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The Influence of Green Human Capital on Business Performance: The Mediation Role of Innovation Activity

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Abstract. This study focuses on ‘green’ topic, especially green human capital (GHC) in manufacturing MSMEs in two provinces in Indonesia, namely Daerah Istimewa Yogyakarta (DIY) and Central Java. In this study, green human capital is associated with the improvement of Micro, Small and Medium Enterprises (MSMEs) business performance mediated by innovation activity.

The survey is conducted at manufacturing MSMEs in DIY and Central Java Province. The sampling technique is carried out with purposive sampling method with a sample target of 200 respondents. Data collection is conducted by distributing questionnaires to the owners, managers, and both owners and managers of the MSMEs. The statistical technique is done by Analysis of Moment Structure 23. The result shows that GHC is able to improve business performance of the MSMEs mediated by innovation-based activities.

Keywords: Green human capital · Innovation activity · Business performance

1 Introduction

The manufacturing industry is one of the mainstay industries that can sustain a country’s economic growth. In 2019, Indonesia has become the largest manufacturing industry base in ASEAN with a contribution of 20.27% in the national economy. The development of the manufacturing industry in Indonesia has been able to shift the role of commodity-based to manufacture-based. The government is trying to transform the economy to focus more on the process of developing non-oil and gas industries. In addition, the manufacturing industry is considered more productive and able to provide a broad chain effect so as to increase the added value of raw materials, increase labor, produce the largest source of foreign exchange, as well as the largest contributor to taxes and customs.

This study focuses on the manufacturing MSMEs in DIY and Central Java Province. It is important since the production growth of large, medium, and small manufacturing industry in these provinces is in accordance with the number of production growth of large, medium, and small industry at the national level. However, if these industries are not managed carefully, it is feared that it will experience a decline. Moreover, MSMEs have complex and homogeneous problems, such as limited capital, technology, human resources, and knowledge [1]. MSMEs also lack in marketing, simple organizational structure, weak management quality, lack in financial reports, and weak legality [2].

In addition, creativity and innovation of MSMEs in DIY is still low [1], and so does in Central Java [2]. However, the position of MSMEs that is based on creativity and innovation in developed countries can be used as the main driver of economic growth; while on the contrary, MSMEs that is based on creativity and innovation have a relatively low role [2]. The low performance of MSMEs in Indonesia in terms of exports and competitiveness is thought to be caused by MSMEs limitation in the process and the implementation of innovation [3]. The manufacturing sector really needs the support of human capital, especially green human capital in this era of ‘greening’ [4], so that employees will increasingly have expertise in managing and implementing a green culture [5]. Theoretically, this study wants to provide theoretical contribution and fill the research gap, namely:

1. Green Human Capital in the manufacturing sector is very much needed in order to improve the green environmental friendly attitude and green culture in employees [4–6].
2. There is still a debate in the implementation of ‘greening’ because it requires a long process and not a small amount of funds, especially in manufacturing MSMEs [7].
3. The controversy of the findings from [8] which proves that GHC does not have any contribution on business sustainability (business, environmental, and social performance). On the other hand, green structural capital and green relational capital have an influence on business sustainability. Previous studies also proved that greening practice has a significant impact in improving business performance [6, 8–12].

Research that focuses on greening practice in the manufacturing MSMEs is still very limited, especially in Indonesia [13]. The manufacturing MSMEs still need greening practice in terms of supply chain, started from input, process, to output. It is important in order to create a green and sustainable work environment [9, 10].

2 Objective and Structure of Research

This main purpose of this study is to examine the influence of green human capital on business performance of the manufacturing MSMEs in DIY and Central Java Provinces, mediated by innovation activity.

This study is divided in three main parts, namely:

- Introduction, which includes the research object, current phenomena of manufacturing industry in Indonesia, and condition of MSMEs in DIY and Central Java.
- Literature Review and Methods, which includes the theory that become the basis of this study (green human capital, innovation activity, business performance) as well as the hypothesis that is examined.
- Analysis of results, discussion, and contribution of this study for managerial aspects of the MSMEs.

