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The Effect of Green Creativity and Green Innovation on Green Competitive Advantage and Performance of Sustainable SMEs: The Moderation Role of Digital Empowerment

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Abstract. The purpose of this study is to examine and analyze the relationship pattern between green creativity, green innovation, green competitive advantage, and sustainable SME performance moderated by digital empowerment. Digital empowerment is a crucial aspect in the current era because creative SMEs are currently faced with a very varied and innovative digital market. The population of this study is natural-colored batik SMEs in two provinces, namely: Special Region of Yogyakarta and West Java. These two provinces have natural-colored batik SMEs and have been able to survive until now. This quantitative study analyzed questionnaire data from 225 batik SME owners in Indonesia using PLS-SEM to examine how green creativity and innovation influence competitive advantage and performance, with digital empowerment as a moderator. The results showed green creativity and innovation had significant positive effects on green competitive advantage and SME performance. Additionally, digital empowerment strengthened the relationships between green creativity, innovation, competitive advantage, and performance. These findings indicate developing employee green creativity, pursuing green innovation, and leveraging digital technology are important strategies for SMEs to achieve sustainability.

Keywords: green creativity, green innovation, green competitive advantage, sustainable SME performance, digital empowerment

1. Introduction

The Industrial Revolution 4.0 is one of the evidences that can have an impact on the development of creative SMEs in Indonesia. The existence of digital disruption has demanded that creative SMEs develop their creativity and innovation in order to compete and have sustainable business performance (Setyaningrum et al., 2023; Muafi et al., 2022; Makarim & Muafi, 2021). The fashion sector is one of Indonesia's major creative SMEs because it significantly contributes to economic growth. The growth of new fashion players without outlets through various sales on social media means that old players must be able to anticipate and be moved to move forward one step ahead in terms of information technology. Batik SMEs in Indonesia are one of the mainstays of the creative industry, creating creative space for business people and creating jobs. They are required to have creative resources to encourage the creation of something new, unique, and different from the products or services produced by competitors (Zameer et al., 2020). Therefore, one of the efforts to improve the performance of SMEs is through digital empowerment (Muafi, 2015). This is because SMEs have the greatest risk exposure compared to other business units. (Lutfi, 2022). It is expected that digital empowerment can be an important factor in increasing market reach and ensuring efficient company operations (Porter, 1985; 2001). Competitive advantage becomes an important aspect of improving the company's performance in a sustainable manner. (Chang & Hung, 2021; Hidayatullah et al., 2019; Zaini et al., 2014; Agha et al., 2012). Company performance can be measured from financial and non-financial perspectives (Hidayatullah et al., 2019; Zaini et al, 2014; Agha et al., 2012). In achieving competitive advantage, there are two important aspects that companies need to pay attention to, namely green creativity and green innovation (Setyaningrum et al., 2019; Nasifoglu et.al, 2020; Bhuto et al., 2021). 2023; Nasifoglu et.al, 2020; Bhutto et al., 2021; Zameer et al., 2020; Annintg-Dorson, 2018). This research aims to fill the research gap by offering new insights, among them:

1. Several research results have focused on investigating product and service innovations based on environmental friendliness (Riaz et al., 2023; Kraus et al., 2020; Rehman et al., 2021; 2022; 2023; Zhang et al., 2022). However, in the context of SMEs, it turns out that in some developing countries, it tends to not be taken seriously (Riaz et al., 2023).

2. This research is framed by the natural RBV approach, which focuses on achieving competitive advantage through changes in the natural environment (Riaz et al., 2023). The findings of several studies also found that the natural RBV theory is still rarely used in the context of SMEs, especially when it is associated with green creativity and green innovation in achieving green competitive advantage and sustainable SME performance. (Riaz et al., 2023; Kraus et al., 2020; Rehman et al., 2021; 2022; 2023; Zhang et al., 2022).

3. The digital aspect is a crucial issue in the era of digitalization, especially in the context of SMEs (Lingling & Ye, 2023; Riofita, 2022; Meng & Wang, 2022). The relationship pattern between green creativity, green innovation, competitive advantage, and sustainable SME performance needs to be sharpened by examining the moderating role of digital empowerment for SMEs in Asia, especially in Indonesia.

