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Organizational Capability, Market Perspective, and Green Innovation Adoption: Insight From Indonesian Food Processing Small and Medium-Sized Enterprises

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Keywords: absorptive capacity, green human capital, green market orientation, marketing performance, pro-green leader

<https://doi.org/10.53703/001c.32293>

Journal of Small Business Strategy

Vol. 32, Issue 2, 2022

The adoption of green innovation is urgent for small- and medium-sized enterprises (SMEs) in the food processing industry to reduce pollution, because the large number of food processing SMEs will contribute more to environmental waste. Nevertheless, SMEs face additional obstacles in adopting innovation compared with large enterprises. This study aims to develop a green innovation adoption model for food processing SMEs to overcome the abovementioned problem and assess the effect of the model on performance. The model consists of two components, namely, organizational capability perspective and market perspective. A total of 245 respondents, who were owners or managers in their respective SMEs, were selected. Data were analyzed using structural equation modeling. The results demonstrate that pro-green leaders, green human capital, and green market orientation significantly influence green innovation adoption, which are, in turn, influenced by absorptive capacity. Furthermore, green innovation adoption and green market orientation significantly influence marketing performance. This finding is important in helping owners of food processing SMEs in formulating strategies for adopting green innovation.

1. Introduction

Small- and medium-sized enterprises (SMEs) in the food processing industry play a vital role in emerging market countries, including Indonesia (Najib & Kiminami, 2011a). SMEs largely contribute to job creation and the distribution of national income as well as to the reduction of poverty, which positively influence sustainable development in such countries (Lopes de Sousa Jabbour et al., 2020). In Indonesia, the number of SMEs reaches 64.2 million, which contribute 61.07% to the total gross domestic product (GDP). In addition, SMEs can absorb 97% of the total national workforce (Depkop.go.id, 2021). However, this type of food processing SMEs produces large quantities of waste worldwide, where SMEs consequently create a large share of waste in the environment (Tevapitak & Helmsing, 2019; Van Dyk et al., 2013). For instance, a study on countries under the Organization for Economic Co-operation and Development (OECD) estimated that SMEs contribute 60%–70% to indus-

trial pollution (OECD, 2018). Therefore, adopting green innovation has become a necessity for food processing SMEs today to diminish the undesirable effects on the environment.

This initiative has become a growing issue in management and innovation studies due to the increased consciousness of sustainable business practices and its effect on competitiveness and performance (C. C. J. Cheng et al., 2014; Nilashi et al., 2019). Furthermore, consumers have become increasingly conscious about environmental issues, which is evident in their loyalty toward green products (Pahlevi & Suhartanto, 2020; Tong et al., 2020; Zhang et al., 2020). The government has pushed industries to be more concerned with environmental impacts by implementing stricter regulations (Gupta & Barua, 2018; Huang et al., 2016; Lopes de Sousa Jabbour et al., 2020). Consequently, all businesses, including SMEs, need to participate in protecting the environment by adopting green innovation (J. Chen & Liu, 2019; Chu et al., 2019). The problem is that the

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adoption of green innovation by SMEs differs from that of large companies (Hansen & Klewitz, 2012). Previous findings identified various barriers to the adoption of the SMEs of this particular innovation, such as the lack of finance, technology, and low skill levels of employees (Aboelmaged & Hashem, 2019; Gupta & Barua, 2018; Marin et al., 2015; Widya-Hasuti et al., 2018).

Prior studies mentioned that internal capacity enables SMEs to unlock such barriers and to adopt innovation, because it is related to their ability to absorb new knowledge, leader's commitment, and human capital readiness (Shahzad et al., 2020; Singh et al., 2020; Subramony et al., 2018; X. Sun et al., 2020). However, investigation on the role of firm capacity in adopting green innovation among food processing SMEs is inadequate (Aboelmaged & Hashem, 2019; Aloise & Macke, 2017; Salim et al., 2019). In terms of internal capacity and green innovation adoption, developing a comprehensive model that provides a better understanding is imperative for the evaluation of the adoption of green innovation among food processing SMEs.

A comprehensive model should be established based on the organizational perspective (internal capacity) and market perspective (market orientation and performance). Consumers indicate increased preference for companies that provide environmentally friendly products (Carbone & Moatti, 2011; Kautish & Dash, 2017). Thus, incorporating environmental issues into competitive strategies by developing green market orientation is necessary for companies (Dibrell et al., 2011; Evans et al., 2017; Y. Li et al., 2018; Pratono et al., 2019). The relationship between adoption of green innovation and marketing performance is extremely important and needs to be explained as an attractive means for SMEs to adopt green innovation. Several studies noted positive links among market orientation, innovation, and performance in large companies, which are mainly in advanced economic countries (Genc et al., 2019; Leal-Rodríguez & Albort-Morant, 2016). Meanwhile, studies that explored the effect of market orientation, innovation, and performance of SMEs and especially in the green context are lacking (Aboelmaged & Hashem, 2019; Singh et al., 2020).

