products of tourism, bringing in foreign exchange income for an area. The concept of archipelago food is a traditional food in an area that is very bound to local culture and has its distinctive characteristics in each region (Taviani, 2020). In other words, traditional food represents cultural diversity, as it uniquely represents each ethnic community within the region (Wibisono et al., 2020). Food is a physiological necessity, but food service and image are also important cultural tourism components (Hjalager & Corigliano, 2020). Food is one of the most basic human needs (Okumus et al., 2018) and is recognized as an important tourist attraction (Long, 2010), and tourists can spend almost half of their budget during their travel on food and drinks (Hjalager & Corigliano, 2020). The food we consume plays an important role in our health and well-being (Raheem et al., 2019).

The Special Region of Yogyakarta is one of the areas in Indonesia that has a variety of typical foods. One of the famous is *gudeg*. *Gudeg* has become a special dining icon in the particular region of Yogyakarta that many are interested in tourists, both foreign and domestic. The studies about perceptions of traditional foods such as *gudeg* show that this culinary has a high demand for tourist and consumer purposes with the wide variety offered (Fibri & Frøst, 2019). Nowadays, *gudeg* business is a culinary business found in almost all corners of Yogyakarta. More and more producers who struggle in the business of *gudeg*, the higher the business competition is going. Yogyakarta is a tourist destination that utilizes a competitive behavior strategy to improve the informal economy, and the culinary business is offered primarily for *gudeg* (Damayanti et al., 2017). Each *gudeg* manufacturer also serves a variety of unique features of *gudeg*. It can provide many alternative options to consumers to decide where to go. Consumers can assess which place is right according to consumers' tastes from some of the places visited. The tight competition caused some *gudeg* businesses to be close, especially the new producers who do not understand the market share. The phenomenon is due to the lack of quality service provided to consumers and lack of innovation in terms of quality products. Conversely, some *gudeg* producers can still compete for several years, even more fans, and even create new branches.

PT. Risquna Dewaksara is an organization that conducts traditional food innovations with canned packaging. The organization located in Tlagareja Market Complex, Modinan, Sleman Yogyakarta. The production plan applies to specific demand with 500-1500 canned products based on customer demand. With advantages in packaging innovations with cans that last up to 2 years then have a tremendous added value because they can be taken anywhere in a long time. Product packaging is used to protect a product from the external environment and promote purposes (Raheem et al., 2014). Moreover, packaging design strongly influences consumer purchase intentions (Javed & Javed, 2015).

Canning is a method of preserving food in a sealed container and air, which is heated in such a way, so that the foodstuffs are durable and undamaged physically, chemically, or biologically (Hendrix & Nurhikmat, 2011). The application of technology on canned *gudeg* is a process to accelerate the utilization of technologies from creator to user. Apply technology means making those technologies part of the operation of the life functions of technology users. Technology is accessible and known in any environment that requires an economic value. Benefits application of the technology were demonstrated to the public the importance of technology to support its business increasing productivity. One of the technologies applied in the process of canning. The technology of canning is a method of preserving food by heating it at high temperatures. The preservation process occurs due to the presence of pathogenic microorganisms and murder by heat. Wet warming (steam) is more effective than dry warming (Kim & Foegeding, 1993). The canning process has severe effects on the organoleptic and nutritional properties during storage due to chemical reactions. The degradation of the nutrients can take place during (a) the sterilization process, (b) the leaching of water-soluble nutrients from the food into the liquor, which is discarded during the consumption, and (c) the chemical destruction during storage, depending on a variety of factors such as temperature, residual oxygen, and the metallic surface of the container (Bender, 1978).

However, canning technology is mostly used for dry food in its use. So, in this research, we tried to analyze the durability and develop a new canned product for wet food such as gudeg. In this paper, we tried to disclose the efficacy strategy of launching a variant new product of Bagong Canned Gudeg based on customer interpretation of organoleptic test and acceptance in market-oriented. Bagong Canned Gudeg has the potential in positioned as a brand of the same product already popular in Yogyakarta. The main goal is to compete as a traditional food souvenir. This product has many advantages, such as altering food chemically by changing the moisture, pH, or salinity levels to protect against microbes, bacteria, mold, and yeast. Gudeg was also very efficient for souvenirs with duration storage for almost two years. So this research wants to explore more about the efficacy of canning applications for gudeg products and whether it is technically and commercially feasible.

II. LITERATURE REVIEW

A. *The Successful Development Model for New Product*

This paper aims to find the impact of new product variant launch, product advantage, and market orientation on new product development (NPD) performance in PT. Risquna Dewaksara. It starts with a synopsis of the three main streams of literature; product launch, product advantage, and market orientation and their relationship with performance development. That is followed by an outline of the research methodology employed; the results and survey presented and discussed. Finally, the conclusions address the relationships between performance and product launch, product advantage, and market orientation. Introducing new products on the market for continuing business success is responsible for employment, economic growth, technological progress, and high living standards.

