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CHAPTER II

LITERATURE REVIEW

The theory of the variables employed is described in this section. The outcomes of previous studies, the research model used, and the hypotheses used in this study are also described. Here's a more detailed explanation.

2.1 Literature Review

2.1.1 Product as Element of Marketing Mix

The marketing mix consists of 4P or 7P marketing factors that are utilized to reach the proper target market for marketing reasons (Rozzaak et al., 2021). Through Marketing Mix, the company can influence consumers by seven elements, that are, product, price, product placement, advertising, procedure, physical environment, and individuals. The purpose of the Marketing Mix is to make it easier in developing the product and strong marketing (Rozzaak et al., 2021).

Products refer to goods or services that a company offers to customers. The products offered must meet the needs of consumers, or these products can open up new demand. To be successful, companies need to understand and deal with the life cycle of their products.

The products' life cycle divided into four stages (*Prasad et al., 2019*), there are:

- **Introductory stage**
Bringing a new product to the market entails a lot of unknowns, uncertainties, and dangers that are often unpredictable (levitt, 1965). In this stage, there is likely to be lost (*Prasad et al., 2019*). A considerable amount of funds are being revolted around promotional schemes.
- **Growth stage**
When the sales rise during the introductory stage, it said a successful new product(levitt, 1965). The sale would quickly increase, and the profit would increase as well (*Prasad et al., 2019*). As a result, the volume of production grows, and the manufacturing cost per unit tends to decrease. Thus, it is a critical stage.

- Maturity stage

Evidence of market saturation is the first symptom of its arrival (levitt, 1965). It means that most consumers will be owning or using the product. At this stage, competitors are more likely to increase their activity (*Prasad et al., 2019*). By now (if the product is a novel product), the competitor will create and launch a similar product, which means the sales will be pushed downwards. So, the company needs to takes efforts to increase and sustained sales. The profit is likely to stabilize or begin to decline, which is referred to as the mature stage.

- Decline stage

After a period of declining sales, the product may become obsolete (*Prasad et al., 2019*). This decline could be caused by the consumers' tastes and preferences change in technology improvement or a better substitute product. In this stage, the profit will drop rapidly (*Prasad et al., 2019*).

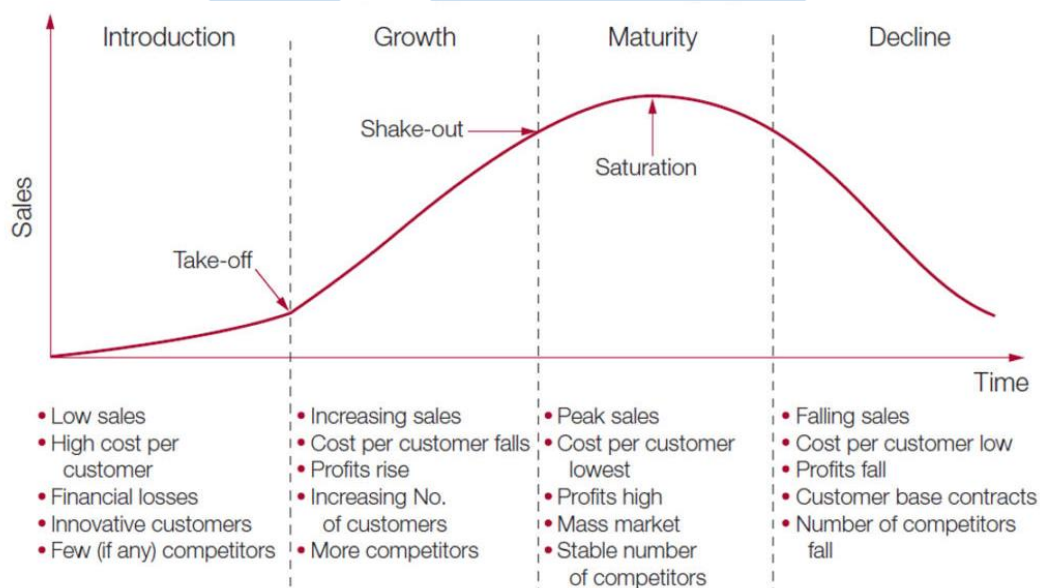


Figure 2. Product Life Cycle
Source: (*Prasad et al., 2019*)

2.1.2 Research & Development

In the food sector, research and development (R&D) attempt to generate and successfully launch new goods on the market. Reducing prices; increasing sensory characteristics; improving nutritional content; Improving food safety, adding convenience, and offering consumers a broader selection

of food options are some of the responsibilities of R&D (Earle & Earle, 1997). When developing new products, R&D puts attention to consumer health, consumer safety, as well as customer satisfaction.