Although previous studies (Jun et al., 2019; Raza, 2020) demonstrate that the government exerts a significant influence on green innovation adoption, the scope of the study does not cover the role of government variables in encouraging the adoption of green innovation among SMEs. In the Indonesian context, however, the central government has issued a presidential regulation on green investment (PP No. 52/2011). Specifically, it requires the use of environmentally friendly technology, especially for the photocopying industry, cooling machines, dry stone batteries, and the cement industry. Meanwhile, the Jakarta Regional Government through Governor Regulation Number 142/2019 on the Obligation to Use Environmentally Friendly Shopping Bags prohibits the use of plastic bags in the modern market (Tobing, 2020). Although the government encourages companies to adopt green innovations, no regulation exists that specifically forces SMEs to adopt green innovation. In addition, the government offers no special incentives for SMEs that adopted this initiative. Therefore, this study excluded the role of the government.

Based on the above mentioned research gap, this study intends to develop a model of green innovation adoption by combining organizational capability (i.e., absorptive capacity, leadership, and human capital) and market perspectives (i.e., market orientation and marketing performance). This study contributes to the elimination of obstacles for SMEs in adopting green innovation. Consequently, food processing SMEs will be able to achieve competitive advantage in a sustainable manner.

This study has three main contributions for theoretical development and practical implication. First, this study proposes a comprehensive model on the link between the dimensions of organizational capability (i.e., absorptive capacity, green human capital, and pro-green leader) and the components of the market perspective (i.e., market orientation and marketing performance) in the context of green innovation adoption, which is limited in previous studies (Aboelmaged & Hashem, 2019; Singh et al., 2020). Second, this study found a positive and significant impact of green human capital on green innovation adoption, which differs from the results of previous studies (Aboelmaged & Hashem, 2019). Finally, this study contributes to the enhancement of the marketing performance of SME owners and managers using organizational capabilities (e.g., absorptive capacity, human capital, and leadership) and marketing perspective (e.g., market orientation and marketing performance) with green innovation adoption, especially in building an environmentally friendly business.

2. Literature review

This study uses an approach based on three general theories, namely, strategic management theory (especially those related to organizational capabilities), marketing theory, and innovation theory. Specifically, organizational capability is the ability of the organization to mobilize tangible and intangible resources to achieve competitive advantage (Helfat & Peteraf, 2003). Ulrich and Lake (1990) elucidates organizational capability as the ability of an organization to manage human capital to achieve competitive advantage. Meanwhile, Loasby (2006) emphasizes organizational capability as the ability to obtain new information, knowledge, and skills (absorptive capacity) to support organizational competitiveness. In this case, organizational capability is related to absorptive capacity, human capital, and leadership. The second theory is marketing theory. Kotler and Keller (2016) defined marketing as the manner in which a company meets the needs and wants of consumers through a profitable exchange process. In this case, market orientation is extremely important for companies to enhance their understanding of not only the needs and wants of consumers but also consumer behavior. As mentioned by Jaworski and Kohli (2012), market-oriented companies always intend to understand changes that occur to consumers to provide products or services that comply with their changing needs and wants. In this regard, innovation plays an important role in meeting such needs and remaining more competitive than competitors. For this reason, the current study employs innovation theory.

2.1. The role of absorptive capacity

Absorptive capacity was initially invented to define a set of collective abilities that firms use to identify new information value, then adapt and implement it to generate profitability (Cohen & Levinthal, 1990). Absorptive capacity can also be well-defined as a set of managerial processes by which firms obtain, adapt, transform, and exploit knowledge (Limaj et al., 2016; Najafi-Tavani et al., 2018). Firms require absorptive capacity if they intend to adopt innovative practices, especially in the manufacturing industry (Albort-Morant et al., 2018; Y.-S. Chen et al., 2009). The role of absorptive capacity is important for encouraging human capital and for acquiring green orientation, for influencing leadership style to become a pro-green leader, and for leading the company to become more market-oriented, such as green market orientation.

According to Birasnav et al. (2011), human capital can be defined as the combination of knowledge, expertise, innovativeness, and capability of workers of the enterprise to accomplish tasks. Green human capital demonstrates a significant competence, which is evident in the eco-friendly orientation of workers' activities, knowledge, abilities, attitudes, and commitments (Jyoti, 2019; Yong et al., 2019). Aboelmaged and Hashem (2019) confirm that absorptive capacity influences green human capital. In other words, environmental values adopted from external sources can be transmitted easily to human capital at SMEs, such that they become green human capital.

