

Market Orientation, Innovation and Its Impact on Environmental Sustainability Practices: Evidence from Indonesian Palm Oil Companies

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Abstract. This study aims to examine the effect of market orientation on innovation and then its impact on environmental sustainability practices. Data was obtained through questionnaires distributed to 178 respondents who were the top and middle managers of the palm company. Data then analyzed by SEM-PLS analysis techniques through WarpPLS 5.0. Results showed that market orientation has a significant effect on innovation and environmental sustainability practices. Further analysis found that innovation mediates the relationship between market orientation and environmental sustainability practices. This study suggests that environmental sustainability practices are important to ensure the sustainability of Palm Oil Company.

Keywords: Market orientation, innovation, environmental sustainability practices, palm company, Indonesia

1 Introduction

Environmental sustainability is a topic of international discussion in the context of sustainability development, a concept that directs the need to adjust goals that pay attention to economic development, environmental and social protection. Bruntland Commission (formerly: World Commission on Environment and Development) since 1983 has been building awareness of the importance of sustainability development. Consumer awareness of sustainability causes customer demand to place more emphasis on products and services that are environmentally friendly and are produced through processes that do not damage the environment [1].

Customers place their primary concern on sustainability, which requires market-oriented organizations to also make sustainability a major focus in determining their business strategies [2]. Market orientation is the activity of collecting and using market information and focusing the coordination of resources to provide superior customer value [3].

Market-oriented companies will better serve their customers based on market information [4]. Based on resource-advantage theory, market oriented companies will have a competitive advantage compared to companies that are not market-oriented. Furthermore, market-oriented companies recognize that demands and needs for environmentally friendly products, then encourage organizations to make efforts to preserve the environment. Market-oriented companies will quickly identify changes in customer demand and implement them in environmental sustainability practices [5].

Facing market changes causes organizations must also focus on innovation [6]. Innovation has a contribution to organizational competitive advantage. Innovation refers to a company's ability to change its organization in the face of pressures from the external environment or because of organizational choices. Innovation is the company's mechanism to survive in a dynamic environment. Therefore, companies are required to be able to create new assessments, new ideas, innovative products, and improve service performance in order to satisfy customers.

This study aims to examine and analyze the relationship between market orientation, innovation and environmental sustainability practices. Green, et al.[5] examine the effect of market orientation on environmental sustainability practices. It was the first empirical study that examine the relationship between market orientation and environmental sustainability practices. This study is an extension of Green, et.al [5] by adding innovation variables as mediators. Previous research was conducted on manufacturing companies in the US. In this study, the populations were taken from palm oil companies in Indonesia, given the absence of research conducted in Indonesia, especially on oil palm companies.

1.1 Literature Review and Hypotheses Development

Market orientation and environmental sustainability practices

Market orientation is the organization's attention to fulfil customer needs quickly and to the development of long-term thinking based on customer needs that can arise at any time [7]. According to Narver and Slater [3] market orientation consists of three behavioural components, namely: customer orientation, competitor orientation, and interfunctional coordination. Customer orientation includes all activities in an effort to obtain information about customers in the target market. Competitor orientation is the company's understanding of short-term strengths, weaknesses, long-term capabilities, and strategies of potential competitors. Meanwhile, Interfunctional Coordination is a coordinated company resource in creating superior value from targeted customers. Interfunctional coordination is sourced from customer and competitor information and consists of business alignment efforts and efforts to create superior value for customers. Interfunctional coordination is tasked with communicating the latest market trend information.

Market orientation is a company activity that is preceded by market intelligence or market research [8]. These intelligence activities produce information and market needs which are then distributed to all parts of the organization. This information will then be considered by the company in determining its organizational strategy. Market-oriented companies will better serve their customers based on market information [4]. According to Carr and Lopez [9] market-oriented companies are able to identify and respond to changes in customer demand. Lafferty and Hult [10] suggest that companies with a market orientation strategically align themselves with the needs and desires of customers and stakeholders who are concerned with broader organizational responsibilities to the community.