2.1.2.1 Product Innovation

A new product or service, a new technique, or new materials are all examples of innovation (Victoria et al., 2020). Innovation arises from interactions among many actors (Gardeazabal et al., 2021). Furthermore, innovation is a characteristic of corporate culture that indicates the level of openness to new ideas, employee rewards for new ideas, learning capacities, and the ability to turn ideas into reality (Nuryanti et al., 2018).

Introducing new products or substantially upgrading is called product innovation (Victoria et al., 2020). Innovation success depends on the efficiency and effectiveness of knowledge-based capabilities interacting with other complementary resources and skills (Zhou & Wu, 2009). To avoid the loss of production and innovation efficiencies, the organization should transform its tacit knowledge into explicit knowledge carefully.

Regarding (Bigliardi et al., 2011), product innovation is the process of bringing a new product or service to market, which includes ideation, product design, product engineering, market research, marketing analysis, etc. A product or product concept that consumers view as novel is also known as a product innovation (Steffen, 2017). According to the theories, product innovation is defined as the process of implementing ideas to be new products into a new market or existing market.

2.1.2.2 Product Development

The product which improved or the new product is represented as product development. (Marxt & Hacklin, 2005). (Phillips et al., 1999) define Product development as new products developed from the identification of the need to launch into the market, as a tangible product. Product development can also be defined as systematic, commercially driven research aimed at developing items and processes that meet a known or suspected consumer need (Winger & Wall, 2006). Meanwhile, (Halagarda,

2008) said that Research activities related to product development include quality assurance, packaging, technical aspects of production, nutritional value labeling, raw materials, necessary technology, and marketing. According to those theories, product development is new products that are developed from the identification of consumers' needs and as a continuously expanding list of research actions.

Product development includes existing product development and new product development. Existing product development includes reformulation of existing products or adding new ingredients to products. Usually, it starts with a market pull. The focus of product innovation is laid on the product. The market introduction and product review are included in product development.

During new product development, employee knowledge is critical (Zammit et al., 2016). In new product development, most novelty arises at the boundaries between the specialized knowledge emanating from different company departments (Le Dain & Merminod, 2014). Throughout the creation of new products, a lot of knowledge is generated and it can be categorized as tacit knowledge, developed from employees' personal experiences and perceptions during product development projects (Zammit et al., 2016).

2.1.3 Knowledge Management

Knowledge is information that is transformed when a person or a system reads, understands, interprets, and applies it to a specific work function. The information can not be knowledge if it can not be applied to anything. Managing knowledge becomes an issue for both individuals and organizations (Victoria et al., 2020).

Knowledge management is a process that aids businesses in locating, selecting, organizing, deploying, and transferring critical information and skills (Nuryanti et al., 2018). Implementation of knowledge management is an advantage of an enterprise's competitiveness. Knowledge is designed to contribute to society's development, improve the economy's competitiveness,

and increase in companies value (Firlej & Žmija, 2017). Knowledge management can be used in developing products. To adapt and respond continuously to the changes, the enterprise needs to use the knowledge (Dašchievici & Ghelase, 2014).

Knowledge acquisition or information generation, knowledge sharing or knowledge transfer, and knowledge usage or application are the three main dimensions of knowledge management (Cheng & Nasurdin, 2010). The important goal of knowledge management is seen to be the sharing of best practices (Dašchievici & Ghelase, 2014). Implementing knowledge management is also done to avoid increased costs, increased errors, and time wasted. Thus, the knowledge must be understood, organized, and transformed for solving the problems. To sustain growth, innovation, and competitive edge, managing the knowledge well is needed by the organizations (Victoria et al., 2020).

Innovation is facilitated by knowledge management and it leads to improving organizational performance (Victoria et al., 2020). To enable the creation, sharing, applying and convert knowledge, The organization must develop an atmosphere in which organizational performance and knowledge management are integrated. In the food and beverage industry, The incapacity of employees to develop, share, apply, and convert knowledge has been a concern. The effectiveness of employees, which is significant to the organization, may be affected by knowledge sharing.