4. The research results of Setyaningrum et al. (2023) apparently concluded that the green creativity of SMEs in Indonesia can make a significant contribution to green competitive advantage but cannot have a significant impact on SME performance. Likewise, the role of green IT empowerment is unable to strengthen the influence of green creativity on SME performance and weaken the influence of green creativity on green competitive advantage. The contradiction of these results is one of the triggers for researchers to do further research.

The objectives of this study were to a) examine the effects of green creativity and innovation on competitive advantage and SME performance, and b) analyze the moderating role of digital empowerment on these relationships.

2. Literature Review

2.1. Green creativity, Green Competitive Advantage and *Sustainable SME performance*

Creativity plays an important role in the innovation and future sustainability of the organization. Creativity is the creation of something valuable and useful ideas, products, services or processes by each individual (Ghimire, et al., 2021). Employee creativity is an important and valuable resource for companies in gaining and maintaining competitive advantage (Chang & Hung, 2021). Creativity refers to employees using their different knowledge, skills, abilities, views, and experiences in the process of generating the ideas needed to solve problems or make decisions efficiently. Employees are encouraged to try new and different approaches at work which makes them more competent and results in high creativity. Employee creativity is a valuable intangible resource that helps companies develop new, differentiated and better processes and activities in the production of products or services that drive a company's competitive advantage (Zameer et al., 2020). Creativity should be a valuable resource for organizations. Ferreira et.al (2018) find that creativity strengthen a company's competitive advantage. Creativity can strengthen brand image which will enhance green competitive advantage. Nasifoglu et.al (2020) find significant relationship between creativity and sustainable competitive advantage. In addition, Anning-Dorson (2018; Bhutto et al., 2021) state that green creativity can strengthen green competitive advantage. Stakeholders currently prefer to buy products/services based on pro-environment. Companies will have long-term sustainability when they produce creative and innovative products and services so that stakeholders will have high loyalty. Barney (1991) suggests if a company wants to achieve a sustainable competitive advantage, company must use a strategy that cannot be imitated or reproduced by competitors. Nasifoglu et.al (2020) find a significant relationship between creativity and sustainable competitive advantage. Shahzad et.al (2016) show that organizational creativity is significantly related to performance in the manufacturing sector in Pakistan. Employee creativity as the basis for an innovative and creative organization is important for business performance. Creativity is related to the continuous development of any organization and employee performance. The study from of Zameer et al. (2020) strengthens the theory that it turns out that green production and green creativity make a significant positive contribution in increasing green competitive advantage but need the mediating role of green brand image. When customers have a strong and positive perception of the product brand, it turns out that it can directly have an impact on green competitive advantage. This means that companies should pay attention to the brand image that will be conveyed to stakeholders to support the company's efforts to be pro-environment in every business process activity. In the context of MSMEs in Indonesia, competitive advantage is proven to have a significant contribution in improving performance, both marketing performance, financial and non-financial performance (Hidayatullah et al., 2019; Zaini et al, 2014; Agha et al., 2012). Some research findings prove that competitive advantage can act as a mediator (Hidayatullah et al., 2019; Zaini et al, 2014). The research results of Setyaningrum et al. (2023) also concluded that green creativity of SMEs in Indonesia can make a significant contribution to green competitive advantage.

H1. Green creativity has positive effect on green competitive advantage.
H2. Competitive advantage has positive effect on sustainable SME performance

