

Building Green Process Innovation Performance in Batik Tulis Lasem

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Abstract

Research on business continuity is an interesting topic to investigate, given the intense competition in the business world. The purpose of this study is to develop Green Process Innovation Performance from Green Strategic Intentions with the help of Intervening Variables, namely Green Intellectual Capital consisting of Green Human Capital, Green Organizational Capital, and Green Relational Capital. The population that became the subject of this study were MSME business actors engaged in Batik Tulis Lasem in Rembang Regency. The sampling method used is the census method, and the number of samples used is 115 respondents, which is part of the total population. The results of the model generated from this study are expected to make a positive contribution to the UMKM players of Batik Tulis Lasem in an effort to maintain the continuity and sustainability of their business, especially in the environmental aspect. The results of this study can also be articulated in the form of suggestions for management and formulation of scientific articles, as well as the development of measurement instruments. The managerial advice generated from this research can be useful for local governments in formulating policies and programs aimed at supporting the continuity of entrepreneurs, especially after the COVID-19 pandemic.

Keywords: *Green Strategic Intent, Green Human Capital, Green Organizational Capital, Green Relational Capital, Green Process Innovation Performance*



INTRODUCTION

To deal with increasing pressure from various stakeholders and to reduce negative impacts on the natural environment (Herremans et al., 2016; Lee and Min, 2015), companies have adopted green strategies with the aim of improving their environmental performance, mainly through green innovation (Weng et al., 2015).

While much research has focused on the drivers and consequences of green strategies, little attention has been paid to the strategy implementation stage (Verrier et al., 2016). Although limited research has shown that firms develop or acquire the resources, both tangible and intangible, necessary to implement a set strategy (Kamasak, 2017), it remains unclear how firms can develop and use intangible resources, such as intellectual capital, to implement a green strategy (Kunapatarawong and Mart, 2016). The lack of a clear understanding of green strategy implementation may explain why many firms have difficulty in operationalizing their green strategies into effective green innovations, and as a result, fail to improve their overall green performance (Leonidou et al., 2017; Matus et al., 2012). Although many firms may have similar green strategies, differences in implementation may explain why some firms excel over others in terms of green performance (Huang and Li, 2018). Therefore, a better understanding of green product innovation cannot be simply applied to green process innovation, as these two types of innovation require different skills, resources and organizational characteristics and can result in different performance (Dost and Badir, 2019).

Firms develop and use resources according to their strategic direction (Reyes-Rodriguez, Iiguez, et al., 2016) as these resources, both independently and through their interactions, influence innovation performance (Dost, et al., 2016). Therefore, by adopting a perspective that emphasizes the role of firm resources (Barney et al., 2001), such as Green Intellectual Capital and its complementary assets, we can investigate the mechanisms underlying their green strategy implementation. Along with the popularity of environmentalism (Chang and Chen, 2012), researchers have introduced the concept of Green Intellectual Capital, which enables firms to comply with strict international environmental regulations, meet the growing environmental awareness among stakeholders, and create added value for the firm (Huang and Kung, 2011). Although the issue of intellectual capital has been a topic of discussion for the past few decades, the concept of Green Intellectual Capital has been recently proposed (Chang and Chen, 2012) and has become one of the increasingly important fields of study (Yong et al., 2019a, b).



LITERATUR REVIEW

Green Intellectual Capital

This view illustrates that success in the implementation of a firm's strategy to achieve competitive advantage is highly dependent on the development and utilization of tangible and intangible resources that have value, are rare, and unique (Barney et al., 2001). In today's knowledge-based economy, greater emphasis is placed on intangible resources (Bontis, 2000), which have become a key factor in achieving competitive advantage for firms. To evaluate these resources, the concept of intellectual capital was proposed (Bontis, 2000). A firm's intellectual capital is defined as the sum of resources contained in the firm's staff or as the collection of knowledge-based resources owned by the firm (Inkinen, 2015).