NPD process is essential for creating products that satisfy the needs of industrial customers and differentiate the company from the competition. The NPD process has a specific character in the industrial sector, considering product personalization and possibilities of close cooperation with the final client (Kazimierska & Grębosz-Krawczyk, 2017). In general, an NPD process is defined as the process of formalized planning or thoughts from the beginning stage of ideas down to market launching (Kim et al., 2016). The NPD process consists of the activities carried out by firms when developing and launching new products. It is a different way to develop a new product in food development. Some criteria and factors should be defined well and introduced to the consumer to give feedback (Horvat *et al.*, 2019). Besides that, a new product introduced on the market evolves over stages, beginning with an initial product concept or idea evaluated, developed, tested, and launched on the market (Booz & Hamilton, 1982). Figure 1, also known as the BAH model, underlies most other NPD systems that have forward. This widely recognized model appears to encompass all the primary stages of models found in the literature. It is based on extensive surveys, in-depth interviews, and case studies and, as such, appears to be a relatively good representation of prevailing practices in the industry. Daniel (1961) and Rockart (1979) proposed that organizations need to identify factors that are critical to the success of that organization, and they suggested that the failure to achieve goals associated with those factors would result in organizational failure.

On the other hand, the organization (firm) becomes a primary driver to define the critical success factors to drive new product development (Cooper, 2019). The critical success factor becomes a challenge in designing a process for successful product innovation. New product projects can move quickly and effectively from the idea stage to a successful launch.

The stages of the NPD model are as follows:

- 1) New Product Strategy: Links the NPD process to company objectives and focuses on idea/concept generation and guidelines for establishing screening criteria.
- 2) Idea generation: A process of searching for the product from ideas to meet company objectives.
- 3) Screening: Comprises an initial analysis to determine which pertinent ideas merit a more detailed study.
- 4) Business Analysis: Further evaluates the ideas based on quantitative factors, such as profits, Return-on-investment (ROI), and sales volume.
- 5) Development: Turns an idea on paper into a demonstrable and productive product.
- 6) Testing: Conducts commercial experiments necessary to verify earlier business judgments.
- 7) Commercialization: A process of launching products.



Figure 1. Stages of New Product Development (NPD) (Booz & Hamilton, 1982)

Booz & Hamilton (1982) found that companies that have successfully launched new products are more likely to have some formal NPD process and generally pass through all the above stages. The focus of product development is to improve the quality of the analysis technique, making it atomized and covering a broader range of performance parameters to generate more precise and reliable data. This innovation process is widely used for classical, which characterizes those operational systems created around the invention, such as the company formation, salesforce establishments, and R&D operations, followed by the creation process of a new product. In figure 2., these strategies are called market pull and customer development strategies (Blank, 2012). The principle that characterizes these strategies is that the customers are the most central piece of a business, and therefore, they should be a part of the product creation (Junior et al., 2019). In a market pull condition, the customer's desire becomes the key driver to become a benchmark in developing the product desired by the market (Wang et al., 2021)

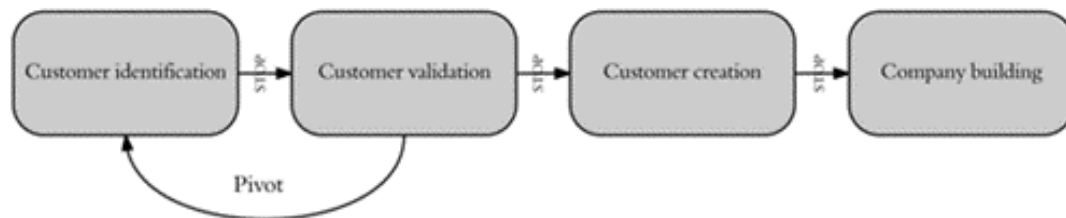


Figure 2. Customer development strategy (Blank, 2012)

For a case study of Bagong Canned Gudeg, this is a similar step facing competition in the market that deals with the superiority of the same product. NPD, in this case, is based on consumers' demand in the market.

B. Derivative Product Variant for Branding Bagong Canned Gudeg

The development of canning technology for food is one of the many research and development results applied by the industry; it becomes essential because technology control requires some improvement in the production process, especially in the pursuit of customer demand. Canning technology defines a method of preservation of foodstuffs in a closed and air-resistant container, which is heated in such a way so that the food is durable and does not suffer damage physically, chemically, and biological (Nurhikmat & Hendrix, 2016). Canning is food

processing where the product is packed in a can to increase the product's shelf life. Increased storability occurs because of processing using high temperatures and an air-tight packaging system (Rianto et al., 2017).

Food canning can be developed due to the proper production process technology, increased market share, and attractive packaging that consumers are well-liked with and affordable. The high added value gained by the *agro-industry* actors fueled the increasing competition both in obtaining raw materials and marketing products processed (Zulkarnain et al., 2013).

The role of technology in packaging products today shows a positive trend in the product trade; it is because it has a lag in the preservation function of products such as:

- 1) Protecting foodstuffs packaged from damage during distribution.
- 2) Protecting the product from physical, chemical, and biological damage.
- 3) Preventing contamination (contamination).
- 4) Maintain quality during storage.
- 5) Food preservation.

The use of packaging in cans is chosen for food because it is air-tight, light pathogen, easy to set up, and not easily broken. Excess stands out uniquely from the packaging can be done sterilization process so that the food stored in it becomes sterile, not easily damaged, and durable. Innovation in food packaging is mainly represented by the development of active and intelligent packing technologies, which deliver safer and high-quality food products (Drago et al., 2020). The three basic functions of food packaging (storage, preservation and protection) are still required today for better maintenance of quality and handling of foods (Rajesh et al., 2019). At the same time, the factors that are a problem in can packaging are going on food (microbes), where the body details cause food to be smelly, rotten and even become toxic. Also, considered in the process technology because the characteristics of each product are different in handling and treatment of the production process. Canning is a way of preserving foodstuffs in tightly sealed containers (*Hermentis*) and destoned with heat. This way of preservation is the most common because it is free from corruption and can maintain the value of nutrition, taste, and attractiveness. The Canning process generally includes the preparation stages of raw materials, bleaching, filling materials into packaging, filling the media solution, air-repellent, sterilization process, cooling, and feeding (Winarno, 1994).