2.1.3.1 Knowledge Creation

Innovation and competitiveness can be achieved through both the generation of internal knowledge and the acquisition of external knowledge (Marco-Lajara et al., 2019). Knowledge creation is critical for businesses in project execution, new project development, and technical innovation to remain inventive and viable in the competitive market (Pinto et al., 2017). According to (Indriartiningtias et al., 2017) knowledge creation is an activity that aims to create the knowledge needed by the company. Also, (Nonaka et al., 2014) said that knowledge creation is a dynamic process to

transform tacit knowledge from outside and within the organization into explicit knowledge.

Knowledge creation is a dynamic process that involves converting explicit knowledge from tacit knowledge (Nonaka et al., 2014). Tacit knowledge is difficult-to-define knowledge stored in an individual's brain (Indriartiningtias et al., 2017). Meanwhile, Knowledge that has been formalized so that it can be easily taught by others is known as explicit knowledge (Indriartiningtias et al., 2017). The interaction of tacit and explicit knowledge is the fundamental source of knowledge creation in organizations. Both knowledges are major entities that complement each other (Pinto et al., 2017).

2.1.3.2 Knowledge Sharing

The exchange of employees' knowledge, skills, and experiences constitutes knowledge sharing (Nazim & Mukherjee, 2016). Also, knowledge sharing can be described as a culture of social interaction involving the exchange of employee knowledge, experiences, and skills across the entire department or organization (Lin, 2007). Based on it, knowledge sharing is an interaction by individuals to seek and develop knowledge, so it can help create a new framework for creative solutions.

People's knowledge has little value until it is used and shared, among other employee incentive factors (Nazim & Mukherjee, 2016). Greater knowledge sharing enables a shared interpretation of unanticipated changes, emerging challenges, and potential solutions, thereby ensuring success in the face of uncertainty (Stock et al., 2021). The most successful aspect of knowledge management has been identified as knowledge sharing (Nazim & Mukherjee, 2016).

2.1.4 Food Industry

The food industry is basic and important to every nation (M. Sadiku., Et al., 2019). The major concerns in the food industry are quality and sanitation. The food industry is a collection of various components that produce a final product, namely food products. Agriculture or livestock, food processing, food

delivery, regulation, research and development, and marketing are all components of the food industry.

The food and beverage sector has a large potential for research and development. The research is about factors that influence consumer behavior and customers' buying choices, so the enterprise could produce the product that reflects the customers and the time of product launching is suitable. Therefore, better for the companies to have a deep understanding of how consumers behave.

Bringing the new products to market takes time. It needs research and trial through R&D, testing, and marketing to sell the products. Besides, Consumers' taste is crucial and it could be fickle at any time. Therefore, the R&D needs to know what to produce and when to launch the products.

Food businesses are competitive and need to engage in product development. Besides the cost operations, the food enterprises are driven by digitalization, to become more efficient. The food industry needs to be creative in both innovation and desire to fulfill consumers' demands. Because of that, the enterprise of the food industry tries to produce high-quality products and use efficient processes. In the food industry, R&D use computer simulation to solve complex operational problem.

2.2 Previous Research

The study “Knowledge Management and Performance of Organizations: A Case Study of Selected Food and Beverage Firms” (Victoria et al., 2020) demonstrates that knowledge creation has a significant negative effect on innovation. It also discovers that knowledge sharing has a significant positive impact on innovation. Knowledge creation has a significant positive effect on job satisfaction, whereas knowledge sharing has an insignificant negative effect.

The research design used is a survey of 320 Nigerian food and beverage industry employees. To collect the data, using a validated questionnaire. Structural equation modeling was utilized to analyze the data. The researcher said that By implementing knowledge management initiatives, the findings of their study can be

used to improve the company's performance in Nigeria and other developing nations.