Research conducted by Green, et al. [5] shows that market-oriented companies will further develop and implement environmental sustainability that has an impact on improving environmental performance. Environmental performance reflects the ability of manufacturing organizations to reduce air emissions, liquid waste emissions, solid waste, and the use of toxic materials that result from the organization's manufacturing process. The practice of environmental sustainability is an activity carried out by organizations to improve human welfare by protecting resources used for human needs and interests and ensuring that damage caused by human waste is not excessive [11]. Environmental sustainability is also related to conservation activities, the use of water, air and land resources wisely [12]. In relation to the

organization, the practice of environmental sustainability is an effort made by the organization to protect the resources that have been used and prevent damage arising from waste generated.

Market-oriented companies place customer orientation and competitor orientation as important in developing their business. Market-oriented companies will make efforts to preserve the environment and be aware of customer demands for products and services that are environmentally friendly. Companies with market orientation will quickly identify changes in customer demand and then encourage organizations to implement environmental sustainability programs. Based on above discussion the following hypothesis is proposed:

**H1: Market orientation has a positive effect on environmental sustainability practices
Market orientation and innovation**

Market orientation is a business culture where the company has a commitment to continue to meet the needs of current and future customers [7]. Companies are required to be able to continue to survive in the market by using existing information. Market-oriented companies process information about customers and competitors to create the value that customers need, providing commitment to the value that has been delivered to achieve high levels of customer satisfaction [8]. Not only focus on customers, market-oriented companies must also pay attention to competitors, both regarding the ability of competitors and their strategies. In addition to creating superior value, companies need interfunctional coordination to facilitate communication between different organizational functions. To achieve this companies need innovation. Companies must be able to process market information optimally so that new ideas can be made by the company to be able to compete with other companies, herein lies the importance of innovation. Innovation comes when the market information obtained, both customers, competitors, and communication between functions can be broken down into solutions for companies to continue to improve their performance.

The emphasis on market orientation requires innovation as a form of effort to answer the needs of consumers, both through the creation of new products and the development of existing products. In addition, the market demands for an environmentally friendly production process also need to be considered. This aims to enable the company to continue to create superior value and make innovation as a tool for the company to win the market while increasing its business performance. Based on above discussion, the following hypothesis is proposed:

**H2: Market orientation has a positive effect on innovation
Innovation and environmental sustainability practices**

Innovation is a means to change organizations, whether it is a response to changes in the external environment or actions that affect the environment [13]. Innovation can be done in various ways such as innovation of new products or services, new technologies or processes, organizational structures or administrative systems, as well as new programs relating to members of the organization. Innovations made by organizations are driven by pressures from the external environment, such as competition, deregulation, isomorphism, scarcity of resources, and customer demand, or because of internal organizational choices, such as gaining special competencies, achieving higher levels of aspirations, and increasing reach and quality of service. Innovation is intended to ensure adaptive behaviour, change the organization to maintain or improve its performance [14].

In managerial practice, innovation presents new ways to increase corporate responsibility by rebuilding relationships between organizations and the wider community [15]. The company innovates continuously to be able to adapt to the environment, especially the market.

By innovating in business, companies can not only face competition but will also be able to face challenges.

The practice of environmental sustainability is a new challenge for companies that arise from market needs. Environmental sustainability practices are activities carried out by organizations in order to protect the natural resources that have been used and efforts to prevent damage caused by waste generated by the organization [11]. To be able to implement environmental sustainability practices, the organization will make changes to its organization. Organizations are required to be able to innovate both the processes and products that are environmentally friendly that will support companies implementing environmental sustainability practices. Therefore, the following hypothesis is proposed:

**H3: Innovation has a positive effect on environmental sustainability practices.
Market orientation, innovation and environmental sustainability practices**

Environmental sustainability practices are practices that are carried out by companies to protect the resources used so as not to cause damage to the environment. Companies must pay attention to air emissions, emissions of liquid waste, solid waste, and the use of toxic materials produced from the organization's manufacturing processes so as not to cause damage to the environment and natural resources. Environmental sustainability practices are market demands that must be carried out by the organization.