2.2. Green innovation towards green competitive advantage and sustainable SME performance

Companies are faced with demands to develop ideas in their business development process towards environmentally friendly practices. Work culture and climate must be created by leading the green product and service innovation (Ghimire, et al., 2021; Chen et al., 2015; 2006). Previous studies have proven that green innovation can be used to reduce company pollution (Gao & Li, 2021). Nowadays, in rapidly changing dynamic business environment, an organization needs change and innovation to

survive, be effective, and gain competitive advantage (Ghimire, et al., 2021). According to Resource based theory, resources are a very important element for the success of an organization. If an organization has the resources and capabilities, it will enrich the strengthening of innovation which will become a resource that contributes to competitiveness. Porter (1985; 2001) argues that competitive advantage determines the success or failure of a company. Competitive advantage lies in the degree to which innovation, cultural cohesion, and efficiency are realized. Anning-Dorson (2018) shows that innovation leads to competitive advantage. Chen et.al (2006) illustrate positive correlation between green innovation for products, processes, and competitive advantage. SMEs can adopt green innovations to create new products and promote products, so as to develop new markets and set prices higher than the market average so that companies enjoy increased competitive advantage and can position themselves as leaders in the market with regard to sustainability (Hart, 1995; Hart & Milstein, 1999). Green innovation processes increase competitive advantage and corporate sustainability (Chen et al., 2006). Riaz et al. (2023) further emphasises the importance of companies to reduce environmental impacts by conducting green-based innovations which are divided into product innovation and process innovation. When these two types of innovation are carried out, companies can increase efficiency and effectiveness. Companies can implement these two types of innovation on an environmentally friendly basis (Li et al., 2020). Research results also found that green innovation can have a significant impact on environmental performance (Rehman et al., 2021; 2022), green performance (Kraus et al., 2020), green marketing performance (Nuryakin & Maryati, 2020), and the competitive advantage of SMEs (Rehman et al., 2023; Riaz et al., 2023; Mady et al., 2021). But on the other hand, the research results from Atriksa & Murwaningsari (2022) showed that green innovation has no effect on green competitive advantage. This proves that there are still inconsistencies in the results because they still show different results in the context of different research objects.

H3. Green innovation has positive effect on green competitive advantage.

H4. Green innovation has positive effect on the sustainable SMEs performance

2.3. Role of Moderation Digital Empowerment

Internet-based technology provides opportunities for small companies, in SMEs, to overcome size limitations and compete more effectively with larger market opportunities. However, realizing the benefits of information technology within an organization requires an understanding of user behavior (Lutfi, 2022). One strategy in empowering information technology is to prioritize the user behavior (Bandura, 1997; 2012). The hope is that the empowerment of information technology will have an impact on creativity, innovative behavior, and creative task (Siswanti & Muafi, 2020; Lin & Chen, 2017; Mehta & Zhu, 2016; Mariani & Imam, 2012; Choi, 2004; Tierney & Farmer, 2004; Hsu et al., 2011; Newman et al., 2018). This is in line with Balkaya & Akkucuk (2021) which state that when a person's behavior is positive, especially self-efficacy, it can actually have positive correlation with the technology used. Information technology has changed operational activities in every field around the world by successfully implementing it in their economic activities, including SMEs (Lutfi, 2022). According to Ghimire, et al. (2021), creativity and innovation are essential for sustainable success, gaining competitive advantage, and the survival of small and medium enterprises (SMEs). Employees are the main source of creativity in any organization. It means increasing creativity have become a major concern for creative-based organizations such as information technology (Ghimire, et al., 2021).

The SME must be able to create an environment where the digital empowerment managed by the organization can develop. Because they must interact with one another, HR in the organization must support one another, which of course also requires a supportive organizational culture. This is important to help the organization unlock the knowledge, experience, and values that employees already have, with the hope of creating rapid innovation. MSMEs must be able to innovate, followed by rapid organizational learning at all times. (https://www.ionology.com/digital-empowerment/, accessed on August 11, 2023). According to Lingling & Ye's research (2023), organizational flexibility is essential

for ongoing adaptation to the digital environment. Organizations must have emotional capabilities because they can have a significant positive impact on open innovation. Riofita (2022) recommends that digital network enablement and digital information sharing have a very significant influence on marketing performance. Companies must pay attention to other aspects, namely digital services, because the recovery of digital services has a significant impact on digital network empowerment and digital information sharing. Meng & Wang (2022) even assert that digitalization can have an impact on corporate value creation. Companies are expected to build a theoretical framework to analyze the process of digital empowerment for companies from the perspectives of production factors and economic activities. Therefore, SMEs should consider using digital, in order to improve the SME's performance and green competitive advantage.