Absorptive capacity is expected to enable the execution of positive eco-friendly initiatives, which are strategically determined at the organizational level (Delmas et al., 2011). In this case, the role of a leader becomes increasingly important for encouraging human capital to adopt a green orientation as well as for giving the company direction to become a green market-oriented company. Previous studies noted that absorptive capacity influences leaders through the transformational value that is more concerned about the environment (Birasnav et al., 2011; Subramony et al., 2018). A pro-environmental or pro-green leader is one who implements a green leadership style, which is influenced by absorptive capacity.

Green market orientation is recognized as an extension of the market orientation concept, which refers to the philosophy of the firm in satisfying consumer needs through services and products (C. C. Cheng & Krumwiede, 2012; Jaworski & Kohli, 2012). Firms with a green market orientation can distinguish environmental management value, monitor wisely for green competition, and present an environmental-friendly image to the markets (Y. Chen et al., 2015; Y. Li et al., 2018). Against this background, the study presents the following hypotheses:

- H1:** Absorptive capacity exerts a positive effect on green human capital.
- H2:** Absorptive capacity exerts a positive effect on pro-green leaders.
- H3:** Absorptive capacity exerts a positive effect on green market orientation.

2.2. The role of the pro-green leader

A pro-green leader is defined as one who places environmental concern as a priority, where leaders demonstrate pro-green behaviors in daily activities and evaluate workers on the basis of environmental concern and performance (Roscoe et al., 2019). To encourage the involvement of workers in environmental issues and to motivate them to exercise extra effort when addressing environmental problems, leaders typically apply rational stimulation (Graves & Sarkis, 2018). Additionally, pro-green leaders exhibit a tendency to demonstrate concern and support for the business activities of the firm, which can benefit the firm in addressing with environmental issues (Roscoe et al., 2019).

According to Arfi et al. (2018), a leaders' ability to access and use external and internal sources of information and knowledge significantly influences green innovation achievement. Previous scholars reported that the leader plays a significant role in directing employee behavior to transform into green human capital (Birasnav et al., 2011; W. Li et al., 2020; Najib et al., 2021). In other words, the attitude and behavior of employees become increasingly concerned about environmental issues (Ahmed et al., 2020). Moreover, Di Fabio and Peiró (2018) noted the pro-green leaders emphasize the use of vigilant decision-making processes and the development of green human capital by continuously generating learning atmospheres that support concern about environmental issues in the business context.

Leadership style and capability exert a positive influence on market orientation (Chiou & Chang, 2009; Gao, 2017; Kivipõld & Vadi, 2013). Specifically, the top management in various business organizations plays a vital role in establishing a market-oriented culture, including customer and competitor culture orientations (Ogbonna & Harris, 2000; Özşahin et al., 2013; Tollin & Christensen, 2019). Based on these findings, the current study presents the following hypotheses:

- H4:** Pro-green leaders positively influence green human capital.
- H5:** Pro-green leaders positively influence green market orientation.

2.3. Green innovation adoption

Carrillo-Hermosilla et al. (2010) defined green innovation as a modification or invention that produces a positive effect on the environment. Innovation can be carried out in three main ways or types, namely, green innovation in product, process, and system or management (Gupta & Barua, 2018; Triguero et al., 2013; Weng et al., 2015; Xie et al., 2019). Correspondingly, green innovation is typified as novel or changed products, processes, or services that diminish environmental damage (De Marchi, 2012). In addition, green innovation is defined as an innovative product, process, organizational change, or marketing solution that diminishes exploitation of natural resources and reduces the release of destructive materials (Ghisetti et al., 2017).

Various factors influence the adoption of innovation among SMEs (Abed, 2020; Leckel et al., 2020; Won & Park, 2020). However, a leader plays the central role in influencing the organization to become a green company, because the leader plays a significant role in developing culture and human capital (Ahmed et al., 2020; W. Li et al., 2020; Ogbonna & Harris, 2000). In other words, leaders hold the power to introduce new ideas to firms, establish a vision, and encourage staff to acquire new knowledge as well as to practice innovation.

Abdullah et al. (2016) disclosed the positive relationship between resources owned by the company and green innovation. According to Woolman and Veshagh (2007), insufficient resources, such as the limited number of staff with environmental knowledge, skill, and experience, result in the lack of expertise for developing green innovation. The number of expert staff on green innovation initiatives is a critical issue in the success of green innovation adoption among SMEs. Consequently, green human capital plays a significant role in the adoption of green innovation. Hence, the study presents the following hypotheses:

H6: Pro-green leaders exert a positive effect on the adoption of green innovation.

H7: Green human capital exerts a positive effect on the adoption of green innovation.

H8: Green market orientation exerts a positive effect on the adoption of green innovation.