III. RESEARCH METHODOLOGY

This research was carried out in several steps, as shown in Fig 3. The first step is to conduct an initial study related to the researched canning product. The product selection was based on the problem experienced by the company PT. Risquna Dewasara to market their products to reach a wider marketing area. The product is called a "Gudeg" and is considered stale quickly, so it is necessary to increase the ability of this product by using canned technology to be widely accessible to consumers.

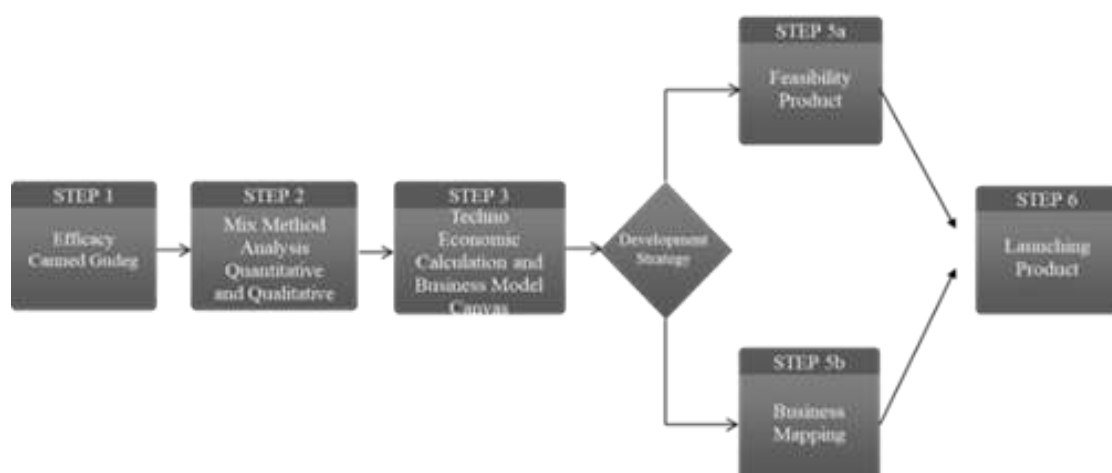


Figure 3. Methodology

This study used a mixed-method (Creswell, 2003), a quantitative and qualitative method (step 2). Both methods can combine with the following notes:

- 1) Can be used to scrutinize the same object but with different purposes.
- 2) Can be used interchangeably.
- 3) Research methods cannot combine because of a different paradigm, but data collection techniques can also use in quantitative research.
- 4) Can use these methods simultaneously if they can be clearly understood and experienced in conducting research (Sugiyono, 2010).

The quantitative used a techno-economic calculation (step 3). This method was conducted to understand the feasibility and business value. At the same time, the qualitative analysis used a Business Model Canvas (BMC) approach to determine the actions in fig 1. In-depth interviews have engaged with the owner to explore more information about the business strategy of the canned gudeg. Data collection through questionnaires was also carried out for organoleptic tests. Besides that, secondary data was used to determine the external factors, especially in business analysis, and to determine some values in the techno-economic calculation. With the mixed method, this study can provide a comprehensive strategy for efficacy launching products for entering the market, especially in the Yogyakarta area, and distributing canned gudeg.

The results of organoleptic tests and product durability tests after being canned become a reference for further product development. So that the determination results of mapping and product feasibility can be continuously updated in the Business Model Canvas document. Also, every change in product strategy should have attention to the results of the calculation of economic feasibility as a reference for investment in product development in the future (step 5). These aspects become a reference for the owner whether it is feasible to launch the product or not (step 6).

IV. RESULT AND DISCUSSION

Successful new products and services are critical for many firms since product innovation is significant in helping organizations to adapt to changes in markets, technology, and competition. An exploration of crucial success factors in new product launches found that the cost of commercializing successful new products was over six times that of products that failed, indicating the significance of launch budgeting to new product success and organizational performance (Di Benedetto, 1999). A paucity of literature regarding the nature of the launch strategy despite its significance to new product performance and organizational performance (Hultink & Hart, 1998). Furthermore, the launch strategy for a new product is a "crucial decision" by marketing managers (Hultink & Schoormans, 1995).

In terms of product derivative Bagong Canned Gudeg the crucial decision was to anticipate the same product. It is can for *gudeg* that have also branding for their market demand, in this case, needs to launch variant from *gudeg* derivative product. PT Risquna Dewaksara anticipates launching six variant products. All products using a canning technology as "value-added" products, contrary to products circulated using preservatives. In this research, there is three main focus to elaborate on the NPD product of PT. Risquna Dewaksara. There is an Organoleptic test to obtain the best concoction, techno-economic analysis to define the investment feasibility study when the NPD process is conducted, and BMC analysis to obtain the best strategy to deliver the product to the market. The NPD process also should consider the situation of the acceptance of consumers to deliver the product to the market (Liu et al., 2020).