Market-oriented organizations gather information regarding current and future customer needs. The information is processed to become a strategy to gain trust and meet customer needs. Market-oriented companies see that the needs of customers today are products and services that are environmentally friendly and do not damage the natural resources used. This encourages companies to make changes in their organizations to be able to meet customer demands and be superior to competitors.

Previous studies suggest that market-oriented organizations will cause the need for innovation [16, 17, 18]. Market orientation must focus on innovation as the main mechanism for responding to market conditions [6, 17, 19, 20]. Market-oriented organizations will carry out innovations that cover various types including new products or services, new technologies or processes and others by paying more attention to environmental aspects and reducing the impact of damage caused by waste generated. Thus the organization will tend to innovate new products or processes and services that are environmentally friendly, this will encourage companies to implement environmental sustainability practices. The following hypothesis is proposed:

H4: The relationship between market orientation and sustainability practices is mediated by innovation

2 Method

This research is a quantitative study using a questionnaire as a data collection tool. The data collected was analyzed using SEM-PLS with WarpPLS 5.0 software.

2.1 Populations and sample

The population of this research is small and medium size palm oil processing companies in Riau Province. A total of 316 questionnaires were distributed to 158 companies. Each

company received 2 questionnaires, which were targeted to be answered by financial and production manager. Of the 316 questionnaires distributed, only 182 are returned. Due to incomplete data, only 178 responses are included in analysis.

2.2 Measurement of variables

The operational definition of market orientation in this study was formed by referring to Barbara [21] and Naver and Slater [3]. Market orientation is defined as the company's actions in the acquisition of information about customers, understanding competitors' strategies, and interfunctional coordination. Market orientation was measured by 9 items. All items are measured on a 10 point scale from 1 (strongly disagree) to 10 (strongly agree)

Innovation is defined as an activity related to technology that serves to open up company insights and improve process that the company already has. This definition is adopted from Huang, et al [22]. All items are measured on a 10 point scale from 1 (strongly disagree) to 10 (strongly agree).

Environmental sustainability practices are defined as activities that refer to an organization's efforts to utilize resources to meet organizational needs by ensuring that damage caused by waste is not excessive. Environmental sustainability is measured by 10 items using an instruments developed by Kusrini and Primadasa [23]. All items are measured on a 10 point scale from 1 (strongly disagree) to 10 (strongly agree).

3 Results And Discussion

The most sample were male. The main age range was 61-70 (30.4%) years old. The study found as high as 6 (8.8%) respondent with extremely old age 81-100 years old. Characteristic of Responden is list in table 1. Twenty-seven (39.1%) of the samples did not have jobs. The most of education level high school graduates is 24 (34.8%) and does not attend school 4 (5.8%).

Table 1. Validity, Reliability Variable and R-Square

Variable	Correlations among l.vs. with sq. rts. of AVEs			AVE	Cronbach's alpha	Composite Realibility	R square
	MO	Envprct	Innov				
MO	0.848			0.719	0.951	0.958	
Envprct	0.700	0.797		0.636	0.936	0.946	0.662
Innov	0.759	0.791	0.881	0.776	0.928	0.945	0.582

Source: WarpPLS 5.0

3.1 Assessment of outer model

Validity is evaluated through confirmatory factor analysis (confirmatory factor analysis) using convergent validity and discriminant validity [24]. Convergent validity test is done by looking at the loading indicator. The loading value of the construct is at 0.700-0.912 > 0.70, AVE value is in the range 0.636-0.776 > 0.50, this indicates that the indicators used in this study can explain each variable [25]. Discriminant validity is performed by comparing the square root of average variance extracted (AVE) values of each construct with correlations or constructs with other constructs in the model. Table 1 below shows that the AVE square value

of each construct is greater than the correlation value between constructs and other constructs in the model, so it is said to have good discriminant validity values [24].

The results of reliability test also can be seen in table 1. Cronbach's alpha range from 0.928 to 0.951 and the composite reliability at 0.945-0.958 > 0.70. This shows that all instruments are error free and consistent on every construct variable with high reliability.