H5. Empowerment of digital positively moderate creativity and green competitive advantage

H6. Empowerment of digital positively moderate green innovation and green competitive advantage

H7. Empowerment of digital positively moderate green innovation and sustainable SME performance

3. Research Method

This study is survey which is conducted on creative SMEs that focus on batik SMEs in three provinces; Provinces of Special Region of Yogyakarta and West Java. The two provinces have batik SMEs which are spread to various regions. The population of this study is all SMEs of natural-colored batik in the three provinces. The target sample is 300 SMEs where each province will be taken proportionally. It meets the requirements as survey research (Hair et al., 2015). This study uses purposive sampling and focuses on batik SMEs that are oriented towards using natural dyes. Natural-colored batik SMEs have been able to survive in the midst of the onslaught of synthetic batik. The selection of SMEs criteria is based on: SMEs. SMEs that have been operating for at least 5 years, and SMEs that have a sales turnover of at least IDR 3 million per month.

The results of distributing the questionnaires turned out to be 225 SMEs from three provinces who answered the questionnaire in full. Cirebon City represents West Java Province and Special Region of Yogyakarta represents Special Region of Yogyakarta Province. The variables studied are: green creativity, green innovation, green competitive advantage, sustainable SME performance, and digital empowerment. The definition and measurement of variables can be explained, among others;

1. Green creativity (GC) is the process of a person's ability to understand gaps or obstacles in everyday life by producing green-oriented creative products/services.
2. Green Innovation (GI) is a process of one's ability to produce new products/services, develop old products/services and modify old products/services to become something unique and different with a green orientation.
3. Green competitive advantage (GCA) is the ability of SMEs obtained through their own resources to have a higher performance than other companies in the same industry or market in the last 5 years that are green oriented.
4. Sustainable SME performance (BP) is the result of implementing a series of business activities conducted by all elements of SME as a process of achieving goals compared to other companies in the same industry or market in a sustainable manner in the last 5 years.
5. Digital empowerment (GIT) is giving authority, motivation, other work privileges and positive feedback and facilitating the development of SME skills so that they have initiatives especially from the IT aspect towards IT digitalization.

Each variable is measured using the Likert scale technique with a score of 1 (strongly disagree) to a score of 7 (very strongly agree) applicable to the green creativity, green innovation, and IT empowerment variables. For the variable green competitive advantage and sustainable SME performance, it is measured with a score of 1 (very low) to a score of 7 (very high).

The indicators/items of each variable are measured as follows:

1. Green creativity, measured using 6 items adopted and modified from Jinag et al. (2021; Chen & Chang, 2013) including:

I succeed in making creative green products that consumers like;

I am fully involved in making creative green products;

I am flexible when asked to think about the problem of making creative green products;

I can effectively cooperate with other employees in making creative green products;

I can share knowledge and creative skills with others related to making green products

I usually quickly realize useful new ideas related to making green products;

2. Green innovation, measured using 5 items adopted and modified from Li et al. (2022).

The production process carried out by the company where I work can effectively prevent and reduce pollution;

The adoption of technology and business operations carried out by the company where I work effectively reduces energy consumption;

My company strives to reduce pollution and save energy in producing products;

My company always uses raw materials either wholly or partially derived from natural materials;

My company tries to produce environmentally friendly products that consumers like.

3. Digital empowerment, measured using 3 items adopted and modified by Lingling & Ye (2023; Kirti & De, 2018; Imtiyaz & Bhogal, 2020) including;

The company strives to improve the optimization of the management of all resources through the introduction of digital technology;

The company has introduced digital technology in the production business process from upstream to downstream;

I like to use the Internet to discover new things.

4. Sustainable SME performance, measured using 5 items adopted and modified from Mangenda Tshiaba et al. (2021; Qurniawati & Nurohman, 2021) among others;

My company has above-average business performance that is used to meet the needs and expectations of consumers and stakeholders in the long term compared to competing companies;

My company has above-average environmental performance that is used to meet the needs and expectations of stakeholders in the long term compared to competing companies;

The company has an above-average sales turnover compared to competing companies;

The company has an above-average market share compared to competing companies;

The company has a high social reputation above average compared to competing companies.