The first phase of this approach emphasized the importance of intellectual capital in creating and managing sustainable competitive advantage (Dumay and Garanina, 2013). The German intellectual capital report introduced a systematic management approach to the knowledge assets hidden within the firm. The fourth stage involves expanding the concept of intellectual capital into a broader ecosystem context, such as across countries, regions, communities, and even firm-specific (Dumay and Garanina, 2013). The National Intellectual Capital Yearbook monitors intangible assets within a country, which has great relevance for national-level competitive advantage (Lin et al., 2019). Research related to this stage also seeks to investigate the impact of intellectual capital on society and the environment (Secundo et al., 2018).

As stakeholder awareness regarding the environment has increased, strategists have realized that the conventional intellectual capital perspective ignores the relationship between a company and its natural environment. To address this issue, researchers have expanded the view of intellectual capital to include green elements. Green organizational capital, for example, refers to the availability of organizational capabilities, commitments, operations, and management systems related to environmental protection within a firm (Chang and Chen, 2012).

Green Strategic Intent and Green Intellectual Capital

Strategic intentions refer to long-term goals that reflect the vision of the future desired by the top management of a company, as described by Prahalad and Doz (1987). As asserted by Hamel & Prahalad (1989), strategic intentions envision the desired leadership position and establish the criteria by which firms measure progress in achieving their strategic goals.

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According to Johnson and Sohi (2001), firms with high levels of strategic intention intensity work continuously and with strong determination to achieve growth, market dominance and competitive advantage. They proposed the concept of green strategic intent, which interprets strategic intent into the context of environmental management. Johnson and Sohi (2001) argued that this concept shows that firms view all their resources through the lens of strategic intent and deliberately and clearly allocate all available resources to achieve their goals, especially in a competitive market. Companies with strong strategic intent build competitive advantage by allocating resources that support proactive actions, and they utilize their resources and capabilities effectively (Reyes-Rodriguez, et al., 2016).

Green Strategic Intent and Green Human Capital

When employees realize that top management shows concern for environmental issues and is committed to long-term environmentally friendly goals, as reflected in the company's strategic environmental objectives, they are more likely to be encouraged to learn more and improve their knowledge and technical skills related to environmental protection. This is so that they can effectively contribute to supporting the company's strategy that focuses on environmental sustainability. Managers who adopt Green strategic intent and see environmental challenges as opportunities, will endeavor to build Green Human Capital by facilitating the development of employees' environmental capabilities and skills through various initiatives such as training, talent management, and involving them in environment-related projects (Wirtenberg et al., 2007).

Green Strategic Intent dan Green Organizational Capital

Research reveals that, in addition to setting the company's Green strategic intent, the environmental ethics of top management have a significant role in efforts to adopt environmentally friendly technologies and operations (Schlegelmilch et al., 1996). A study conducted by Greeno and Robinson (1992) found that companies that are proactive in dealing with environmental issues tend to increase the use of environmentally supportive technologies and also increase their operational capabilities in terms of the environment.

Green Strategic Intent and Green Relational Capital

Similarly, firms with Green strategic intent will collaborate with environmentally



conscious customers to understand and address their environmental concerns (Schlegelmilch et al., 1996), enabling them to build closer relationships with these customers. In addition, environmentally conscious suppliers play a significant role in helping companies implement their Green strategic intent by providing raw materials and products that are environmentally friendly. Companies that have a strong Green strategic intent will add an environmental dimension to their supplier selection criteria, and will only partner with suppliers that have achieved an appropriate level of performance in both operational and environmental terms (Hong et al., 2019).

