



The Influence of Green Behavior Innovation on Competitive Advantage in Batik Family Business

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ABSTRACT

Purpose – This study investigates the impact of green behavior innovation on competitive advantage within Batik SME family businesses, focusing on the influence of emotional intelligence, spiritual intelligence, and green creativity on driving green innovation behavior. **Methodology/approach** – This study was conducted through a survey research with a quantitative approach, involving 32 Batik SMEs in Indonesia. The testing method employed classical assumption tests, multiple linear regression analysis, and path analysis. **Findings** – The study finds that Emotional Intelligence positively influences Green Creativity and Green Innovation Behavior, while Spiritual Intelligence has a negative impact on Green Creativity but a positive effect on Green Innovation Behavior. Additionally, Green Creativity plays a crucial role in driving Green Innovation Behavior within family businesses. The findings highlight the significance of Emotional Intelligence and Green Creativity in promoting sustainable practices in Batik SME family businesses. **Novelty/value** – The novelty and value of this research lie in its exploration of the interplay between emotional intelligence, spiritual intelligence, green creativity, and green innovation behavior within Batik SME family businesses in Indonesia. These findings offer a unique perspective on how emotional and spiritual intelligence, coupled with creativity, can enhance competitive advantage and sustainability in the Batik industry.

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INTRODUCTION

The batik industry is one of the creative economy sectors that plays an important role in the Indonesian economy. Batik not only represents the nation's cultural heritage but also contributes significantly to the country's revenue through exports. Among the players in this industry, batik SMEs (Small and Medium Enterprises) play a vital role in preserving traditional batik techniques and designs. In the context of the batik industry in Indonesia, which is largely dominated by small and medium-sized family enterprises (SMEs), understanding the impact of green innovation behavior on competitive dynamics is crucial for sustainable growth (Oktavia et al., 2020), (Zulfikar et al., 2021). The family business environment is a complex and dynamic ecosystem, where the interaction between family dynamics and business operations can have a significant impact on innovation and competitive advantage (Dyer Jr, 2003), (Guan et al., 2020).

In addition, the type of business and industry in which a family firm operates can also be a factor that determines innovation (Oktavia et al., 2020), (Al-Nashmi & Aldeen, 2022). In the case of the batik industry in Indonesia, families play an important role in driving the economy and employment.



Green innovation behavior, which includes the implementation of environmentally friendly practices and technologies, can be a powerful tool for families in the batik industry to differentiate themselves, improve efficiency, and attract environmentally conscious consumers. Green innovation behavior suggests that firms can gain a competitive advantage by acquiring and utilizing resources that are valuable, scarce, and difficult to import (Al-Nashmi & Aldeen, 2022) (Zahara and Nersiwad, 2017), (Novitasari & Agustia, 2023).

Within green innovation behavior there are green products and green processes that can enable families to reduce production costs, improve brand reputation, and respond better to changes in market demand (Huong et al., 2021), (R. U. Khan et al., 2022), (Zhan, 2023), (Novitasari & Agustia, 2023), (Moursellas et al., 2023). This is because Green products can lead to the development of unique and environmentally friendly products and processes, which can differentiate a company from its competitors and improve its overall performance. previous research has highlighted the importance of separating family and business dimensions to facilitate business growth and innovation (Oktavia et al., 2020). The shift towards sustainable practices has become an urgent global concern, and the concept of green process towards green innovation behavior has emerged as an important aspect in this effort. Green innovation, broadly defined as the development of new or modified products, processes, and technologies that help preserve the environment, has gained significant traction in recent years (Weng et al., 2015), (Wachjuni et al., 2022), (P. A. Khan & Johl, 2019), (Zhan, 2023).

On this occasion we would like to examine the family businesses of Batik SMEs from the cities of Cirebon, Semarang, Lasem, Pekalongan and Kuningan that implement green behavior innovation. Existing research has highlighted the unique challenges and opportunities that families face in terms of innovation and internationalization. Family firms are often characterized by a strong emphasis on tradition, an anti-risk attitude, and a mix of family and business interests, which may hinder or facilitate innovation efforts (Singh & Kota, 2017), (Singh & Kota, 2017), (Jiang et al., 2017).