2.4. Factors influencing marketing performance

Marketing performance is a measure of the results achieved from the marketing or operational activities of the company in the form of market size, such as sales value, customer satisfaction, brand reputation, and profit (Deng et al., 2019; Goyal & Mishra, 2019; Homburg et al., 2012). Previous findings pointed to the a positive link between market orientation and marketing performance of the firm (Dabrowski et al., 2019; Iyer et al., 2019). The concept of market orientation is important in marketing theory (Jaworski & Kohli, 2012), which posits that the top objective of the firm is to satisfy the needs and demands of its better than its competitors do (Narver et al., 1998). Previous studies on market orientation proposed that market-oriented culture is a determinant of improved performance. A market-oriented firm prioritizes consumer needs and strives to improve its performance to satisfy consumers, which, thus, increases its performance level (K.-A. Sun & Kim, 2013; Williams & Naumann, 2011). A stream of research demonstrated that firms benefit from developing a market orientation due to its effect on performance (Narver & Slater, 1990; Slater & Narver, 2000).

To respond to the growth of pro-environmental consumers, companies, such as SMEs, need to adopt green innovation. As reported by Prakash and Pathak (2017), consumer intention influences their buying decisions. Therefore, firms should respond to the trend of green consumers by presenting green innovation adopted by the company. Green innovation adoption is positively linked to marketing performance, because consumers are looking for a new product or process that companies can offer (Hong et

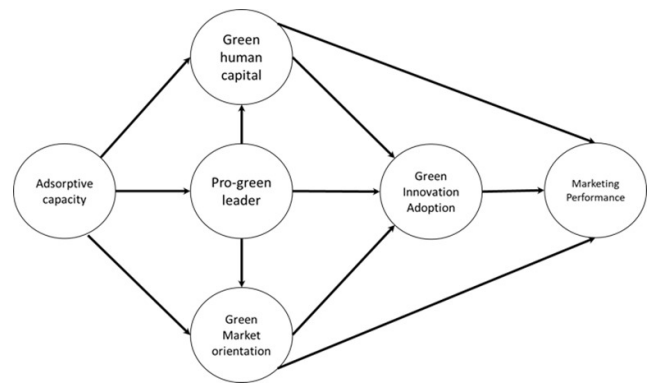


Figure 1. The initial model of adoption of green innovation and marketing performance

al., 2019; Singh et al., 2020). However, the process of adopting innovation is largely influenced by the readiness of human capital. Previous studies reported that human capital is one of the most important factors in adopting an innovation (Danquah & Amankwah-Amoah, 2017; Ogbeibu et al., 2020; Singh et al., 2020). Moreover, it is part of marketing capability, which also influence overall organizational performance, including marketing performance (Davcik et al., 2020; Hartline & Bejou, 2012). Hence, the proposed hypotheses are as follows:

H9: Green innovation adoption positively influences marketing performance.

H10: Green human capital positively influences marketing performance.

H11: Green market orientation influences marketing performance.

Based on the literature review and the formulated hypotheses, this study formulated an initial model of green innovation adoption and marketing performance. [Figure 1](#) presents that green human capital, pro-green leaders, and green market orientation influence green innovation adoption. In turn, absorptive capacity influence these three variables. Furthermore, this model assumes that pro-green leaders positively influence green human capital and green market orientation, because human capital and market orientation are highly dependent on leaders. In addition, the adoption of green innovation, green human capital, and green market orientation are considered to exert a positive impact on marketing performance.

3. Method

3.1. Data collection

Quantitative data were collected through a self-administered survey on 245 owners or managers of small- and medium-sized food processing businesses in greater Jakarta, including Bogor and Depok cities, Indonesia. No valid data are available regarding the population of food processing SMEs with their names, addresses, and detail contact numbers. Thus, this study used social media (WhatsApp) groups consisting of owners or managers of SMEs

Table 1. Construct, items, and sources of measurement variables

Construct	Items	Sources
Absorptive capacity (AC)	Valuable new knowledge is recognized by our company. Valuable knowledge from external sources is absorbed by our company. To improve performance, our company uses new knowledge. Our company identifies new and valuable ideas. To improve performance, our company uses innovative ideas. Our company encourages the creation of innovative and valuable ideas.	Aboelmaged and Hashem (2019) and Zacharia et al. (2011)
Green innovation adoption (GIA)	To reduce environmental risks, our company adopts less inputs. Our company adopts clean technologies. Our company reuses or recycles inputs, materials, and wastes. Toxic materials in our company are substituted by eco-friendly ones. The use of e-commerce is encouraged by my firm, because it is more eco-friendly.	Aboelmaged and Hashem (2019) and Kusi-Sarpong et al. (2015)
Green human capital (GHC)	Our staff is happy to provide eco-friendly products and services. Our staff uses teamwork to protect the environment. Our staff receives full support for protecting the environment. Our staff understands how green operations fit with the daily job. Our staff is freed to make decisions about environmental issues.	Chang and Chen (2012), Chen and Chang (2013), and Srinivasan and Kurey (2014)
Green market orientation (GMO)	We discuss the environmental aspect of our organization with stakeholders. To identify green needs, we implement market research. We target environmentally-conscious consumers. We prefer digital promotion to promote products, because it is more eco-friendly.	Chahal et al. (2014) and Papadas et al. (2017)
Pro-Green Leader (PGL)	I always encourage my staff to learn green information. I always communicate environmental policy with my staff. I help my staff when they face green problems. I review the green operations for progress. When evaluating staff, I emphasize the importance of green practices	Bowen et al. (2001), Dubey et al. (2015), and Srinivasan and Kurey (2014)
Marketing performance (MP)	Adoption of green innovation increases sale volume. Adoption of green innovation increases profit rate. Adoption of green innovation enhances our reputation.	El-Kassar and Singh (2019) and Lin et al. (2013)