Green Human Capital and Green Process Innovation Performance

There is agreement among experts that human assets in a company facilitate the innovation process. These human assets act as a repository of knowledge, various skills, and learning abilities possessed by employees, which ultimately become the main source of sustainable competitive advantage and innovation (Dost and Badir, 2019). Previous research conducted by Russo and Fouts (1997) has shown that the level of expertise and specialized environmental skills possessed by employees is necessary for companies to effectively develop and utilize green technologies in their business operations. When a company has a high level of Green Human Capital, it is expected that its employees already have adequate skills and competencies in environmental matters, and this will increase their likelihood to actively and productively contribute to environmental protection efforts.

Green Organizational Capital and Green Process Innovation Performance

Therefore, we recommend efforts to increase the level of engineering and management practices that are of superior quality in environmental aspects, and encourage continued investment in various aspects of environmentally friendly business. In addition, sharing best practices and experiences related to environmental protection efforts by employees can incentivize them to find more effective approaches to reducing emissions and hazardous waste from business operations. All of these actions can positively affect a company's green process innovation performance. Investment in environmentally-focused projects and sharing of results and best practices among all business units, functions, and plants (Lanoie et al., 2011) can also play a role in improving a company's overall green process innovation performance. Therefore, we propose programs that encourage the development of organizational capital in order to



increase the level of corporate green process innovation performance.

Green Relational Capital and Green Process Innovation Performance

Close ties with customers give firms access to different perspectives, expertise and experience, which drives innovation in products and processes (Wimalachandra et al., 2014). In addition, many firms have established closer partnerships with their suppliers to capitalize on the skills, capabilities, knowledge and resources possessed by these suppliers, thereby influencing their own innovation performance (Walter, 2003). Furthermore, engaging with environmentally committed suppliers tends to give firms access to environmentally friendly technologies (Chiou et al., 2011), which in turn facilitates and supports innovation in environmentally sustainable processes.

Previous Research

The following is a reference to previous research:

Table 1. Previous Research

No	Researcher	Methodology	Result
1	(Dost & Badir, 2019)	Quantitative research with respondents 257 managers of small and medium-sized companies in Thailand	A company's human capital facilitates innovation because it is a repository of diverse employee skills, knowledge pools, and learning capabilities that are the source of sustainable competitive advantage and innovation.
2	(Lanoie et al., 2011)	Quantitative Research with respondents 153 small Cypriot manufacturers	investing in environmental projects and sharing results and best practices among all business units, functions, and can also improve the company's overall Green Process Innovation Performance.
3	(Wu, 2013).	Quantitative research with IT company	the company's collaboration with environmentally friendly stakeholders can help the company reduce waste and



No	Researcher	Methodology	Result
		respondents in Taiwan	energy consumption, which will improve its Green Process Innovation Performance.

Source: Processed data

Framework of Thought

The following is the framework used in this study:

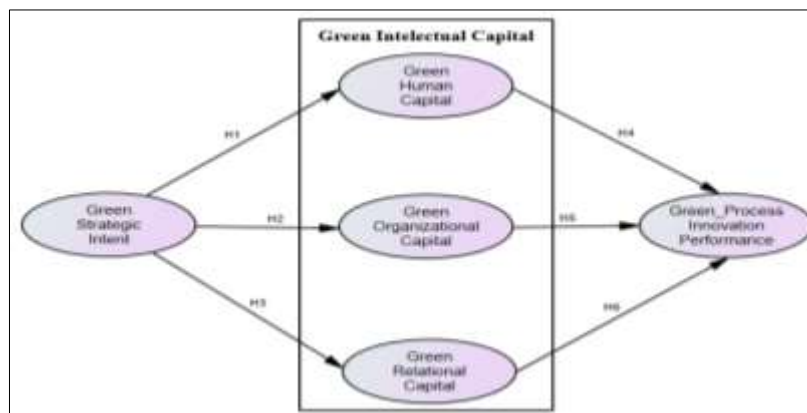


Figure 1. Theoretical Framework

Source: model developed in research

Research Hypothesis

The formulation of this research hypothesis is as follows:

1. Green strategic intent has a positive effect on green human capital.
2. Green strategic intent has a positive effect on Green organizational capital.
3. Green strategic intent has a positive effect on Green relational capital.
4. Green Human Capital has a positive effect on Green Process Innovation Performance.
5. Green organizational capital has a positive effect on Green Process Innovation Performance.
6. Green Relational Capital has a positive effect on Green Process Innovation Performance.