The phenomenon that occurs in SME Batik families, the fact that environmental management and saving raw materials, additives, water and energy still have constraints lack of practical knowledge of environmental management and limited human resources. If no innovation is made with natural dyes, the amount of wastewater discharged into the environment will be increasingly dangerous for biotic and abiotic life. The existence of environmental problems makes people start to worry and realize that many of the products they use are one of the contributors to environmental damage. The increasing public concern for the environment has led to the emergence of thoughts of efforts to help reduce the impact of the decline in environmental quality due to the batik production waste produced, namely by being smarter and more selective in buying products (smart consumer) (Wachjuni et al., 2024).

Batik SMEs, especially those managed as family businesses, face great challenges in maintaining business sustainability amidst the demands of a global market that is increasingly concerned about environmental issues. To overcome this challenge, the application of green innovation behavior is very important. Green innovation behavior includes various environmentally friendly innovative efforts in the production process and business management (Yu-Shan ChenShyh-Bao LaiChao-Tung Wen, 2006), (Carmeli & Spreitzer, 2009).

In the context of the batik industry in Indonesia, families play an important role in driving the economy and employment. However, the industry faces intense competition, and family firms must continuously innovate to maintain their competitive edge. Green innovation behavior, which includes the implementation of environmentally friendly practices and technologies, can be a powerful tool for families in the batik industry to differentiate themselves, improve efficiency, and attract environmentally conscious consumers (Singh & Kota, 2017), (Caracuel & Mandojana, 2013).

Family businesses have several advantages that can encourage the implementation of green innovation behavior. Family businesses are rooted in strong values towards sustainability and environmental sustainability and are passed down from generation to generation. These values not



only influence the way they do business but also how to innovate in order to continue to be competitive in a dynamic market. Green creativity leads to green innovation.

In addition, green creativity, the ability to generate new environmentally friendly ideas, can play an important mediating role in the relationship between emotional intelligence, spiritual intelligence, and green innovation behavior. Individuals who are creative in finding green solutions tend to be more innovative in implementing green practices in their businesses and can be an exciting opportunity to bond with family members while building sustainable businesses. Families are a key resource in building innovation strategies to address weaknesses in business activities, gaps in supply chains or operations.

So here, we want to see about family companies' concern for the environment with emotional intelligence and spiritual intelligence will increase green creativity so that it will build green innovation behavior to increase competitive advantage (Maldonado & Márquez, 2023). The goal is to see that the application of green innovation behavior in family business batik SMEs is an effective strategy to create a competitive advantage in a global market that is increasingly concerned with environmental issues. Emotional intelligence and spiritual intelligence are key factors that support the implementation of green innovation, with green creativity as a mediation that connects the two. Through the development of green creativity, family business batik SMEs can produce products that are not only of high quality and cultural value, but also environmentally friendly and in accordance with the demands of modern consumers.

LITERATURE REVIEW

Green innovation Behavior

Green innovation behavior in family businesses can come from various sources and motivations. Triggers for green innovation behavior in family businesses usually arise due to environmental awareness, family values, leadership, market demands and competition, regulation and compliance, and long-term goals. Green innovation behavior in family businesses, business owners can be more effective in designing sustainable and future-oriented strategies.

Green innovation behavior comes from the development of green behavior theory. According to Goleman, D., & Barlow 2012 Green behavior is the action of individuals or groups directed to maintain, preserve, and improve the environment and encourage ecological sustainability (Hollweg, 2012), (Capra and Stone, 2010). The concept of green behavior involves innovation focusing on environmentally friendly actions towards creating new innovations that reduce negative impacts on the environment and can improve environmental welfare. Green innovation includes efforts to produce innovations that contribute to sustainable development and preservation of the natural environment (Chen, Bao, 2006). Green innovation behavior is a behavior that is motivated to produce innovative goods and services that pay attention to environmental preservation and sustainable excellence.

Indicators of green innovation behavior used in this study are environmentally friendly product development, environmental awareness and education, manajamene's commitment to sustainability.