Besides, several previous studies have a concept similar to this research. These studies are used as a reference in conducting this research. As stated in the table below, some of these earlier studies have been collated :

Table 2. Previous Researches

No.	Authors	Title	Journals	Research Findings
1	Romeo Bandinelli, Elisa D'avolio, Monica Rossi, Sergio Terzi, Rinaldo Rinaldi	Assessing the Role of Knowledge Management in the New Product Development Process: An Empirical Study	11th IFIP Internasional Conference on Product Lifecycle Management (PLM)	The correlation between Knowledge Management maturity and New Product Development in the Electrical industry is positive.
2	Rifat Kamasak, Meltem Yavuz, A. Ozgur Karagulle, Tamer Agca	Importance of Strategic Flexibility on the Knowledge and Innovation Relationship: An Emerging Market Study	5th Internasional Conference on Leadership, Technology, Innovation and Business Management	- Positive correlation between the knowledge management system and innovation - Strategic flexibility makes the positive linkage between the knowledge management system and innovation performance stronger
3	Victoria O. Akpa, Babatunde H.	Knowledge Management and	International Journal of Economics and	- Innovation was significantly impacted

	Akinlabi, Priscilla T. Asikhia, Goodluck K. Nnorom	Performance of Organizations: A Case Study of Selected Food and Beverage Firms	Business Administration	negatively by knowledge creation - Knowledge sharing had a significant positive effect on innovation - Job satisfaction is significantly enhanced by knowledge creation - Knowledge sharing had an insignificant negative effect on job satisfaction
4	Yung-Lung Lai, Feng-Jyh Lin	The effect of Knowledge Management and Technology Innovation on New Product Development Performance – An Empirical Study of Taiwanese Machine Tools Industry	The 2012 International Conference on Asia Pacific Business Innovation & Technology Management	- Knowledge management has a significant positive effect on TI and New Product performance - Knowledge Management and TI have a significant positive effect on New Product Development performance
5	Amirhosein Mardani, Saghi Nikoosokhan, Mahmoud	The Relationship Between Knowledge Management	Journal of High Technology Management Research	- Knowledge management activities have direct and indirect effects on innovation and organizational

	Moradi, Mohammad Doustar	and Innovation Performance		performance via an increase in innovation capability - Knowledge creation, integration, and application enhance innovation and performance
6	Assunta Di Vaio, Rosa Palladino, Alberto Pezzi, David E. Kalisz	The Role of Digital innovation in knowledge management systems: A systematic literature review	Journal of Business Research	- Knowledge reaches its full potential when it is effectively utilized by the organization through internal and external sharing processes
7	Cheng Ling Tan, Aizzat Mohd. Nasuridin	Knowledge Management Effectiveness and Technological Innovation: An Empirical Study in the Malaysian Manufacturing Industry	Journal of Mobile Technologies, Knowledge and Society	- The effectiveness of knowledge acquisition has a significant positive relationship with product innovation - Product innovation and process innovation were found to be unrelated to knowledge sharing effectiveness - Product innovation and process innovation had no relationship with

				Knowledge application effectiveness
8	Assoc. Prof. Daschievici Luiza, Assoc. Prof. Ghelase Daniela	Knowledge Management in the Competitive Control of Food Manufacturing	The Annals of “ Dunarea De Jos” University of Galati. Fascicle XIV Mechanical Engineering	- This study presents a knowledge management model for food research, supported by cutting-edge information technology
9	Gregory N. Stock, Jacob Chia-An Tsai, James J. Jiang, Gary Klein	Coping with Uncertainty: Knowledge Sharing in New Product Development Projects	International Journal of Project Management	- Knowledge-sharing requirements (KSR) and knowledge-sharing quantity (KSQ) are two different mediators that jointly contribute to the performance of an NPD project via uncertainty and inter-organizational interaction - The effects of KSR and KSQ meditation revealed that knowledge sharing is a crucial aspect of knowledge processing - When both NPD project uncertainty and inter-organizational interaction are high, NPD project

				<p>performance is higher than when neither is high (low KSR – low KSQ).</p> <p>- In cases of misalignment, over-shared knowledge regarding a given level of KSR is superior to under-shared knowledge at the same KSR levels</p>
10	Gabriele Santoro, Demetris Vrontis, Alberto Pastore	External Knowledge Sourcing and New Product Development: Evidence from the Italian Food and Beverage Industry	British Food Journal	- This approach to innovation is beneficial for NPD performance, as firms in the sample incorporate external knowledge sources into their innovation processes.