A. Preference Test Product (Organoleptic)

This test provided listening and mapping the customer needed, especially for the new product launch by PT. Risquna Dewaksara. The organoleptic test was conducted on 74 respondents, spread over 3 locations, namely Yogyakarta (31.08%), Bandung (39.19%), and Bogor (29.73%). The respondents have various professions such as entrepreneurs (31%), civil servants (20.27%), private employees (5.41%), households (13.51%), restaurant entrepreneurs (2.70%), Catering Entrepreneurs (13.51%), and others (13.51%). One of the respondents is a customer of the PT. Risquna Dewaksara is a new customer (to be targeted) from an exhibition event. This test used a questionnaire, and besides the organoleptic, the product's features (packaging) and brand were also asked in this questionnaire to obtain the best composition in NPD of Bagong Canned Gudeg. The result of this test is shown in figure 4.

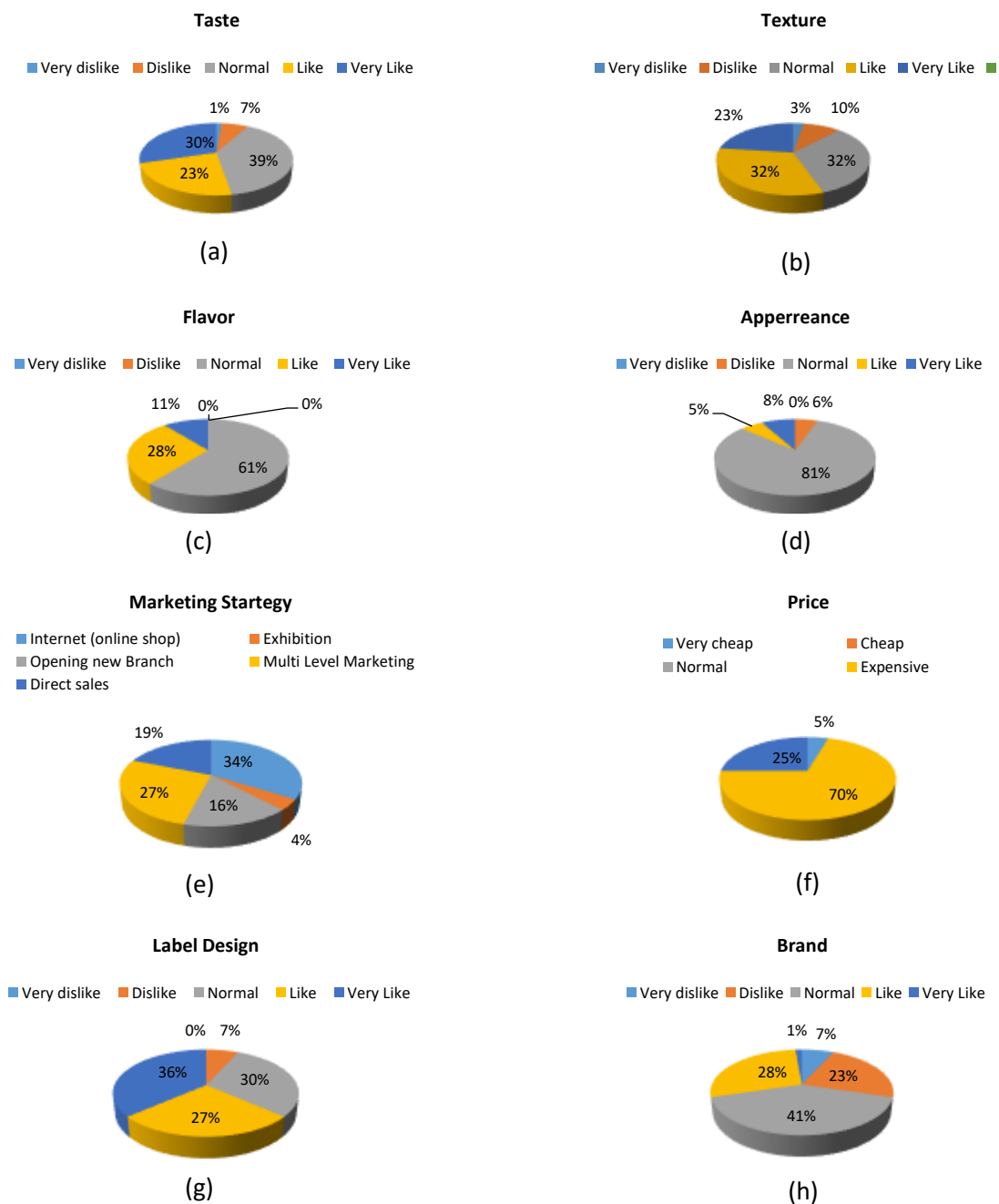


Figure 4. Result of organoleptic test and NPD questioner product Bagong Canned Gudeg

From the figure above, diagrams (a), (b), (c), and (d) focus on organoleptic results, diagrams (e), (f), (g), and (h) describe features (demand) of the product. This research uses analysis statistic descriptive (qualitative data) with ordinal data, shown in Figure 4. From the taste of Bagong Canned Gudeg, the data shows that about 91% that the consumer likes the taste (see the percentage of normal, like, and very like). This conclusion is that there are no significant changes needed. This product always uses a secret recipe from the family founder of PT. Risquna Dewaksara and this recipe is the primary strategy to maintain the taste and flavor of the product. This recipe is famous and has become a traditional recipe in the family PT. About the texture of Bagong Canned Gudeg, 32%

of the consumer presume the texture is like and standard as a *gudeg*. According to the expired date product, this texture is maintained for a long time through the canning process. The flavor result, this result correlates with the product's taste. About 28% like the flavor, and 61% presume the product has a classic flavor as *gudeg*. There is no problem and weakness in developing the Bagong Canned Gudeg as NPD of PT. Risquna Dewaksara. The denial of the flavor of the product is 0%. Although 81% presume the appearance usually is, just 5% is assessed, the product has a functional appearance — the big challenge for the company to develop the appearance of the product more attractive.