RESEARCH METHODOLOGY

This research was conducted in approximately 6 months. The place used for research is 14 sub-districts in Rembang Regency. The respondents used were the actors of batik tulis asem. The data used in this study are primary data in the form of respondents' responses regarding Green Strategic Intent, Green Human, Organizational, Relational Capital, and Green Process Innovation Performance. The population used in this study were UMKM Batik Tulis Lasem in Rembang Regency. Meanwhile, the sampling technique used in this study was the Census Method with a total of 115 business respondents. The requirements for the sample are first, UMKM Batik Tulis Lasem both offline and online in Rembang Regency; Second, respondents can be found and are willing to fill out a questionnaire. The type of data analysis carried out in this study is descriptive-quantitative analysis, where data is obtained using a questionnaire distributed to MSMEs Batik Tulis Lasem.

Variable Indicators

The following are the variable indicators used in the study:

Table 2. Variable Indicators

No	Variable	Indicators
1	<i>Green Strategic Intent</i>	• <i>Strategically aggressive</i> • <i>Competitive dominance</i> • <i>Systematically builds competitive advantages</i> • <i>Strategic targets and goals</i>
2	<i>Green Human Capital</i>	• <i>Productive and contribute strongly</i> • <i>Adequately competent</i> • <i>Perform well in pursuing environmental product</i> • <i>Cooperate well and work in teams</i>
3	<i>Green Organizational Capital</i>	• <i>Superior management system</i> • <i>A committee to make progress on key issues</i> • <i>Makes an adequate investment</i> • <i>Smoothly runs operations</i>



No	Variable	Indicators
4	<i>Green Relational Capital</i>	• <i>Designs products as customers' desires</i> • <i>Satisfies its customers</i> • <i>Persistently with upstream suppliers</i> • <i>Persistently with strategic partners</i>
5	<i>Green Process Innovation Performance</i>	• <i>Reducing hazardous emissions</i> • <i>Recycling waste and treated/reused emissions</i> • <i>Reducing the consumption of water, electricity, coal and oil</i> • <i>Reducing the use of raw materials</i>

Source: data process

The measurement scale used is semantic differential with a scale of 1-10. Data was obtained by distributing questionnaires to MSMEs Batik Tulis Lasem. The data obtained was then analyzed using SPSS software version 25. The data was tested with several types of tests, namely Validity Test, Reliability Test and Classical Assumption Test. Hypothesis testing is carried out using Path Analysis which is an extension of the regression model, which is used to test the correlation matrix in the causal model compared by the researcher.

DISCUSSION

Validity Test

Research is said to be valid if the calculated r value is greater than the specified r table value (count > r table). In this study, the validity test results were obtained as follows:

Table 3. Validity Test of X

Variable	Question Item	r count	r table	Result
<i>Green Strategic Intent</i>	Item 1	0,847	0.1832	Valid
	Item 2	0,913		Valid
	Item 3	0,932		Valid
	Item 4	0,843		Valid

Source: processed data



Table 4. Validity Test of M1

Variable	Question Item	r count	r table	Result
<i>Green Human Capital</i>	Item 1	0,857	0.1832	Valid
	Item 2	0,895		Valid
	Item 3	0,891		Valid
	Item 4	0,812		Valid

Source: processed data

Table 5. Validity Test of M2

Variable	Question Item	r count	r table	Result
<i>Green Organizational Capital</i>	Item 1	0,882	0.1832	Valid
	Item 2	0,827		Valid
	Item 3	0,842		Valid
	Item 4	0,863		Valid