3 Literature Review

3.1 Green Human Capital and Innovation Activity

Human capital becomes an important aspect for a firm. Human capital is a knowledge owned by people and firm that can be beneficial for the development of organization or firm [14]. Given the importance of the way firms manage and develop their human capital, it is important for companies to examine the relationship between human capital (human resources) development and innovation [15, 16]. Numerous studies have shown that human capital (education, experience, and skill) and characteristics of top manager affects firm outcome (Liu *et al.* 2017). Some previous studies have also explained the importance of firm resources and competencies as key factors in understanding sustainable innovation [18]. Business competitiveness in a long-term context can be achieved by increasing productivity and consumption of resources that maximizes efficiency. Human capital is generally considered as an important part of innovation [16, 19]. The research results also explain that Green Human Capital has a relationship with green HRM, innovation culture, and environmental performance [20]. According to [21, 22] Green Human Capital includes knowledge, skills, ability, experience, behavior, wisdom, creativity, and employee commitment toward environmental aspects. It cannot be denied that organizations that actively involved in green innovation can increase their productivity, improve the organization's image, as well as their business performance. The role of GHC is indispensable in the process [22–24]. GHC can be obtained from the results of Green Human Resources Management Practices [25, 26] by selecting and recruiting new employees and providing both education and training that is oriented to greening behavior.

Regarding innovation, [27] examined the relationship between HRM system and process in British companies. The results found that companies that used the practice of “*high commitment/high performance*” proves that 34% were used to innovate, while 42% were used to introduce the innovation process. Besides, [28] also found strong evidence of a significant relationship between high resource management practices and innovation.

Human capital is proven to have an important role in increasing firm innovation [29, 30]. [14, 31, 32] stated that human capital has an important role in increasing the innovation activity of a company. In increasing the innovation activity of a company, human capital must be seen from several indicators, namely: employee percentage, level of education, experience, depth of knowledge, training investment in work, investment

in human capital, employee rotation, absenteeism ratio, remuneration, salary, skills, attitude, level of compatibility with company values, creativity and innovation, employee with professional work plan, and competitiveness [14, 33]. It is also added by [29] who highlighted the importance of corporate policy intervention on human capital, which will be able to increase the innovation activity of the firm to improve the business performance.

In order to increase human capital for innovative activities, it can be through a learning process. Learning process is how companies effectively use internal mechanisms to increase and interact with external parties. Learning process explains growth, process, and trajectories of the firm's innovative activities [31]. It can be concluded that human capital that is trained and has certain criteria will be able to increase innovation activities of the firm. [21, 33] added that GHC in the long run is able to influence the firm's competitive advantage in sustainable manner.

H1. Green human capital has a positive influence on innovation activity.

H2. Innovation activity has a positive influence on business performance.

3.2 Green Human Capital and Business Performance

When an individual's talent, skills, abilities, or experience continue to be nurtured over many years, members of the organization will become very satisfied with what they have just learned from something new [34, 35]. Based on resource-based view and dynamic capabilities of firm, human capital are the center of a set of resources and capabilities [36]. It is because competitiveness and firm performance depends on the profile of human capital. In other words, firm with superior human capital will be better positioned compared to other firms [36]. Firms promote their human capital and are able to create values through selection and training process [37]. Human capital theory assumes that knowledge can enhance greater cognitive skills to individuals, thereby encouraging their productivity and efficiency to develop activities [38]. The results of several studies prove that human capital has a significant influence on firm performance [34, 36–39], also in MSMEs context [40]. The importance of human capital in developing firm performance must be accompanied by a learning process and training for the employee [34], especially if it is directed to green training and development in Green HRM practice, so that it could have an impact on improving business sustainability [9, 25, 26].

H3. Green human capital has a positive influence on business performance.

H4. Green human capital has a positive influence on business performance mediated by innovation activity.