for data collection. In managing SMEs in Indonesia, several characteristics can be used to differentiate between SMEs. For others, the owner and manager are two different individuals, whereas owners are also managers in other SMEs. In companies where the owner and manager are separate individuals, the manager is generally given the full delegation to manage the company, whereas the owner only acts as an investor. In the current study, the managers selected as respondents are managers with full authority in managing the company. As such, they hold the same responsibility and decision-making as owners who directly manage the business.

The purposive sampling method was applied using the following criteria: (1) an SME in the food processing industry located in greater Jakarta, (2) minimum operation of one year, and (3) adoption of green innovation for at least 3 months. The definition of SMEs in the context of the present study follows the definition released by Badan Pusat Statistik (Statistics Indonesia). SMEs are categorized according to the number of employees, where a small-sized company has no more than 20 employees, whereas a medium-sized company has between 21 and 99 employees. Furthermore, the sample size was based on the general rule of thumb suggested by Hair et al. (2017) for conducting Structural equation modeling (SEM) analysis. Accordingly, the sample size should be approximately 100 observations or a ratio of 5:1 or 10:1 observation per variable for analysis. The total number of questions to be used as an observable variable should be 28 questions. Therefore, the total re-

spondents recruited should be 140 to 280. The study selected 245 respondents.

3.2. Research instrument

To measure each variable, the study used indicators as adopted and adapted from tools developed by previous researchers. Focus group discussions (FGDs) were conducted to formulate indicators that need to be adopted and that need an adaptation process. FGDs were conducted by two experts in marketing and consumer behavior, two experts in food processing SMEs, one psychologist, and two environmental activists.

To assess the identified variables, several instruments for measurement were generated by developing questionnaires related to absorptive capacity, green innovation adoption, green human capital, green market orientation, green leader's orientation, and business performance. [Table 1](#) provides the construct and items in detail. All variables were assessed based on questionnaires, where items were rated using a five-point Likert-type scale. The reliability of the instruments was assessed using Cronbach's alpha. Face and content validity were assessed through the review of experts, who considered validity as acceptable.

3.3. Data analysis

This study was empirically explanatory and designed using the quantitative approach. SEM was used to assess the

structural links among variables. SEM analysis employs two models, namely, structural and measurement (Hair et al., 2014; Malhotra, 2007). In the measurement model, the indicator items for each construct were analyzed after which construct validity was evaluated. Confirmatory factor analysis (CFA) was used to analyze the measurement model in which the variables defining each construct had been defined by the researchers. Furthermore, CFA was used to validate the relationship between the indicator variables and their principal latent constructs. The structural model determines the correlation among the constructs (Nurlaela et al., 2019). Statistical software SPSS 24.0 and AMOS 24.0 were used to analyze and interpret data.

4. Results

4.1. Profile of respondents

The respondents were predominantly males (62%), which is in line with the characteristic of small- and medium-sized businesses in Indonesia (Najib & Fahma, 2020). The largest proportion of the respondents (39%) is aged between 31 and 40 years, which represents the mature age group for business operations. In terms of level of education, the majority (40%) were senior high school graduates, which is typical of owners of SMEs in Indonesia (Najib & Kiminami, 2011a). [Table 2](#) presents a detailed profile of the respondents.

[Table 3](#) shows indicates that the respondents perceived absorptive capacity and green human capital as very favorable (means between 4 and 5), whereas having a pro-green leader was perceived favorable (means between 3 and 4) from the organizational capability perspective. Alternatively, the respondents perceived green market orientation and marketing performance as very favorable (means between 4 and 5) from the marketing perspective. Moreover, green innovation adoption was perceived as very favorable (means between 4 and 5). Lastly, little variation exists between the perceptions of groups among gender, education, and business experience related to the construct variables.

4.2. Measurement model

Each construct obtained Cronbach's alpha values between 0.881 and 0.927, which indicates that the internal consistency of the measurement model is highly satisfactory (Fassott et al., 2016). Moreover, the value of composite reliability exceeds the minimum cut-off of 0.6 as recommended by Hair et al. (2017). In other words, the levels of internal consistency and reliability are acceptable. [Table 4](#) illustrates that the lowest value of AVE is 0.740, which exceeds the cut-off value of 0.5, which indicates that the CFA results also support the convergent validity of all constructs. [Table 5](#) illustrates that the shared variance of different variables does not exceed the square root of the average variance explained. Thus, the discriminant validity of the measurement model is acceptable. Therefore, these findings confirm that the measurement instruments can be used to measure the constructs in this study.