Source: processed data

Table 6. Validity Test of M3

Variable	Question Item	r count	r table	Result
<i>Green Organizational Capital</i>	Item 1	0,882	0.1832	Valid
	Item 2	0,827		Valid
	Item 3	0,842		Valid
	Item 4	0,863		Valid

Source: processed data

Table 7. Validity Test of Y

Variable	Question Item	r count	r table	Result
<i>Green Process Innovation Performance</i>	Item 1	0,850	0.1832	Valid
	Item 2	0,637		Valid
	Item 3	0,799		Valid
	Item 4	0,837		Valid

Source: processed data



Based on the validity test results, the question items for all variables are declared valid.

Reliability Test

Decision making for reliability testing is that a construct or variable is said to be reliable if it provides a Cronbach's Alpha value > 0.7 . In this study, the reliability test results were obtained as follows:

Table 8. Reliability Test

No	Variable	Chronbach Alpha	Result
1	<i>Green Strategic Intent</i>	0,836	Reliable
2	<i>Green Human Capital</i>	0,832	Reliable
3	<i>Green organizational Capital</i>	0,830	Reliable
4	<i>Green Relational Capital</i>	0,822	Reliable
5	<i>Green Process Innovation Performance</i>	0,810	Reliable

Source: processed data

Based on the reliability test results, all variables can be declared reliable.

Normality Test

The normality test aims to test whether in the regression model, the dependent variable and the independent variable both have a normal distribution or not. where the sig value must be > 0.05 in order to be said to be normally distributed. The following are the results of the normality test:

Table 9. Normality Test

Test	Sig.	Alpha	Result
Kolmogorov-Smirnov	0,200	0,05	Data Normally Distributed

Source: processed data

Based on the results of the normality test, it can be concluded that the data is normally distributed



Multicollinearity Test

The multicollinearity test is intended to test whether the regression model finds a correlation between independent variables. The multicollinearity test results can be seen in the following table:

Table 10. Multicollinearity Test

No	Variable	Tolerance	VIF	Result
1	<i>Green Strategic Intent</i>	0,488	2,049	Multicollinearity Does Not Occur
2	<i>Green Human Capital</i>	0,881	1,136	
3	<i>Green organizational Capital</i>	0,410	2,438	
4	<i>Green Relational Capital</i>	0,554	1,806	

Source: processed data

From the test results above, the three variables have a tolerance value of more than 0.10 and a VIF value of less than 10, it can be concluded that the data does not occur multicollinearity.

Heteroscedasticity Test

This test aims to test whether in the model there is an inequality of variance from the residuals of one observation to another. The results of the heteroscedasticity test can be seen in the following scatterplot graph:

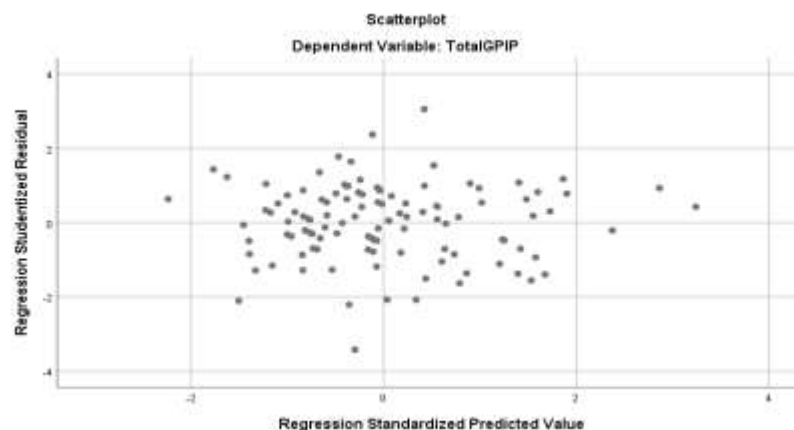


Figure 2. Heteroscedasticity Test

Source: processed data

Based on the picture above, it can be seen that the plots contained in the image spread randomly, so it can be concluded that the data does not occur heteroscedasticity.