About the marketing strategy, by using the modus data, the best strategy to enhance the marketing of the product is by the online shop (34%). Besides that, some of the respondents also expect the product can be delivered by developing a Multi-Level Marketing method (27%), direct sales (19%), and opening a new branch (16%). This result correlates with the BMC model analysis described in the net section. Moreover, diagram (e) also provides no significant benefit from an exhibition event. Techno-economic analysis can affect this result, mainly elaborating on promotion options to reduce costs. For the price product, almost all customers usually presume the price, which also correlates Techno-Economic analysis. There is no refusal about the design because almost all customers can accept the label design. For the Brand, PT. Risquna Dewaksara should have more effort to change the brand of the product. Although 41% of customers usually presume and 28% like the brand, 23% dislike the brand. More of the rejection of the brand came from West Java customers because Bagong as a brand has a different meaning in Yogyakarta. Bagong in West Java means pork that most Muslims in Indonesia, especially in West Java, dislike and do not eat pork. Differentiation of this meaning should be prevented by defining new branding for this product, significantly to penetrate the market in West Java.

B. Techno-Economic

Techno-economic analysis was conducted to analyze NPD's investment feasibility, especially in Bagong Canned Gudeg. This analysis, the manufacturing process, and all of the variables should be determined and clearly defined. This techno-economic also strengthens the features resulting in the previous section to provide more detailed calculations about the product's manufacturing process until sales and profit in a period. Techno-economic analysis using Discounted Cash Flow (DCF) method and predict the gain of benefit from some indicator economic like Net Present Value (NPV), Profitability Index (PI), Internal Rate of Return (IRR), and Payback Period (PP). All of the metrics proposed are most useful for measuring the success of the screening and business analysis stage. These metrics should be used to rate, rank order, and ultimately select projects. All metrics have their advantages and disadvantages (Bhuiyan, 2011).

This result can convince the investor to invest their investment in collaborating in developing this product. Techno-economic analysis was conducted by directly seeing the product's manufacturing process and interviewing the PT. Risquna Dewasaksara to determine all variable that influences this analysis. A techno-economic analysis is a living document same as a BMC analysis. The techno-economic analysis determined the production cost, investment cost, cash flow analysis, and DCF Analysis. The techno-economic result is shown in the table below:

Table 1. Investment Cost

No	Description	Total	Unit Price (Rp)	Total (Rp)
Main Utility				
1	Spare part of the boiler	1	10.000.000	10.000.000
2	Spare part of exhaust box	1	10.000.000	10.000.000
3	Spare part of seamer	1	10.000.000	10.000.000
4	Spare part of generator	1	10.000.000	10.000.000
5	Spare part of sterilization	1	10.000.000	10.000.000
				50.000.000
Support Utility				
6	Laboratory coat	7	100.000	700.000
7	Headgear	5	30.000	150.000
8	Mask	5	25.000	125.000
9	Rubber gloves	5	30.000	150.000
10	Apron	5	10.000	50.000
11	Shoes	7	50.000	350.000
Shipping Equipment		-	-	-
Sub Total				51.525.000
Technology License (10 years)		5%	-	2.576.250
Grand Total				54.101.250

Table 2. Cost Production

No	Description	Price (Rp)		Total in 1 Month (Rp)	Total in 1 year (Rp)
Main ingredients					
1	Chicken meat	25.000	kg	11.562.500	127.187.500
2	Duck egg	2.000	pcs	15.000.000	165.000.000
3	Young jackfruit	5.000	kg	5.500.000	60.500.000
4	Chuck	50.000	kg	6.250.000	68.750.000
5	Red onion	30.000	kg	15.600.000	171.600.000
6	Garlic	20.000	kg	10.250.000	112.750.000
7	Tofu	5.000	kg	3.000.000	33.000.000
8	Tempe	5.000	kg	3.000.000	33.000.000
9	Palm sugar	10.000	kg	6.125.000	67.375.000
10	Coconut	7.500	kg	5.156.250	56.718.750
11	Cayenne pepper	30.000	kg	16.500.000	181.500.000
12	Critical chili	20.000	kg	10.250.000	112.750.000
18	Tomato	10.000	kg	12.000.000	132.000.000
19	Blondho	25.000	kg	5.000.000	55.000.000
20	Candlenut	20.000	kg	6.500.000	71.500.000
21	Pepper	110.000	kg	4.400.000	48.400.000
22	Nutmeg	15.000	kg	1.500.000	16.500.000
23	Cooking oil	20.000	liter	7.500.000	82.500.000
24	Sugar	12.000	kg	7.500.000	82.500.000
25	Salt	1.500	kg	187.500	2.062.500
	Subtotal 1			152.781.250	1.680.593.750
Utility					
26	Electricity	3.300	Kwh	6.600.000	72.600.000
27	Solar	7.000	liter	38.500.000	423.500.000
28	Refill gas (50 kg)	450.000	pcs	4.500.000	49.500.000
	Subtotal 2			49.600.000	545.600.000
Packaging					
29	Cans size 73/70 x82 + EOE	1.800	cans	45.000.000	495.000.000
30	Packaging Cartons	2.000	box	1.000.000	11.000.000
	Subtotal 3			46.000.000	506.000.000
Labor					
31	Staff	7	person	8.000.000	104.000.000
	Total			256.381.250	2.836.193.750
	Grand Total			256.381.250	2.836.193.750