Table 2. Profile of respondents

Demographic profile	N = 245	%
Gender:		
- Male	152	62
- Female	93	38
Age (year):		
- 20–30	73	29.8
- 31–40	97	39.6
- 41–50	45	18.4
- >50	30	12.2
Income per month (Indonesian Rupiah):		
- < 20 million	60	24.5
- 20–40 million	91	37.1
- 41–60 million	74	30.2
- >60 million	20	8.2
Level of education:		
- Primary school	11	4.5
- Junior high school	51	20.8
- Senior high school	98	40.0
- Bachelor's degree	85	34.7
Business experience (years):		
- <5	73	29.8
- 5–10	84	34.3
- 11–15	52	21.2
- >15	36	14.7

4.3. Structural model

To test the relationships among variables simultaneously, a structural equation model with maximum likelihood estimation was used with the following goodness-of-fit indices: $\chi^2 = 502.11$, $df = 180$, $CMIN/DF = 2.30$, $CFI = 0.98$, $NFI = 0.96$, $TLI = 0.96$, $RMSEA = 0.07$. All values exceed the cut-off values recommended by Hu et al. (1992). Hence, the model is acceptable. Based on squared multiple correlation, pro-green leader, green human capital, and green market orientation explain 0.49% of variance of green innovation adoption. Moreover, green innovation, green human capital, and green market orientation elucidate 0.52% of variance of marketing performance. In other words, the model has a predictive power of 52% for marketing performance. According to Hair et al (2014), this value is included in the moderate category and tends to be high.

[Table 6](#) describes the result of the hypothesis testing using regression coefficients and the respective significant values. The result demonstrate that pro-green leader ($\beta = 0.522$, $t = 5.821$, $p < 0.01$), green human capital ($\beta = 0.310$, $t = 4.121$, $p < 0.01$), and green market orientation ($\beta = 0.431$, $t = 4.313$, $p < 0.01$) exert positive impacts on green innovation adoption. These results support H6, H7, and H8. Moreover, green innovation adoption significantly influences marketing performance ($\beta = 0.333$, $t = 3.925$, $p < 0.01$) and green market orientation ($\beta = 0.213$, $t = 3.723$, $p < 0.01$). Consequently, this finding support H9 and H11, whereas H10 (i.e., the relationship between green human capital and market performance) is rejected ($\beta = 0.072$, $t = 0.821$, $p > 0.05$). However, although green human capital exerted no significant direct effect on market performance, it exerts a significant indirect effect through green innovation adoption as a mediator.

Table 3. Means of construct variable by gender, education, and business experience

Profile		Construct Variables					
		AC	GIA	GHC	GMO	PGL	MP
Gender	Male	4.636	4.336	4.212	4.204	3.783	4.190
	Female	4.594	4.332	4.102	4.228	3.871	4.184
Level of education	Primary school	4.579	4.333	4.149	4.205	3.766	4.182
	Junior high school	4.611	4.329	4.155	4.207	3.774	4.182
	Senior high school	4.628	4.337	4.158	4.226	3.825	4.184
	Bachelor's degree	4.642	4.337	4.166	4.226	3.943	4.188
Business experience (year)	<5	4.582	4.331	4.157	4.215	3.825	4.187
	5-10	4.662	4.336	4.153	4.218	3.823	4.189
	11-15	4.643	4.336	4.158	4.220	3.828	4.184
	>15	4.573	4.333	4.160	4.211	3.832	4.188

The finding indicates that absorptive capacity exerts a significant influence on green human capital ($\beta = 0.342$, $t = 4.743$, $p < 0.01$), pro-green leader ($\beta = 0.245$, $t = 5.428$, $p < 0.01$), and green market orientation ($\beta = 0.262$, $t = 4.392$, $p < 0.01$). Thus, the findings support H1, H2, and H3. The role of a pro-green leader can be confirmed through its relationship with green human capital ($\beta = 0.413$, $t = 3.694$, $p < 0.001$), green market orientation ($\beta = 0.522$, $t = 5.821$, $p < 0.001$), and green innovation adoption. Consequently, these results also support H4 and H5.