Path Test

Path analysis is used to test the effect of intervening variables. Path analysis is an extension of multiple linear regression analysis, or path analysis is the use of regression analysis to estimate the causal relationship between variables (causal models) that have been previously determined. The following are the results of the path analysis in this study:

Table 11. Path Test

Hypothesis	Coeff.	Se	t	P
Green strategic intent has a positive effect on Green human capital.	0,3620	0,0926	3,9083	0,0002
Green strategic intent has a positive effect on Green organizational capital.	0,6460	0,0653	9,8889	0,0000
Green strategic intent has a positive effect on green relational capital.	0,4909	0,747	6,5680	0,0000
Green Human Capital has a positive effect on Green Process Innovation Performance.	0,923	0,0576	1,6044	0,1115
Green organizational capital has a positive effect on Green Process Innovation Performance.	0,4103	0,0933	4,3983	0,0000
Green Relational Capital has a positive effect on Green Process Innovation Performance.	0,1833	0,0815	2,2495	0,0265

Source: processed data

From the results of the path analysis above, the analysis model in the study is obtained as follows:



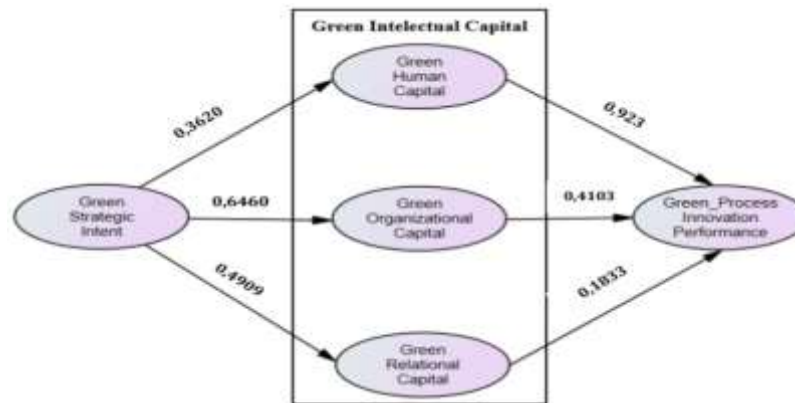


Figure 3. Research Model

Source: Processed data

The direct and indirect effects can be seen from the table below, namely:

Table 12. Direct Influence

Variable	Coeff.	Se	t	P
GSI-GPIP	0,2946	0,0667	10,2382	0,000

Source: Processed data

Table 13. Indirect Effect

Variable	Data	Se	Result
GHI, GOC, GRC	0,3885	0,0712	5,4564
GHI	0,0334	0,0270	1,2370
GOC	0,2650	0,0612	4,3300
GRC	0,0900	0,0430	2,0930

Source: Processed data

From The results of the path analysis above show that the Green strategic intent variable has a direct influence on variable Y through the interveing variables, namely Green human capital, M2, M3 of 0.2946. The three variables have an indirect effect on variable Y of 5.4564, while each intervening variable has an indirect effect on variable Y, namely 1.2370 for Green human capital, 4.3300 for Green organizational capital, and the last is 2.0930 for GRC.

In the Model Summary table, the R-Square value is known which is used to show the

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magnitude of the influence of the independent and intervening variables on the independent variable.

Table 14. Model Summary

R-square	Adj R-Square	P
0,6358	0,6226	0,0000

Source: Processed data

The R-Square value of 0.6358 shows the influence of the independent and intervening variables, namely Green strategic intent on Y by 63.58% and the remaining 36.42% is influenced by other variables not examined in the study.

