

The Role of Research and Development on Sustainable Competitive Advantage

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Abstract: *Research and Development (R&D) strategy is one of the important factors in supporting the business continuity of the cigarette industry, especially Nojorono because the R&D strategy has an impact on the development of innovative products. Supporting factors of R&D strategy are innovation, internal and external factors which include R&D control management, company size and age, and government regulations. R&D strategy is carried out as a step in achieving a sustainable competitive advantage. This research is a qualitative research with descriptive analysis from in-depth interviews with informants. Objective of the research is to analyze the role of R&D in achieving sustainable competitive advantage. The results of this research indicates that supporting factors of R&D strategy have a significant role to the performance of the R&D business as well as the company.*

Keywords: R&D, Sustainable Competitive Advantage, Business strategy

I. INTRODUCTION

Covid-19 pandemic has caused a large contraction of the world economy (Kemenkeu, 2021). This pandemic has not only caused significant impact on the health crisis, but also the world trade map underwent significant changes to the supply chain of world production and consumer consumption (Chengying He, 2021). During this pandemic situation, Indonesian economic shows decline in the industrial sector at 2.97% (Siti Indayani, 2020), while accommodation, food and beverage sectors recorded growth of 6.36% (YoY) (Sumarendra, 2020). Meanwhile, the tobacco products industry sector contributed 10.11% to the state budget (year 2020). In the January-September 2021 period, by category, the cigarette industry experienced a total production increase of 4.3% (Limanseto, 2021). The largest proportion was contributed by the tobacco product export which increase by 3.24%, (Saputra, 2021). The increase in tobacco excise of 12.5% (year 2021) and 12% (year 2022) applies differently for each type or class of cigarettes, bigger annual production should pay more excise, means that there is a price increment of cigarette. On the other hand smokers buying power is weaker, consequently there is a trickling down effect, smokers buy cheaper cigarettes but provides a higher tar effect (Elena, 2021). This situation forced the industry to produce affordable products to be survived in the market.

This is also experienced by the fifth largest cigarette producer in Indonesia, namely PT Nojorono Tobacco International, with their well-known brands *Minak Djinggo* and *Clas Mild* (Nojorono, 2021). In order to maintain the market existence of Nojorono during this competitive market situation, the company has launched some new derivative products at affordable prices, those were *Clas Mild Silver* (2019) and *Minak Djinggo Rempah* (2020). This shows that Nojorono's R&D has taken strategic steps to meet consumer needs and contributing to the development of innovative and cost-efficient products (Julian, 2022). Under dynamic market situations, one of the key success factor to obtain competitive and sustainable product advantages is to build a strong strategy for R&D (S. Arunachalam, 2021). Several strategic steps have been taken by Nojorono's R&D i.e. determining KPIs, establishing PDCA team, routine review performance quarterly and controlling the product development process. So, the R&D strategy of PT. Nojorono Tobacco International is engaged in product innovation development as a strategic step for business performance to achieve sustainable advantage.

II. LITERATURE

Business Strategy

Increasing global market is a new challenge for companies in dynamic and competitive conditions (Xhavit Islami, 2020). Strategy is a tool used by companies to achieve a competitive advantage with long-term goals. Porter introduced the five forces framework as a definitive driving tool for identifying the company's strengths with competitors based on internal and external perspectives (Porter, 1985). Porter's competitive strategy is identified through a five-strength framework which includes rivalry among existing competitors, threat of new entrants, bargaining power of buyers, bargaining power of supplier, threat of substitute products or services (Diane Isabelle, 2020). According to (Hakan Hakansson, 2006) business strategy is an activity that involves the company's organizational resources determining long-term goals to increase effectiveness. Organizational effectiveness has the potential to gather resources and match environmental characteristics with organizational capabilities. Meanwhile, business strategy according to (Tamanna Dalwai, 2021) is a business management activity that has a role in influencing the efficiency or effectiveness of a company's market conditions.

R&D strategy and interrelationships can be explained through several key factors in the business model canvas. The business model canvas is the premise of an organization to describe the structure and management of transactions designed to create value through the exploitation of business opportunities (Ortt, 2019). Key factors in the business model canvas that describe R&D include customer segment, value proposition, customer relationships revenue streams, key resources, key activities and cost structure (Kyllikki Taipale-Eräväla, 2020). The business model canvas is not only relevant to the creation of the company, it is also important to gain competitive advantage and to analyze the various stages to facilitate the growth of the company (Peng, 2021).