Table 3. DCF Analysis

Year	0	1	2	3	4	5
Revenue from sales	-	7.700.000.000	9.625.000.000	9.625.000.000	9.625.000.000	9.625.000.000
Investment Capital	(1.079.626.250)					
Working capital	-	(1.025.525.000)				
Total Modal	(1.079.626.250)	(1.025.525.000)	-	-	-	-
Costing						
Production cost	-	2.289.755.000	2.836.193.750	2.836.193.750	2.836.193.750	2.836.193.750
Business costs	-	2.222.000.000	2.777.500.000	2.777.500.000	2.777.500.000	2.777.500.000
Financial costs	-	381.686.389	735.875.238	702.073.795	668.272.352	246.480.618
Total	-	4.893.441.389	6.349.568.988	6.315.767.545	6.281.966.102	5.860.174.368
Net Cash Flow	(1.079.626.250)	1.781.033.611	3.275.431.012	3.309.232.455	3.343.033.898	3.764.825.632
Net Cash Flow Accumulated	(1.079.626.250)	701.407.361	3.976.838.374	7.286.070.829	10.629.104.727	14.393.930.359
Profitability Index (PI)		1,24				
Net Present Value (NPV)		15.138.487.749				
Internal Rate of Return (IRR)		18.25	/Years			

Table 4. Cash Flow Analysis

Year	0	1	2	3	4	5
Capacity		80%	100%	100%	100%	100%
Gudeg Cans		220.000	275.000	275.000	275.000	275.000
Total		220.000	275.000	275.000	275.000	275.000
Revenue						
Sales						
Gudeg Cans	35.000 /kg	7.700.000.000	9.625.000.000	9.625.000.000	9.625.000.000	9.625.000.000
Total Revenue		7.700.000.000	9.625.000.000	9.625.000.000	9.625.000.000	9.625.000.000
Investment cost						
	54.101.250					
Cost Production						
Raw material		1.344.475.000	1.680.593.750	1.680.593.750	1.680.593.750	1.680.593.750
Utility		436.480.000	545.600.000	545.600.000	545.600.000	545.600.000
Labor		104.000.000	104.000.000	104.000.000	104.000.000	104.000.000
Packaging		404.800.000	506.000.000	506.000.000	506.000.000	506.000.000
Maintenance		-	-	-	-	-
Technical Supervision		-	-	-	-	-
Payroll Overhead		-	-	-	-	-
Plant Overhead		-	-	-	-	-
Total Cost Production		2.289.755.000	2.836.193.750	2.836.193.750	2.836.193.750	2.836.193.750
Marketing Cost						
General Sales Agent (GSA)	1 %	77.000.000	96.250.000	96.250.000	96.250.000	96.250.000
Royalty	5 %	385.000.000	481.250.000	481.250.000	481.250.000	481.250.000
Shipment	8.000 /box	1.760.000.000	2.200.000.000	2.200.000.000	2.200.000.000	2.200.000.000
Total Marketing Cost		2.222.000.000	2.777.500.000	2.777.500.000	2.777.500.000	2.777.500.000
Total		4.511.755.000	5.613.693.750	5.613.693.750	5.613.693.750	5.613.693.750
Others						
Bank interest						
Investment Credit Installments	5 Years	7.574.175	7.574.175	7.574.175	7.574.175	7.574.175
Working Capital Receivables	5 Years	205.105.000	205.105.000	205.105.000	205.105.000	205.105.000
Investment Credit Interest	13 %	4.923.214	3.938.571	2.953.928	1.969.286	984.643
Working Capital Interest	16 %	164.084.000	131.267.200	98.450.400	65.633.600	32.816.800
Working Capital Loan Installments	3 Years	-	341.841.667	341.841.667	341.841.667	-
Working Capital Loan Interest	13,5 %	-	46.148.625	46.148.625	46.148.625	-
Profit-sharing		-	-	-	-	-
Total		381.686.389	735.875.238	702.073.795	668.272.352	246.480.618
Taxes (PPN)	10 %	300.180.862	381.252.269	384.708.663	389.755.474	397.674.231
Total Credit		5.193.622.251	6.730.821.256	6.700.476.208	6.671.721.576	6.257.848.598
Surplus / Deficit		2.506.377.749	2.894.178.744	2.924.523.792	2.953.278.424	3.367.151.402
Modal & Loan						
Investment Cost	30 %	16.230.375				
Investment Credit	70 %	37.870.875				
Working capital	4	1.025.525.000				
Total Modal & Loan Cost		1.079.626.250				
Net Cash Flow		3.586.003.999	6.480.182.743	9.404.706.535	12.357.984.959	15.725.136.360