4 Research Method

This study is conducted by surveying all the manufacturing MSMEs in DIY and Central Java Province. The survey is directed to the owners, managers, and both owners and managers of MSMEs in these provinces with the target sample of 200 respondents who were chosen. Respondents were asked to complete the questionnaire that is given. The response rate of this study is 154 respondents out of 200. Respondents were asked to answer the questionnaire related to green human capital, innovation activity, and business

performance they manage. The statistic technique is done using Analysis of Moment Structure 23. As for the questionnaire items are sourced from:

1. Green human capital (HC) consists of 7 items which are sourced and modified from [11, 22, 34].
2. Innovation activity (IC) consists of 5 items, which are sourced and modified from [29, 33].
3. Business performance (BP) consists of 3 items, which are sourced and modified from [34,37].

The validity and reliability test results show that the questionnaires are valid and reliable. The results from data normality test concluded that all data are normal since it is in the range of $\pm 2,58$. There is also no outlier found in this study.

5 Results and Discussion

5.1 Respondents' Characteristics

The majority of the respondents are both owners and managers (79%); men (67%), the MSMEs have operated for at least 3 years (76%), and the type of business is food MSMEs (68%).

5.2 Hypothesis Test

The final model of research path analysis can be seen on Fig. 1.

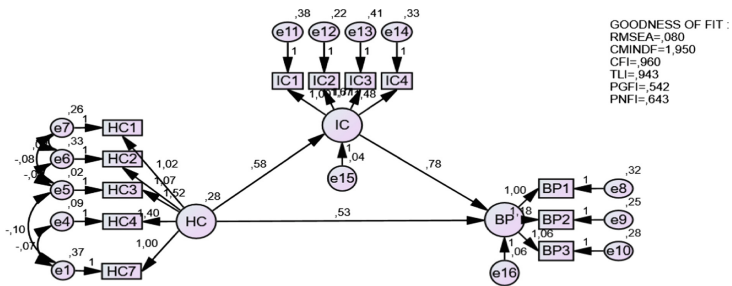


Fig. 1. The results of the influence of green human capital on business performance: the mediation role of innovation activity

The test results of Goodness of Fit have explained that all criteria have been met and the model can be said to be fit as shown in Table 1.

Table 1. Goodness of fit (Gof) test results

Fit index	Goodness of fit	Criteria	Cut-off value	Description
Absolute fit	RMSEA	≤0.08	0.060	Fit
	CMINDF	≤2,00	1,950	Fit
Incremental fit	TLI	≥0.90	0.960	Fit
	CFI	≥0.90	0.943	Fit
Parsimony fit	PGFI	≥0.60	0.542	Marginal fit
	PNFI	≥0.60	0.643	Fit

The test results of *regression weight* in this study can be seen on Table 2.

Table 2. Regression weight test results

			Estimate	S.E	C.R	P	Hypothesis
IC	<---	HC	,578	,113	5,121	***	H1: Supported
BP	<---	IC	,779	,256	3,045	,002	H2: Supported
BP	<---	HC	,528	,162	3,256	,001	H3: Supported

Based on Table 2, all hypotheses have the Critical Ratio value of Critical Ratio > 1.96 (P < 0.05) so that all hypothesis are accepted.

5.3 Mediation Testing

The mediation test results can be seen in Table 3. Based on the results of mediation test, it can be known that innovation activity mediates the influence of green human capital on business performance significantly.

Table 3. Mediation test results

	HC	IC	BP	Hypothesis
IC	
BP	,012*	H4. Supported

Note: *sign 0.05

6 Discussion

The results of this research prove that Green Human Capital influences innovation activity and business performance. Likewise, innovation activity influences business performance and mediates the relationship between Green Human Capital on business

performance. It is known that innovation depends on ideas. The main source of ideas is a talented individual. Most organizations still have a lot to learn about how to make themselves better, and the results can be turned out great [41]. When the Green Human Capital exists in a firm that has a willingness to change, they will have more accurate interpretation ability in innovation. Green Human Capital has a central role in individual creation and source of knowledge. Therefore, individual is the main actor in innovation. An individual possesses knowledge, creativity, and ability to identify and utilize the opportunity and ideas for innovation. Thus, it is suggested by [41] that there are three useful guidelines that leaders can take when it comes to recruiting and motivating creative talent, namely: (1) hiring people with various abilities and interests (Microsoft calls it 'bandwidth'); (2) hiring people with various backgrounds and personality; and (3) involving peers in selection process. All of these guidelines can be directed by requiring employees and managers to have a commitment in greening in every business activity of the company.