Emotional intelligence

Emotional intelligence includes the ability to recognize, understand, and manage one's own and others' emotions. Individuals with high emotional intelligence are able to manage stress, communicate effectively, and resolve conflicts well, ultimately supporting the implementation of green innovation behavior in family businesses (Drigas & Papoutsis, 2018), (Moursellas et al., 2023).

Green innovation behavior is motivated by the emotional intelligence of family members and raises awareness and hopes that the business continues to grow and be able to compete by innovating their business with regard to the environment. According to Daniel Goleman, emotional intelligence is the ability to manage emotions, recognize one's own feelings, motivate oneself and establish good relationships with others (Goleman, 2007). The success in implementing Green innovation behavior



in this family business unit through emotional intelligence we try to measure through the ability to control himself not to create products that can endanger the safety of others, motivate himself to create environmentally friendly products, motivate himself to empathize with others (Goleman, 2007).

Indicators used in this study: self-awareness, self-management, and self-motivation (Goleman, 2007).

Spiritual intelligence

Spiritual intelligence encourages individuals to see their business as part of a larger ecosystem, where environmental sustainability is one of the top priorities. In the spiritual intelligence variable, we measure it through the high level of awareness of family members, the ability to be flexible in the face of change, and the unwillingness to harm people instilled by family members for the success and sustainability of their business. In addition, spiritual intelligence relates to awareness of the meaning of life, spiritual values, and connection with the environment (Moursellas et al., 2023). Spiritual intelligence includes the ability to engage in virtuous behavior, foster compassion and altruism, and find hope and optimism in the face of adversity (Hyson, 2013), (Vasconcelos, 2020).

Green innovation behavior is also strongly influenced by spiritual intelligence for family members in managing their business. Spiritual intelligence is the highest intelligence related to a person's awareness to be able to interpret everything in depth that has the ability and sensitivity through the basis of the soul. Spiritual intelligence according to (Danah, Marshall, 2007) is a concept that includes understanding, developing, and applying the spiritual dimension in an individual's life. It involves awareness and understanding of meaning, values, life purpose, and connection with something greater than oneself, which can be a religious concept, transcendence, or the existence of something divine (Ramadhani & Khotimah, 2023).

The indicators in this study are the search for meaning and purpose, spiritual self-awareness, and harmony with nature.

Green creativity

Green creativity is the ability to develop new ideas that are environmentally friendly and can be implemented in production processes, products, or services (Cropley, 2023). Creativity is about solving problems and satisfying needs by developing new and useful solutions - in other words, creativity is about the talents, processes and environmental factors that help us produce new and useful products. Cropley says that creativity is like a system with four interacting elements: the person (which refers to the interaction between talents), the press (which refers to the process and environment), the product (which refers to the new and useful product) and the social context (Cropley, 2023). According to Torrance (1981), creativity is the process of an individual's ability to understand gaps or obstacles in his life, formulate new hypotheses and communicate the results, and wherever possible modify and test the hypotheses that have been formulated (Center, n.d.).

Green creativity according to Chen and Chang is part of green product development. They stated that for green creativity and green product development to succeed, green dynamic capabilities and green transformational leadership are required (Chen and Chang, 2013). The indicators of green creativity used in this study are the efficient use of natural resources, the adoption of environmentally friendly technologies, and creativity in product and process design.

HYPOTHESIS

Direct Effect

- H1 : Emotional Intelligence affects green Creativity
- H2 : Spiritual Intelligence affects green Creativity
- H3 : Emotional Intelligence affects green innovation behavior
- H4: Spiritual Intelligence affects green innovation behavior
- H5: Green Creativity Affects Green Innovation Behavior

**Indirect Effect**

H6 : Green Creativity mediates Emotional Intelligence on Green Innovation Behavior

H7 : Green Creativity mediates Spiritual Intelligence on Green Innovation Behavior

METHOD

The research method used in this study is to use survey research methods with a quantitative approach. The population in this study were Batik SMEs with green products or green with a population of 32 Batik SMEs (Cirebon, Semarang, Lasem, Pekalongan and Kuningan) . The small population size requires respondents to use saturated sampling techniques / based on the census, where all respondents are sampled in this study (Sugiyono, 2017). Tests were carried out using multiple linear regression analysis Path analysis using SPSS 26. Intervening tested with sobel test.