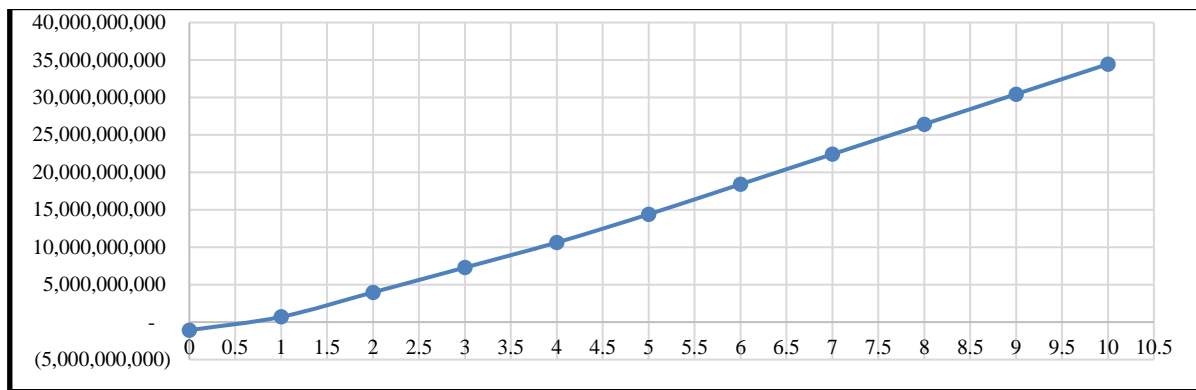


Figure 5. Revenue stream prediction for NPD Bagong Canned Gudeg (Payback Period)

In this analysis, especially for cost production calculation (Table. 2), the NPD product of Bagong Canned Gudeg is produced in 1000 cans a day, or similar to 275.000 cans a year (with the assumption that one month has 25 workdays and 11 months in a year). The cost of goods sold for the Gudeg Bagong is Rp35.000- for 1 unit and about 71% of the revenue margin. This result is related to questionnaire demand, which is that this product is cheaper than other products in the market. Also, the price of economic production for NPD of Bagong Canned Gudeg, if the production is less than 275.000 cans a day, will make the probability to gain the revenue longer than before. This calculation also considers the investment cost (Table 1) and labor to produce this product. The revenue's balance point can be obtained from the analysis of cash flow (Table 4) and DCF (table 3). These tables also examine the cost of investment, loan, and profit from sales of this product. The crucial factors determined how much the investment and loan costs were needed to develop this product until entering the market. Also, the DCF analysis will give the economic reason why this product should develop or not. From DCF (Table 3) shows that the Present Net Value (NPV) of the product is Rp.15.138.487.749,- If the NPV is positive, the whole of the investment is accepted (Umar, 2005). It means that this product was developed on a mass scale. With internal calculation Rate of Return (IRR) per year 18,25, it means significant on revolving of funding and can be predicted as cash flow sheet. Also, in Profitability Index (PI) is 1, 24; its means this value is >1 so that the investment feasibility is accepted. From Figure 5. This product's Payback Period (PP) is less than one year. This PP value is significant to convincing that this product will give tremendous opportunity to obtain the profit based on sales of the product. Also, of course, the minimum amount of sales must be fulfilled according to the Cash Flow Analysis (Table 4).

C. Business Model Canvas (BMC) Analysis

BMC analysis focuses on how the product can be delivered to the consumer, the key indicators to develop the product, the revenue stream (correlates with techno-economic analysis), and how the model business can be conducted based on the NPD product. The specific analysis of competitors of the product was conducted in further analysis and not included in this BMC. Business Model Canvas is a business model consisting of nine blocks of business activity area, which has the purpose of mapping the strategy to build an active business, that can win the competition and success in the long term. This business Model Canvas is characterized by the nine blocks of models that, if unified, will become one business entity, such as;

1. Customers Segment.
2. Value Proposition.
3. Customer Relationship.
4. Channel.
5. Revenue Stream.
6. Key Resource.
7. Key Activities.
8. Key Partnership.
9. Cost Structure.

Canvas business model defines using nine components: customer segments, customer relationships, distribution channels, value proposition, key resources, key activities, partners, cost structure, and revenue streams

(Osterwalder & Pigneur, 2009). Canvas is a powerful visualization tool that clearly shows all the components and interconnections. The visualization tool Canvas is, in our opinion, the most complex, analytical, flexible, and general so that it can use for research of companies in all industries. Of course, the technique of Canvas has got some limitations considering the absolute perception of a company, e. g. It does not include the purpose of the company and a competitive environment. However, it contributes primarily to cognition about how a company is working. This analysis can be used for all business models in the foods industries sector, especially canned *gudeg*. With accelerating overall strength and shortage of business, process analysis of needs and profit have been done quickly. The purpose of mapping businesses was to know the weaknesses and understand the power of the business. From the right point of view illustrates systematically business which can then use for decision-making business strategic management development. From figure 4, standard theoretical subscribes analysis on the business model canvas for Bagong Canned Gudeg in the following Figure 6.