5. Discussion and implication

5.1. Discussion

First, the findings confirm that pro-green leader, green human capital, and green market orientation influence green innovation adoption among food processing SMEs. In turn, absorptive capacity influences the three variables. This finding is in line with those of previous research, which established the relationship between absorptive capacity and green orientation of organization (Aboelmaged & Hashem, 2019; Riikinen et al., 2017). Additionally, this result is consistent with the prediction of the current study, which emphasized the important role of absorptive capacity and pro-green leader as drivers of the adoption of green innovation among food processing SMEs, especially from the perspective of an emerging market country such as Indonesia. According to Hofstede et al. (2010), the leader is a determinant factor of the attitudes and behaviors of employees, because the power of distance in a country such as Indonesia is high. Furthermore, the involvement of a leader with a clear vision, authority, and responsibility in following strategic changes toward the sustainability of businesses and the environment may enable SMEs to adopt green innovation in business activities (Del Brío & Junquera, 2003).

Second, the proposed green innovation adoption model displayed a better predictive power than those of previous studies (Aboelmaged & Hashem, 2019; Asadi et al., 2020; Zailani et al., 2015). Therefore, this finding can be considered an improved model from the previous, existing green

innovation adoption model. In addition, this model was developed specifically for food processing SMEs in the context of a developing country. This model will be beneficial in reducing the negative impact on the environment from the operation of food processing SMEs, because the food processing industry has been recognized as a large contributor to environmental pollution (Van Dyk et al., 2013). Nonetheless, these findings may also be suitable for SMEs in other industries, because SMEs in Indonesia generally share similar characteristics in terms of internal capacity, leadership, and market orientation (Najib & Kiminami, 2011b).

Third, we found that green innovation adoption among food processing SMEs together with green market orientation exert a significant influence on marketing performance. Previous research confirmed that green innovation could be a significant predictor of performance (Asadi et al., 2020; Cai & Li, 2018; Zailani et al., 2015). According to García-Pozo et al. (2015), businesses with high levels of environmental concern displayed better performance in terms of economic performance, such as profitability, compared with those with low levels of environmental concern. Consequently, firms may improve economic performance through green innovation practices, because they can manage costs and obtain market differentiation (Rezende et al., 2019). From another perspective, the trend among consumers is that of becoming more concerned about the environment and increasingly preferring to use environmentally friendly products (Tong et al., 2020; Zhang et al., 2020). For this reason, companies that adopt green innovation and green market orientation will attract more consumers than those without such adoption. In this regard, green innovation adoption influences marketing performance.

Previous research mentioned that human capital is a component of marketing capability, which also influences the overall organizational performance, including marketing performance (Davicik et al., 2020). Unfortunately, this study failed to prove the direct positive influence of green human capital on marketing performance. Therefore, this study was unable to provide support for previous research. However, the current study found that green innovation

Table 4. Results of the measurement model

Variable	Factor loading	AVE	Composite Reliability	Cronbach's Alpha
Absorptive capacity		0.872	0.953	0.927
AC1	0.916			
AC1	0.923			
AC3	0.905			
AC4	0.903			
AC5	0.827			
AC6	0.839			
Green innovation adoption		0.896	0.963	0.942
GIA1	0.883			
GIA2	0.836			
GIA3	0.916			
GIA4	0.929			
GIA5	0.917			
Green human capital		0.843	0.891	0.855
GHC 1	0.890			
GHC2	0.902			
GHC3	0.885			
GHC4	0.837			
GHC5	0.915			
Green market orientation		0.740	0.911	0.902
GMO1	0.862			
GMO2	0.875			
GMO3	0.872			
GMO4	0.832			
Pro-green leader		0.889	0.941	0.878
PGL 1	0.956			
PGL 2	0.888			
PGL 3	0.857			
PGL 4	0.921			
PGL 5	0.907			
Marketing performance		0.888	0.726	0.881
MP1	0.905			
MP2	0.879			
MP3	0.765			

Table 5. Correlation among research constructs

Latent variables	Mean	SD	AC	GIA	GHC	GMO	PGL	MP
Absorptive capacity (AC)	4.615	1.514	0.852					
Green innovation adoption (GIA)	4.334	1.368	0.356	0.881				
Green human capital (GHC)	4.157	1.389	0.299	0.437	0.782			
Green market orientation (GMO)	4.216	1.256	0.327	0.527	0.386	0.790		
Pro-Green Leader (PGL)	3.827	1.042	0.288	0.365	0.365	0.522	0.819	
Marketing performance (MP)	4.187	1.275	0.292	0.472	0.333	0.625	0.557	0.847

Note: N = 245, italics on the diagonal represents the squared roots of AVE, whereas variable correlations are below the diagonal

adoption significantly mediates the link between green human capital and market performance. This finding supports the results of several previous studies that reported that

motivational factors and skills that encourage enterprises to exert effort to perform may mediate the relationship be-

Table 6. Results of hypothesis testing

Hypotheses	β	t-Value	p-Value	Decision
H1: Absorptive capacity Green human capital	0.342	4.743	**	Accepted
H2: Absorptive capacity Pro-green leader	0.245	5.428	**	Accepted
H3: Absorptive capacity Green market orientation	0.262	4.392	**	Accepted
H4: Pro-green leader Green human capital	0.413	3.694	***	Accepted
H5: Pro-green leader Green market orientation	0.522	5.821	***	Accepted
H6: Pro-green leader Green innovation adoption	0.436	6.547	**	Accepted
H7: Green human capital Green innovation adoption	0.310	4.121	**	Accepted
H8: Green market orientation Green innovation adoption	0.431	4.313	***	Accepted
H9: Green innovation adoption Marketing performance	0.333	3.925	**	Accepted
H10: Green human capital Marketing performance	0.072	0.821	0.06	Rejected
H11: Green market orientation Marketing performance	0.213	3.723	**	Accepted

Note: ** $p < .01$.