RESULT AND DISCUSSION**Classical Assumption Test****Table 1 One-Sample Kolmogorov-Smirnov Test**

		Unstandardized Residual
N		32
Normal Parameters ^{a,b}	Mean	.0000000
	Std.	
	Deviation	3.38598395
Most Extreme Differences	Absolute	.089
	Positive	.089
	Negative	-.080
Test Statistic		.089
Asymp. Sig. (2-tailed)		.200 ^{c,d}
Exact Sig. (2-tailed)		.942
Point Probability		.000

a. **Test distribution is Normal.**

b. Calculated from data.

c. Lilliefors Significance Correction.

d. This is a lower bound of the true significance.

Based on the table 1, it can be seen that all significance levels on the variables in the study are normally distributed. This is evidenced by the Asymp. Sig (2-tailed) value obtained is $0.942 > 0.005$, indicating that the research sample is normally distributed.

**Multicollinearity Test****Table 2 Multicollinearity Test**

Model		Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance VIF
1	(Constant)	-47.765	26.160		-1.826	.079	
	Emotional Intelligence	.626	.234	.388	2.678	.012	.719 1.391
	Spiritual Intelligence	1.455	.358	.564	4.061	.000	.782 1.279
	Green Creativity	.465	.161	.465	2.888	.007	.582 1.717

a. Dependent Variable: Green Innovation Behavior

From the table 2, it can be seen that each independent variable has a tolerance value $> 0,1$ and a VIF value < 10 So with this it can be said that there are no symptoms of multicollinearity between the independent variables in the regression model in this study.

Heteroscedasticity Test**Table 3 Heteroscedasticity Test**

Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.
		B	Std. Error	Beta			
1	(Constant)	5.194	16.356			.318	.753
	Emotional Intelligence	-.054	.146	-.082		-.371	.714
	Spiritual Intelligence	.009	.224	.008		.038	.970
	Green Creativity	-.004	.101	-.009		-.035	.972

a. Dependent Variable: abs_res

From the table 3, It can be seen that all variables have a significance value > 0.05 , it can be concluded that there is no heteroscedasticity in this regression model.

**Structural Equation I****Table 4 Structural Equation I
Coefficients^a**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	109.181	22.350		4.885	.000
	Emotional Intelligence	.753	.231	.466	3.263	.003
	Spiritual Intelligence	-1.005	.369	-.390	-2.726	.011

a. Dependent Variable: Green Creativity

$$Z = a1 + b1.X1 + b1.X2 + e$$

$$Z = 109,181 + 0,753.X1 - 1,005.X2 + e$$

From the table 4, it can be concluded that Emotional Intelligence has a positive influence on Green Creativity. Conversely, Spiritual Intelligence has a negative influence on Green Creativity in this model.

Structure equation II**Table 5 Structure equation II
Coefficients^a**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-47.765	26.160		-1.826	.079		
	Emotional Intelligence	.626	.234	.388	2.678	.012	.719	1.391
	Spiritual Intelligence	1.455	.358	.564	4.061	.000	.782	1.279
	Green Creativity	.465	.161	.465	2.888	.007	.582	1.717

a. Dependent Variable: Green Innovation Behavior

$$Y = a2 + b2.X1 + b2.X2 + e$$

$$Y = - 74,765 + 0,626.X1 + 1,455. X2+ e$$

Hypothesis Test**Direct Effect Test**

H1 : The coefficient value of **Emotional Intelligence** = 0,753, the value is positive and the significance value is $0,003 < 0,05$, meaning that Emotional Intelligence has a positive effect on **Green Creativity**. **Hypothesis 1 accepted**



H2 : **Spritual Intelligence** coefficient value = -1,005 the value is negative and the significance value is $0,011 < 0,05$, meaning that **Spritual Intelligence** has a negative effect on **Green Creativity**. **Hypothesis 2 rejected**