 Key Partners <ul style="list-style-type: none"> - Food Industry - Canned Industry Indonesian Canned Packaging Manufacturers Association (APKKI) - Ministry of Law and Human Rights - Universities / R & D institutions - Ministry of Industry - BPOM - BSN 	 Key Activities <ul style="list-style-type: none"> - Assembling production equipment - Limited production trials - Commercial-scale production - Arrangement of production permits - Brand management, patents, etc. - Promotion / Exhibition - Sales Product 	 Value Propositions <ul style="list-style-type: none"> - hygienist - Innovative and using canning technology - Without preservatives - Competitive on price - Product quality assurance 	 Customer Relationships <ul style="list-style-type: none"> - As supplier/producer - Multi-Level Marketing - Promotion - Discount 	 Customer Segments <ul style="list-style-type: none"> - Traditional food Industry - A citizen who fans with traditional food
Cost Structure  <ul style="list-style-type: none"> - Fixed cost: Purchase of production equipment - Variable cost: Production operations 		Revenue Stream  <ul style="list-style-type: none"> - Product sales (direct) - Production license - Product development cooperation 		

Figure 6. Business Model Canvas for Bagong Canned Gudeg

The BMC document above is a document of Business Plan, a living document, which means that BMC documents can change with the development of business products. The figure above describes the customer segment who will consume the product. This segment is oriented toward people who love traditional food and want to bring it to other places long-time expiration. This segmentation provides that the product that wants to get the product quickly can be consumed anytime and anywhere without fear and the product will spill. The consumer can be targeted in a specific location (in Java) and recommended to a citizen abroad who likes this traditional food.

The figure above also describes two kinds of business models that can develop. There is a Business to Business (B2B) type and a Business to Customer (B2C) type. Depending on the organization, which is PT. Risquna Dewaksara is an SME, and the B2B model business is considered more restrictive than the B2C model. That describes in Techno-economic analysis, where the best strategy to develop the new market of NPD is by selling the product directly to the customer at a competitive price. Multi-Level Marketing can conduct one of the strategies to enhance this product's commercialization. With open the sales branch in the segment area, broader

the commercialization by using the internet (social media, online shop) and networking from an industry association.

Besides the "strategy marketing" of the product in BMC analysis, the other key point is that this result also describes the critical factor in making the process NPD successfully. BMC analysis shows that canning technology cannot separate from this business process. Because without this technology, there is a lack of added value for the Bagong Canned Gudeg. It will make the product will have business-like as usual. There is no strengthening in the packaging and storing method, and this product cannot be delivered well in the more extensive area and a longer time. The utilizing of this technology is a must. This approach also has been determined in the calculation of investment analysis (Table 1). The company should provide the license to utilize this technology to maintain the product can produce smoothly. In this case, the company gives a 5% license for utilizing the technology. This BMC analysis can also make the company more confident in convincing investors to develop the product.

V. CONCLUSION

New product development to be a success remains a critical challenge for companies. Many companies are aware of the significant role new products must play in their future and quest for prosperity. The firms are continually searching for ways to revitalize, restructure, and redesign their NPD practices and processes for better results.

This framework proposes that NPD firms have a clear and well-communicated new product strategy to succeed. These firms should have well-defined new product arenas and long-term trust with clear goals. Successful businesses and teams of NPD have a dedication to the customer's voice. The firm must gather as many ideas as possible. Also, many of these should come from customers so that the firm can be in a position to design and develop winning new products. Up-front homework before product design and development is critical for a firm's success. The quality of execution of the pre-development steps-initial screening, preliminary market, technical studies, and business analysis is closely tied to the products' financial performance. Firms should try to shorten the development time to minimize the chances of changing development and customer needs when the product comes into the market. It is essential to verify and validate product performance requirements and design specifications, and customer acceptance before launching the product into the market through validation and user field testing.

The efficacy strategy analysis for canned *gudeg* shows that the product still needs future development, especially in labeling and branding. For labeling, the use of color, the size of the font, and the information about the product were limited. The branding for the product can be adjusted with several names to prevent ambiguous and negative meanings in some areas (especially in west Java). The power of branding can be derived from the secret received and the family name, which is already known national.

The techno-economic analysis also shows that the product has an opportunity to penetrate the market. The PI has a result of 1.24, NPV analysis of about 15-billion-rupiah, IRR result of 18.25 per year, and the Payback Period of about one year can convince the investor to invest in this business. Techno-economic gives the more quantitative analysis to perform the investment model and calculate the product's price with the cash flow analysis based on the organization's perspective (firm) to develop this product based on their utility and human resources capability.

BMC analysis strengthens the quantitative analysis to perform the product's best delivery to the consumer (market). By defining the nine main blocks of the BMC model, the organization and stakeholders can observe the procedures and business model of the product. Key indicators and success factors such as canning technology give a value proposition to make an NPD of canned *gudeg*. Networking and connection sources of technology and product that can be delivered to the market are also described in this BMC analysis. The other important information from BMC analysis is that there is 2 model business that can be described for this product: the B2B and B2C model. This model has a different perspective and can influence the revenue stream and the method to organize the strategy market in the future.

This study can be used by the organization (firm) to enhance the process of the NPD of the product. The firm also can decide to promote their product to investors to invest in this business. The firm can make a strategy and communicate with internal concerns in some aspects and elaborate on the best way to provide products following consumer desires.

This study is still limited to several economic and business aspects based on BMC analysis. So that further research can be done to increase the level of efficiency and effectiveness of production based on the business strategy, Supply chain analysis and strategic marketing based on competitor intelligence can be conducted to strengthen this study on how the condition of the raw materials, the flow of the raw materials, the cost of transportation analysis, and stock management become important ways to keep running. The competitor analysis describes the product's position in the market. Moreover, encourage the product from the "unknown product" to "known product" and the best strategy to give the best share market with the competitor in some areas. As a research gap, future research also concentrates on understanding how to incorporate environmental issues in the new product development process. Also, consider environmental criteria in portfolio management in the pre-development phase.

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