The Balanced Scorecard is a comprehensive strategic management system (Kaplan, 1996). The balanced scorecard functions in outlining the vision to strategic goals and the strategic management system by utilizing a set of indicators (financial and non-financial) (Hladchenko, 2015). The purpose of the balanced scorecard is to align work plans with business goals, determine work effectiveness measures, direct employee efforts towards work goals, and achieve balanced results across various organizational stakeholders (Wake, 2015). System Performance measurement with the balanced scorecard is divided into four perspectives i.e. financial performance (financial performance), customer satisfaction (customer satisfaction), internal business processes (internal business processes), growth and development perspectives, learning (learning and growth) (Chinho Lin, 2021).

Research and Development Strategy

Research and Development is a fundamental driving tool for shareholders facing a dynamic and competitive market, reflected in the success of R & D in innovating by interpreting opportunities and threats posed by market changes (S. Arunachalam, 2021). According to (Pegah Khoshnevis, 2018) argues that R&D is a means of increasing human knowledge and social culture that is implemented creatively in real applications. For company development process, R&D will be linked to investment in promoting scientific and technological progress (Eric C. Wang, 2007). R & D investment consumes resources and fails at a high rate. R&D investment is a source of company innovation to cope with global competition and the need for innovation sustainable (David Diwei Lv, 2019). R&D tendencies have a complementary effect on performance long-term which varies according to with the age of the firm (Moncada Paternò Castello, 2022). Meanwhile, (Joanna Radomska, 2021) says that the role of R&D in achieving competitive advantage can affect the company's long-term strategy by combining a R&D strategy and proactive risk-taking.

In the competitive market situation, company requires to think critically in formulating R&D strategies productively and varied for the company's profits (Moncada Paternò Castello, 2022). The implementation of Porter's strategy effectively and precisely, can be used as a starting point of R&D to produce low costs products and provide a level of profitability on par with competitors (Dr.Yogesh Hole, 2019). However, R&D can also choose product differentiation strategy to attract consumer, with a relatively high price. Consequently it require to give innovative attributes so that it will be difficult for competitors to imitate, even though innovation takes time and costs relatively high to the R&D development process (Xhavit Islami, 2020).

Innovation

Innovation in the process of economic development with resources. Productive innovation was first proposed by Joseph Schumpeter (1911) in (Jorge Tello-Gamarra, 2018). According to (Mohammad Sajid, 2015) innovation is a core business strategy as the application of modern innovative techniques strengthens the company's control over the industry. Innovation according to (Peter Kesting, 2015) is a multi-stage organizational process of converting creative ideas into

products, services, or processes, as well as providing differentiating value to selling points in the market. According to Schumpeter (1911) in (Jin Chen, 2019) innovation is divided into five forms, as follows:

- a) Introducing new products
- b) Adopt methods and processes
- c) Implementing a new organizational form
- d) Developing new markets
- e) Advantage of new sources of gold supply

The success of corporate innovation is supported by the effect of human resource flexibility which has an impact on innovation performance for R&D to achieve company performance (Angel Martínez-Sánchez, 2020). In research (Deschamps, 2018) the company's innovation lies on R&D. In controlling the performance of R&D measurement is carried out and development of new products into five categories, i.e.:

- a) Communication
- b) Resource allocation
- c) Define corrective action
- d) Decision making
- e) Continuous learning and improvement

Strategic decisions, policies and procedures within the company are influenced by the role of the leader. In the R&D organization the leader plays a role in the successful development of innovative and creative products through the effective formation of an innovative organization (Mozhdeh Mokhber, 2018). Leadership according to (Pradeep Kumar Rout, 2019) is a person's ability to understand the needs of the organization, which effectively provides an impact for researchers to produce innovative products in R&D. R&D leaders will be effective and successful in corporate organizations, if he has abilities, i.e., hard and soft skills, domain expertise, strong research knowledge, cognitive abilities and motivation based on contextual factors (Vishal Gupta, 2014).