Hypothesis Test

1. From the results of the tests carried out, it is known that the t value of the Green strategic intent variable is 3.9083 with a significance value <0.05 , namely 0.0002 so it can be concluded that Green strategic intent affects Green human capital. or H1 is accepted. This is in accordance with research conducted by (Dost & Badir, 2019) where the existence of GSI which includes a sustainability strategy in the company to develop its management has an influence on the human resources in the company. Facilities that arise because of GSI can help human resources to develop in the future.
2. From the results of the tests carried out, it is known that the t value of the Green strategic intent variable is 9.8889 with a significance value <0.05 , namely 0.0000 so it can be concluded that Green strategic intent affects Green organizational capital or H1 is accepted. This is in line with research conducted by (Lanoie et al, 2011) where GSI in this case is a form of company investment in environmental projects and other organizational projects that can increase profits for the company.
3. From the results of the tests carried out, it is known that the t value of the Green strategic intent variable is 6.5680 with a significance value <0.05 , namely 0.0000 so it can be concluded that X has an effect on Green relational capital or H1 is accepted. The results obtained are supported by research conducted by (Wu, 2013) where GSI is a form of strategy in the form of collaboration from a company that is proven to have an influence on future company activities.



4. From the test results conducted, it is known that the t value of the Green Human Capital variable is 1.6044 with a significance value > 0.05 , namely 0.1115 so it can be concluded that Green Human Capital has no effect on Green Process Innovation Performance or H4 is rejected. This is most likely due to the transition period that occurred in Indonesia after the 2019 Pandemic, at which time there was a massive reduction in human resources in several business sectors.
5. From the results of the tests carried out, it is known that the t value of the Green organizational capital variable is 4.3983 with a significance value > 0.05 , namely 0.0000 so it can be concluded that Green organizational capital affects Green Process Innovation Performance or H5 is accepted. This is supported by the results of research conducted by (Lanoie et al, 2011) where organizational activities certainly have an impact on the development of innovation in the company. The more cooperation the company has with other organizations, the more open the path of innovation and development will be for the company.
6. From the test results conducted, it is known that the t value of the Green relational capital variable is 2.2495 with a significance value > 0.05 , namely 0.0265 so it can be concluded that X has an effect on Green Process Innovation Performance or H6 is accepted. This is in line with research conducted by (Wu, 2013) where relationships certainly have a very important influence on improving company performance. The relationship that the company has will affect what innovations need to be done and how to execute them.

CONCLUSION

Based on the research conducted, several conclusions were obtained, namely:

1. Green strategic intent variable as an independent variable has a positive influence on Green Human Capital.
2. Green strategic intent variable as an independent variable has a positive influence on Green Organizational Capital.
3. Green strategic intent variable as an independent variable has a positive influence on Green Relational Capital.
4. Green Human Capital variable as an intervening variable has no positive effect on Green Process Innovation Performance.



5. Green Organizational Capital variable as an intervening variable has a positive effect on Green Process Innovation Performance.
6. Green Relational Capital variable as an intervening variable has a positive effect on Green Process Innovation Performance.

FUTURE DIRECTIONS

Based on the results of the research conducted, there is some suggestion that can be used in the future directions:

1. Batik Lasem MSMEs are advised to improve their strategies in optimizing human resources, including the development of both soft and hard skills. This is becoming increasingly important given the impact of the COVID-19 pandemic that has affected many aspects of business. Improving the quality of human resources will help MSMEs compete more effectively with other companies. In addition, Batik Lasem MSMEs need to strengthen their cooperation with other companies to improve the company's operations and achieve more maximum profits. Close cooperation with business partners can help overcome various challenges faced by MSMEs and support their business growth.
2. The government is advised to increase efforts in providing greater information and stimuli related to the performance of green process innovation to Batik Lasem MSMEs. This could include comparisons and recommendations related to innovation as well as analysis of the prevailing market after the impact of the pandemic in 2019. The goal is for Batik Lasem MSMEs to have a better understanding of market conditions and have the ability to compete both at the national and international levels.

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