*** $p < .001$.

tween human capital and business performance (Gardner et al., 2011; Raineri, 2017).

5.2. Theoretical contribution

Organizational capabilities and marketing capabilities may be strongly related. Exhibiting high levels of organizational capabilities will lead to better marketing capabilities for organizations, such as marketing performance. This study contributed to the literature by extending the knowledge of the link between organizational capabilities, marketing capabilities (e.g., human capital), and organizational performance (e.g., innovation adoption and marketing performance) from the perspective of green management. Previous studies, such as Aboelmaged and Hashem (2019) and Singh et al. (2020), have partially examined the link among organizational capability, marketing capability, and organizational performance. However, they did not investigate these components using a comprehensive model. To the best of our knowledge, the current study is the first to examine the determinant factors of green innovation adoption among food processing SMEs in the Indonesian context. The SME sector is vital, because it is a fast-growing industry with a substantial effect on the environment. Although studies that determined the influence of green innovation on environmental performance are limited, no research has been conducted on green innovation adoption among food processing SMEs. Additionally, studies that explored the effect of green innovation adoption on marketing performance are rare. Specifically, Aboelmaged and Hashem (2019) investigated the relationship between human capital and green innovation adoption. Unfortunately, however, they failed to point to any significant relationship between these variables. Therefore, this study expanded the knowledge and understanding of the link between green human capital and green innovation adoption.

5.3. Managerial implication

The key factors for adopting green innovation, as identified in the present study, are important for owners of food

processing SMEs, policymakers, and stakeholders who are concerned about environmental issues. Understanding this model can help in developing programs that may facilitate SMEs in adopting green innovation in their businesses. A pro-green leader significantly influences green innovation adoption. Thus, developing pro-green leaders has become an important aspect. A pro-green leader plays a central role in influencing green human capital and green market orientation, which, in turn, influences green innovation adoption. Developing the mindset, attitude, and behavior of pro-green leaders can be achieved by increasing the absorptive capacity of food processing SMEs through various methods, such as training and workshops. In addition, pro-green leaders should convey a clear vision, commitment, and strategy to accelerate green innovation adoption. This study indicates that pro-green leadership can integrate human capital and market orientation culture to encourage green innovation adoption among food processing SMEs. Furthermore, it illustrates that support from SME leaders is the best means for adopting green innovation.

Green innovation and green market orientation can be forces that drive improvement in market performance. These factors hold the potential to be a good motivator for SME owners or managers in implementing green innovation adoption and in becoming a green market-oriented company. As previously mentioned, global consumers, including Indonesian consumers, in particular those belonging to the middle class, tend to be concerned with healthy lifestyle as well as environmental protection. This tendency can be an opportunity for SMEs in developing their market segment by adopting and promoting green innovation. Moreover, food processing SMEs should adopt green innovation in terms of products and processes to achieve business sustainability as represented by marketing performance. Therefore, this study provides a contribution for policy makers, because several issues emerging from these findings are specifically related to the adoption of green innovation from the perspective of food processing SMEs. The growth of SMEs exerts a substantial impact on national GDP and creates job opportunities.

6. Conclusions

The main objective of the current study is to develop a green innovation adoption model for food processing SMEs and to demonstrate the manner in which its adoption will influence performance. The study found that absorptive capacity exerts a positive influence on green human capital, pro-green leaders, and green market orientation. These three variables consequently significantly influence green innovation adoption. In addition, green innovation adoption and market orientation exert a significant impact on marketing performance. Therefore, the objective of this study has been validated by the empirical evidence in the context of food processing SMEs.

Despite this validation, this study has its limitations. First, the study is cross-sectional in nature, which exhibits

less statistical power compared with a longitudinal study. To provide precise results, future studies may conduct a longitudinal study for an extended period of time. Second, this study is conducted in Jakarta and its surrounding area, which is recognized as an urban area. A similar study can be carried out in different regions of the country in addition to urban areas to enable data comparison and an exploration of whether findings will differ across the regions of the country. Lastly, the explanation of the study in terms of the demographic characteristics related to green innovation adoption is also limited. Thus, future research may insert other demographic characteristics in the model, such as gender, age, and level of education, to enrich the explanation.



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