2.3 Research Framework

Based on the (Victoria et al., 2020) study, a research framework was developed that was combined with the objectives of this research. The research framework used is as follows:

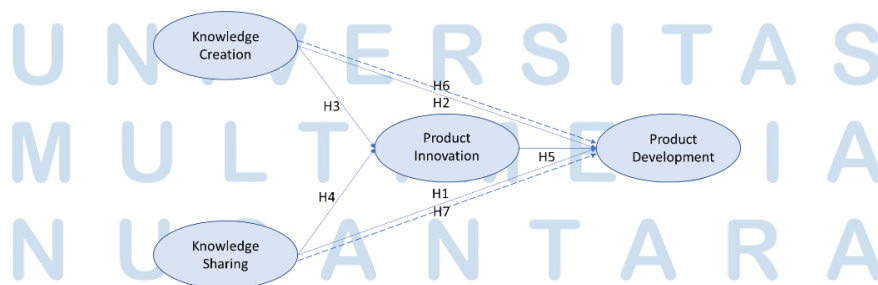


Figure 3. Research Framework

2.4 Hypothesis

The following are some hypotheses that aim to provide direction for research analysis. This hypothesis is taken based on the research framework used. Also, this hypothesis is supported by several previous studies which have similar research concepts.

2.4.1 The Relationship Between Knowledge Sharing and Product Development

Knowledge sharing refers to the communication between team members that are required for product development (Cheng & Nasurdin, 2010). Project success is based on effective knowledge sharing in complex, time-consuming interactions (Thamhain, 2004). When organizations are effective at sharing knowledge, the flow of information is increased, allowing the organization to generate superior products. Based on observations, it is suspected that knowledge sharing affects product development because, with the exchange of knowledge between individuals, individuals will acquire new knowledge and can apply this knowledge to product development. Based on support from the literature, The following hypothesis is :

H1: Knowledge sharing has a positive effect on product development

2.4.2 The Relationship Between Knowledge Creation and Product Development

Working on product development allows for team-based knowledge creation, problem-solving, and brainstorming to address product-related challenges (Poh Kiat Ng et al., 2011). The study discovered a relationship between new product development and the generation and management of new knowledge (Cheng & Nasurdin, 2010). With the creation of good knowledge within the company, the R&D team will be able to easily obtain the knowledge needed to support product development. Therefore, following these previous studies, the hypothesis is:

H2: Knowledge creation has a positive effect on product development

2.4.3 The Relationship Between Knowledge Creation and Product Innovation

Based on research (Victoria et al., 2020), The creation of knowledge had a significant negative impact on innovation. However, the study by (Rajapathirana & Hui, 2018) shows that knowledge creation facilitates innovation. Moderating effects of knowledge acquisition improve new product performance (Rajapathirana & Hui, 2018). Based on previous research, it is said that Knowledge creation, integration, and application enhance innovation and performance. Also, it is said that The effectiveness of knowledge acquisition has a significant positive relationship with product innovation. Based on the literature, the next hypothesis is:

H3: Knowledge creation has a positive effect on product innovation

2.4.4 The Relationship Between Knowledge Sharing and Product Innovation

According to research (Victoria et al., 2020), knowledge sharing had a significant positive effect on innovation. "Innovative information use," "efficient information collection," and "shared interpretation" are the knowledge management tools. increase the performance of new items and the ability to innovate (Rajapathirana & Hui, 2018). Based on the research that has been done, it is known that knowledge sharing has a significant positive effect on innovation. Based on it, the hypothesis used in this study is:

H4: Knowledge sharing has a positive effect on product innovation

2.4.5 The Role of Product Innovation

Process and product innovation are both examples of innovation. Process innovation does not deliver a new product to the market. It helps to provide a better solution to meet existing or new requirements. Product development also includes new product development and existing product development. Existing product development requires minimal innovative thinking as no novel ingredients or processes are required.

Product innovation is the management framework for making adjustments and enhancements to products (Rainey, 2009). It entails the development, validation, and marketing of new products, as well as their conceptualization, design, and development. Thus, new product development becomes part of product innovation. Successful new products are developed through an effective new product development process that streamlines the flow of activities and outcomes from concept to commercialization by combining previous new product development program knowledge with the skills and abilities of the participants (Rainey, 2009).

H5: product innovation has a positive effect on product development

H6: product innovation mediates the relationship between knowledge creation and product development

H7: product innovation mediates the relationship between knowledge sharing and product development

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