Internal and External Factors

Management control is a formal system for maintaining or changing the pattern of organizational activities that includes planning system and procedures based on the use of information (Adnan A. Alkhafaji, 2018). Control management functions in improving performance, if the system aligned with the company's strategy (Jukka, 2021). According to (Göstl, 2019) control management is used as a standard criterion as the center of the function of control mechanisms and assumptions about environmental changes. Implementation of control management in the company's performance is identified based on external and internal value (Mohammad Ali Latifi, 2021). External values refer to market pricing and product development R&D processes, internal values refer to internal conditions, such as setting rules, standard operating procedures and policies, and standard costs (Parulian Silaen, 2009). Related to the family business of the Indonesian cigarette industry, the implementation of management and control systems are carried out informally which is interpreted as a business controlled by the founding family with a tendency to have a dominant role in the business management process according to the needs of the business owner (Antonius Singgih Setiawan, 2021).

Another aspect in determining the company's performance is the size of the company. Companies that have a larger size will get funding from various sources as the management of the company's sources of funds in the development of R&D investments (Sung Joo Bae, 2020). According to (Daniele Battaglia, 2018) some factors may influence the company's R&D development are the age of the company, the longer the company is established will have an impact on increasing the learning process of a company, so that the organization becomes more consistent in operational activities and enhancement pen intellectual capital company performance. Moreover, government regulations on the cigarette industry have strong role on the company's performance process, both international and national regulations (Alexandra Cros, 2019). The government's regulatory provisions for the increase in excise duty will be related to the provisions of the WHO Convention on the Framework Convention on Tobacco Control (FCTC) (Marita Hefler, 2021). These regulations triggers cigarette companies to develop appropriate and effective strategies for the sustainability of the company's life cycle through product development innovations (Kurniawan, 2020).

Competitive Advantage R&D

Competitive advantage in business is a way to win market competition. By paying attention to the long-term profitability of the industry and analyzing factors competitively, it aims to protect the company against competitive pressures (Porter, 1985). Meanwhile, the key to developing a strategy is to dig up information to the root of the problem and analyze the sources of industrial strength (Awdita Citra Birru, 2022). The company will achieve the best performance in facing a dynamic market, if the business strategy has a sustainable competitive advantage (María Rosario González-Rodríguez, 2018). Through the strategic flexibility of business as a forum for proactive product development, the success of

product innovation for R&D will be achieved, by aligning company resources and achieving customer satisfaction (S. Arunachalam, 2021).

Firm Performance

The company's performance measurement is measured through two dimensions, namely the financial dimension and the non-financial dimension (Chinho Lin, 2021). Company performance is the company's ability to achieve company targets, in considering the efficient use of business facilities during the production and consumption processes (Van Hau, 2021). The company's performance with R&D is related to R&D activities in the development of company knowledge, which is influenced by three factors includes internal factors, external factors and other uncertain factors. In general, R&D spending will increase organizational capabilities and company performance, through increasing employee and organizational capabilities (Tsong-chun Chen, 2019). Internal business processes are also used as a measurement of company performance, the commonly used measures are quality, response time, cost and the introduction of new products (Subarkah, 2021). According to Robert S. Kaplan and David P. Norton (1996: 24) quoted by (Mario Dadić, 2018), an organization that focuses on strategy, divides internal business processes into three stages i.e., the process of innovation, operations and after-sales service. Meanwhile, the learning and growth perspective emphasizes companies to innovate and develop new products which give value for customers. The measuring tools used are employee satisfaction and information system available (Lucky Setiawan, 2020). The learning and growth perspective must be seen through several steps that include operational excellence, leadership in development and organization knowledge (Mario Dadić, 2018).