Innovation activity is able to mediate the relationship between GHC on MSMEs business performance. It is known that manufacturing MSMEs strongly need the ability to generate new and innovative products as well as excellent services to their customers. This requires effective and efficient innovation activity in every business processes. Therefore, innovative knowledge ability and good human capital is also needed. The demands of the customer needs must be able to be answered responsively with excellent services. This can be the opportunity and challenges in the future so that companies take notes on employee ownership from the aspects of ability, knowledge, and attitude that is focused and concerned on the environment. If manufacturing companies pay attention to the aspects of GHC, it is expected that all strategies and policies determined in the future will pay attention to environmental issues, thus allow companies to gain trust from their stakeholders. Employees will be able to explore and exploit new ideas successfully, which will always be connected to environmental aspects, so that it can have great impact on business performance in a long term. Thus, innovation activity becomes a very important aspect in mediating the relationship between GHC on the business performance of manufacturing MSMEs in Indonesia.

Innovation theory shows that innovation is a learning process carried out by both individual personnel and by the organization as a whole [42]. Human capital utilizes this learning since the innovation process comes from international market through face-to-face communication, teamwork, absorption, education, work, and work experience [43]. Therefore, human capital is related to learning ability which can further increase the positive effect on innovation [42] and business performance of the company [44] especially in greening practice [9,25,26] stated that human capital that possesses entrepreneurial experience, manpower, and creativity will have a positive impact on firm performance. Improving employee performance is one of the important drivers of organizational growth. In recent years, organizations have also invested heavily in human capital to utilize employee productivity, so that the business performance of the firm will improve [44].

7 Conclusion

The conclusion that can be drawn in this study is that green human capital is able to increase innovation activity of manufacturing MSMEs; innovation activity can increase the business performance of manufacturing MSMEs; green human capital can increase the business performance of manufacturing MSMEs; and green human capital can increase business performance, mediated by innovation activity in manufacturing MSMEs in DIY and Central Java Province. The findings of this study imply the importance of innovation activity as well as the implementation of green human capital in manufacturing MSMEs.

7.1 Managerial Contribution

This study provides contributions to managerial aspects, namely:

1. The manufacturing MSMEs need to have a commitment to carry out the practice of Human Resources system properly, especially in terms of Green Human Capital ownership. It is important because it will be very beneficial in increasing the behavior of greening activities.
2. Green Human Capital is required because it will also be able to have an impact on improving MSMEs business sustainability, especially in terms of business, environmental, and social performance.
3. The ownership of Green Human Capital can be done by MSMEs by recruiting and selecting employees, training, courses, seminar, conference, and workshop related to greening activity, thus it is predicted to be able to affect the mindset from the staffs and leader.

7.2 Limitation and Recommendation For Future Research

1. There are limited manufacturing MSMEs in Indonesia that have GHC, so that they do not completely understand the questionnaire that is filled out. Besides, the population of this study only includes manufacturing MSMEs in the Provinces of Daerah Istimewa Yogyakarta and Central Java, so it is feared that it will not be able to generalize the manufacturing MSMEs in Indonesia. In the future, MSMEs should also be classified as those that have implemented Green Human Capital and other greening activities, so that they can see the impact on environmental and social performance.
2. This study only focuses on MSMEs business performance mediated by innovation activities. There are other mediation variables that can be considered for future research, such as green innovation culture, green life style, and green information technology.

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