H3 : **Emotional Intelligence** coefficient value 0. 626 and significant $0,012 < 0,05$, meaning that Emotional Intelligence has a positive and significant effect on **Green Innovation Behaviour**. **Hypothesis 3 accepted**

H4 : **Spritual Intelligence** coefficient value of 1.455 and significant $0,000 < 0,05$, meaning that **Spritual Intelligence** has a positive and significant effect on **Green Innovation Behaviour**. **Hypothesis 4 accepted**

H5 : **Green Creativity** coefficient value is 0.465 and the significance number is $0,007 < 0,05$, meaning that **Green Creativity** has a positive and significant effect on **Green Innovation Behaviour**. **Hypothesis 5 accepted**

Indirect influence Test

Table 6 Sobel Test

	Pengaruh Tidak Langsung	Z Sobel	P Sobel
direct effect X1-> Z-> Y	0,350145	216,174219	0,0306381
Indirect effect X2-> Z-> Y	-0,002325	-0,01354999	0,989189

Source : Processed data 2024

H6 : The indirect effect of **Emotional Intelligence** -> **Green Creativity** -> **Green Innovation Behavior** is 0.350, Z Sobelnya = 216.1 > 1.96 and P Sobel = $0,031 < 0,05$, meaning that there is an influence of **Emotional Intelligence** on **Green Innovation Behavior** through **Green Creativity**. **Hypothesis 6 accepted**

H7 : The indirect effect of **Spritual Intelligence** -> **Green Creativity** -> **Green Innovation Behaviour** is - 0.002, Z Sobelnya = $0,002 < 1,96$ and P Sobel = $0,989 < 0,05$, meaning that **Spritual Intelligence** affects **Green Innovation Behaviour** through **Green Creativity**. **Hypothesis 7 is rejected**

DISCUSSIONS

Emotional Intelligence Affects Green Creativity

In this study, it is known that Emotional Intelligence has positive and significance on Green Creativity in the family business of Batik MSMEs in Cirebon, Semarang, Lasem, Pekalongan and Kuningan. As revealed that in the family business of Batik MSMEs in those cities, individuals with high Emotional Intelligence tend to create more innovations or ideas that are environmentally friendly. This could mean that they are better able to motivate themselves and others to think creatively about ways to make their businesses more sustainable (Harini et al., 2020), (Doğru, 2022), (Coronado-Maldonado & Benítez-Márquez, 2023). The results of this study are in line with research conducted by (Dong et al., 2022), (Doğru, 2022), (Coronado-Maldonado & Benítez-Márquez, 2023).



Spiritual Intelligence Affects Green Creativity

In this study, it turns out that Spiritual Intelligence has a negative effect on Green Creativity in the family business of batik MSMEs in Cirebon, Semarang, Lasem, Pekalongan and Kuningan. This happens because the spiritual values owned are different from the approach to Green creativity. As it is known that cow dung can be a natural dye for batik, but the cultivation of religious values states that batik using cow dung cannot be used for worship (Vasconcelos, 2020), (McGhee, P., & Grant, 2017). The results of this study are also supported by previous research (Sharma & Sharma, 2017), (McGhee, P., & Grant, 2017)

Emotional Intelligence affects green innovation behavior

The findings of this study are that Emotional Intelligence has a positive and significant effect on Green Innovation Behaviour in family businesses of Batik MSMEs in Cirebon, Semarang, Lasem, Pekalongan and Kuningan. This shows that family businesses that have a high level of emotional intelligence tend to have better Green Innovation Behaviour. They are able to create products and processes that pay attention to the sustainability of a more friendly and good environment (Hamdani et al., 2019)(Harini et al., 2020), (Novitasari & Agustia, 2023)

Spiritual Intelligence affects green innovation behavior

Spiritual Intelligence has a positive and significant effect on Green Innovation Behaviour in family businesses of Batik MSMEs in Cirebon, Semarang, Lasem, Pekalongan and Kuningan. This shows that family businesses of MSME Batik that have a high level of spiritual intelligence tend to have better Green Innovation Behaviour. They are able to create environmentally friendly products and processes and are better able to adapt to sustainable practices (Alwadani & Ndubisi, 2020),(Astrachan et al., 2020). Penelitian ini didukung dari temuan sebelumnya oleh (McGhee, P., & Grant, 2017), (Harini et al., 2020),(Pio et al., 2020).