Development Framework Model

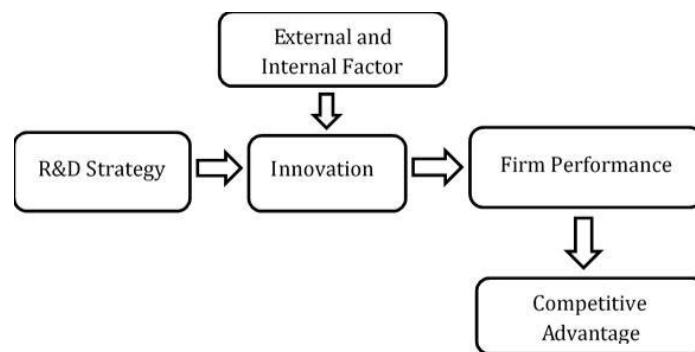


Figure 1. Research Framework Model

III. METHODS

Research method in term of product innovation strategy uses a qualitative approach to identify attributes relate to some strategic relevance, theory development, strategy implementation, and experience of new phenomena that affect innovation performance. (Giulio Ferrigno, 2021). Data collection activities use in-depth interviews, to obtain qualitative data related to R&D strategy, internal external factors, innovation, company performance and competitive advantage in the cigarette industry. The source of data in this study is primary data as the main data in the form of in-depth interviews from individual sources started from top level management, middle level management and lower level management. Secondary data is managed from previous research, documentation of recordings and forms interview guide. The data were analyzed qualitatively and described in descriptive form. The data analysis technique in this study according to (Rijali, 2018), begins from data collection, data reduction, data presentation, and drawing conclusions or verification. It is required validity and reliability test to check credibility of qualitative data (Yin, Robert K, 2011).

IV. RESULT

Results of this qualitative research shows that to achieve competitive advantage R&D strategy is influenced by government regulations, corporate control management, innovation and business performance. As for Nojorono, R&D serves as the heart of the company, uniting the company's vision and the place where ideas are developed. The company's core value is FAITH (Fraternity, Accountability, Innovation, Trustworthy, High Performance), this value becomes a guideline in operating R&D. In the midst of improving performance against global market challenges, R&D implements an agile strategy by focusing on the company's core competence. To achieve sustainable competitive advantage are influenced by HR

capability and product maintenance capabilities. So that the benchmark of success and indicators of R&D to achieve competitive advantage by developing HR competencies through training and achieving individual performance against KPIs.

Innovation plays an important role in the sustainability of the company's business. Innovation is the key in any research that is carried out, considering that market demands for new products continue to grow and the availability of raw materials is limited (Faruk Kalay, 2015). One example of the innovations is an innovative new product, namely *Minak Djinggo Rempah* in 2020. To maintain consistency of taste in this product, the capabilities of human resources and facilities are continuously improved to aim product standardization. To maintain performance of the laboratory result, R&D Nojorono conducts collaborative studies with other tobacco companies in Asia, to compare the validity of laboratory test data with competitors. Other things to do is to provide coaching, and standardizes product specifications.

Nojorono was established in 1932, as a family company, make conservative structure and operating model of the company which is not yet flexible to implement a diversification strategy. The good thing is that currently the board of commissary realize to change the family-based system to more professional based system by recruiting more professional people to improve performance systems. By doing this revolutionary step, hopefully R&D ready to face external factors, i.e. decreased volume due to reduced consumer purchasing power, increased health awareness, increased market share for low-priced cigarettes, and regulation of tobacco excise which resulted in an increase in selling prices.

The achievement of the R&D performance can be seen from the number of products produced within a period of 5 years, namely with the innovation of spiced SKT (hand rolled kretek cigarettes), SKMM products (mild machine-made kretek cigarettes) from the Clas Mild derivatives, and SKMR (regular machine-made kretek cigarettes) with added value. on the cigarette filter. As a company that offers products directly to consumers or known as Business to Customers, R&D has shown enough performance in handling complaints against existing products translated from the department's KPI, that complaints are no more than 5% of the total for a year. The significant results of R&D performance, of course, cannot be separated from the role of leaders in directing performance targets, one of which is by creating a documentation system related to product trials and implementing SOPs as standardization. Performance targets that are achieved or not achieved by employees are appreciated by the presence of rewards and punishments, which have not been carried out optimally in the system.

The R&D strategy is influenced by strategic decisions to identify competitive advantages through products launched as potential competition with competitors, although not yet optimally, the R&D roadmap strategy continues to be pursued. This is an opportunity for all employees to innovate to create quality products that are able to compete in the market through the company's culture values. In addition, creating product differentiation is the right way to maintain product existence in the market.

V. CONCLUSION

Based on the qualitative research process, there are several factors contribute to the comprehensive R&D strategy to achieve a sustainable competitive advantage i.e., company value, product innovation, management control, company size and age, and government regulations, and business performance presented by achievement on KPI.

This study has limitations, since some of information are classified as confidential, so it is necessary to make more researches to other similar companies as benchmark, so that the picture of the role of R&D on sustainable advantage especially within a cigarette company is clearer.

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