The R-square of innovation is 0.582, meaning that 58.2% of the innovation is influenced by market orientation and the rest is influenced by variables outside the model. While the R-Square of environmental sustainability practices is 0.662 (66.2%), which means that 66.2% of the variability of environmental sustainability practices is influenced by market orientation and innovation, the rest is influenced by other variables.

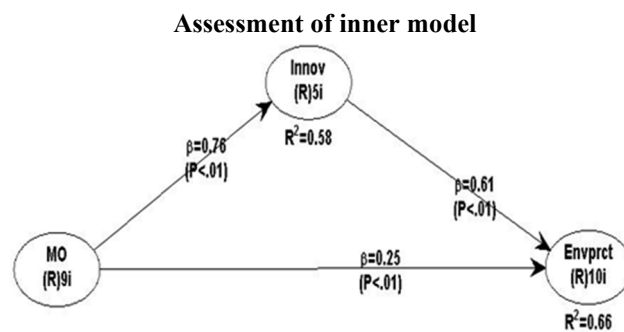


Figure 1. Full Structural Equation Model

Direct effect Figure 1 displays the results of direct influence test. Market orientation (MO) has a positive effect on innovation ($\beta = 0.763$, $PV < 0.001$), MO has a positive effect on sustainability environmental practices ($\beta = 0.246$, $PV < 0.001$) and innovation has a positive effect on sustainability environmental practices ($\beta = 0.614$, $PV < 0.001$).

Indirect effect Table 3 shows the indirect effects which was tested by the VAF method. Results show that innovation acts as a partial mediator of the relationship between market orientation and environmental sustainability practices.

Table 2. Indirect Effect

Path	axb (1)	axb+c (2)	VAF=(1)/(2)x100%	Efek
MO INNOV	0.763x0.614=0.469	0.469+0.700=1.169	20%<40.12%<80%	Partial
ENVPRCT				mediation

Notes:

a = path coefficient value of predictor variable to mediator, with the significance of $P < 0.001$

b = path coefficient value of mediator variable to criterion, with the significance of $P < 0.001$

c = path coefficient value of the predictor variable on criterion before the mediator variable included in the model, with a significance of $P < 0.001$ ($\beta = 0.700$; P Value < 0.001)

This study proposes 4 hypotheses to be tested. The results support all hypotheses. This research successfully proved that market orientation has an influence on the practice of environmental sustainability directly or indirectly. Market-oriented companies align themselves with the needs and desires of customers and stakeholders who care about broader organizational responsibilities to the community. Customer demands for environmentally

friendly products and services make the organization aware of environmental preservation and protect it from air emissions, waste and toxic substances produced by the organization. This encourages companies to adopt environmental sustainability practices. The results of this study are consistent with research conducted by Green, et al [5].

This research also proves that market orientation can influence environmental sustainability practices through innovation. Market-oriented companies pay special attention to the needs and demands of customers, so market orientation requires organizations to innovate to realize customer needs [6, 17, 19, 20]. Innovations by organizations include various types including new products or services, new technologies or processes, organizational structures or administrative systems, as well as new programs relating to members of the organization. In relation to customer demands for environmentally friendly products and services, organizations can innovate their products or their production processes towards environmental preservation practices and prevent damage arising from the waste they produce. So the organization will indirectly carry out environmental sustainability practices.

4 Conclusions

This research has succeeded in achieving its objectives. Market orientation and innovation are proven to have an influence on environmental sustainability practices. This research has also proven that innovation can be a mediator of the relationship between market orientation and environmental sustainability practices. However, interpretation of the results of this study must be carried out with caution, this research was only carried out on Palm Oil companies in 1 province, so the results of this study cannot be generalized to Oil Palm Companies in Indonesia.

This study only examines market orientation and innovation as variables that can influence environmental sustainability practices. Previous research has proven that environmental sustainability practices can also be influenced by supply chain management [26]. Future studies can enlarge the sample size so as to increase the generalization of results and add other variables that can affect environmental sustainability practices so that the results of the research are more comprehensive.

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