Green Creativity Affects Green Innovation Behavior

Green Creativity has a positive and significant effect on Green Innovation Behaviour in family businesses of UMKM Batik in Cirebon, Semarang, Lasem, Pekalongan and Kuningan in this study. This shows that family businesses of Batik MSMEs have a high level of creativity so that Green Innovation Behaviour is better and they are able to create products and processes that are environmentally friendly and specifically focus on environmental sustainability which encourages innovation (El-Kassar & Singh, 2019), (Harini et al., 2020),(Novitasari & Agustia, 2023).

Green Creativity mediates Emotional Intelligence on Green Innovation Behavior

Emotional Intelligence on Green Innovation Behavior has an influence after being mediated by Green Creativity in Batik MSME Family Businesses in Cirebon, Semarang, Lasem, Pekalongan and Kuningan. In this case, family businesses that have good emotional intelligence will encourage green creativity so that they understand how to manage emotions that encourage sustainable Green Innovation Behavior (Wang et al., 2020), (Doğru, 2022), (Dong et al., 2022), (Coronado-Maldonado & Benítez-Márquez, 2023)

Green Creativity mediates Spiritual Intelligence on Green Innovation Behavior

Spiritual Intelligence negatively affects Green Innovation Behavior when mediated by Green Creativity in Batik MSME Family Businesses in Cirebon, Semarang, Lasem, Pekalongan and Kuningan. In this study, the reality is that family businesses with high levels of Spiritual Intelligence can potentially inhibit Green Creativity and negatively impact Green Innovation Behavior. So



although spiritual values and ethics are important in business, they will be cautious about innovation(El-Kassar & Singh, 2019) (Astrachan et al., 2020), (Alwadani & Ndubisi, 2020).

CONCLUSION

Conclusion

Emotional Intelligence has positive and significance on Green Creativity in the family business of Batik MSMEs in Cirebon, Semarang, Lasem, Pekalongan and Kuningan; Spiritual Intelligence has a negative effect on Green Creativity in the family business of batik MSMEs in Cirebon, Semarang, Lasem, Pekalongan and Kuningan; Emotional Intelligence has a positive and significant effect on Green Innovation Behaviour in family businesses of Batik MSMEs in Cirebon, Semarang, Lasem, Pekalongan and Kuningan; Spiritual Intelligence has a positive and significant effect on Green Innovation Behaviour in family businesses of Batik MSMEs in Cirebon, Semarang, Lasem, Pekalongan and Kuningan; Green Creativity has a positive and significant effect on Green Innovation Behaviour in family businesses of UMKM Batik in Cirebon, Semarang, Lasem, Pekalongan and Kuningan; Emotional Intelligence on Green Innovation Behavior has an influence after being mediated by Green Creativity in Batik MSME Family Businesses in Cirebon, Semarang, Lasem, Pekalongan and Kuningan; Spiritual Intelligence negatively affects Green Innovation Behavior when mediated by Green Creativity in Batik MSME Family Businesses in Cirebon, Semarang, Lasem, Pekalongan and Kuningan.

Suggestions

One weakness of this article is the limited sample size, as the study only involved 32 Batik SMEs in Indonesia. A larger and more diverse sample could enhance the generalizability and robustness of the findings.

One suggestion for future research would be to expand the sample size to include a more diverse range of Batik SMEs in Indonesia. A larger sample could provide a more comprehensive understanding of the relationships between emotional intelligence, spiritual intelligence, green creativity, and green innovation behavior within family businesses in the Batik industry (). Additionally, conducting longitudinal studies to observe the long-term effects of these factors on sustainable practices and competitive advantage in Batik SMEs could offer valuable insights for both academia and industry.

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