5. Green competitive advantage, measured using 3 items adopted from Astutia, & Datrinia (2021; Chen & Chang's, 2013) including

My company produces low-cost products in environmentally friendly innovation;

My company offers products and services that are environmentally friendly and difficult for competitors to imitate;

My company's main competitors cannot replace our company's position as an environmentally

friendly company.

The statistical technique uses Partial Least Square (PLS) as it has advantages including (Hair et al, 2015; Augusty, 2006):

1. PLS has the main function for model design as well as being used to confirm the theory.
2. PLS does not require many conditions or assumptions such as SEM (AMOS, LISREL).
3. PLS function has two functions, namely inner model and outer model. The inner model looks more at the regression coefficient, which is to examine the effect of one variable on another. Meanwhile, the outer model is used to assess validity and reliability. This is also used to assess the suitability of the outer model, among others: reliability and validity of reflective latent variables and formative latent variables. While the assessment of the suitability of the inner model includes: explaining the variance of endogenous latent variables, the size of the influence contributed and the relevance in prediction.

4. Results

4.1. Respondent Characteristics

The sample in this study is classified according to several characteristics including gender, monthly turnover, number of employees, and the length of time the SMEs have been operating. The classification results are shown in Table 1.

Table 1. Respondent Characteristics

Characteristics	Amount	Percentage
Gender		
Man	4	1.3
Woman	221	98.7
Monthly turnover		
> 6 million	96	42.9
2 million - 3,5 millions	111	49.1
3,6 million - 4,5 million	9	4.0
4,6 million - 5,9 million	9	4.0
Number of employees		
1-19 Persons	212	94.6
20-49 Persons	13	5.4
Length of Business		
>10 years	5	2.2
1-3 years	65	29.0
4-6 years	141	62.9
7-9 years	14	5.8
Total	225	100

Table 1 shows that from the gender aspect of the respondents in this study, the majority are women with a total of 221 female respondents. Furthermore, from the monthly turnover aspect, the respondents in this study have average turnover of 2 million - 3.5 million. As for the aspect of the number of employees, the average respondent has 1-19 employees in the SME they manage. From the aspect of business length, the respondents in this study had an average number of employees of 4-6 years.

4.2. Measurement Model Evaluation

This study uses the evaluation of measurement models in several ways through convergent validity, discriminant validity, construct validity, and reliability. Convergent validity measures the ability of an

indicator to explain its variables. The criteria used in convergent validity refer to Hair et al. (2019) that a valid indicator has a loading factor value between 0.5 and 0.7. The greater the loading factor value indicates the better the validity of an indicator. The construct validity refers to the AVE value with AVE criteria > 0.5. Furthermore, it can be seen in Table 2.

Table 2. Validity Analysis

Variable	Indikator	Loading Faktor	Validitas Konvergen	AVE	Validitas Konstruk
Business Performance	BP1	0.909	Valid	0,852	Valid
	BP2	0.909	Valid		
	BP3	0.929	Valid		
	BP4	0.942	Valid		
	BP5	0.925	Valid		
Green Creativity	GC1	0.923	Valid	0,81	Valid
	GC2	0.922	Valid		
	GC3	0.914	Valid		
	GC4	0.943	Valid		
	GC5	0.971	Valid		
	GC6	0.909	Valid		
Green Competitive Advantage	GCA1	0.875	Valid	0,866	Valid
	GCA2	0.927	Valid		
	GCA3	0.897	Valid		
Green Innovation	GI1	0.895	Valid	0,67	Valid
	GI2	0.897	Valid		
	GI3	0.891	Valid		
	GI4	0.894	Valid		
	GI5	0.800	Valid		
Digital Empowerment	GIT1	0.660	Valid	0,768	Valid
	GIT2	0.890	Valid		
	GIT3	0.886	Valid		

Table 2 produces the loading factor values for each indicator and the AVE values for each variable. All indicators in this study have a loading factor value of > 0.6 so that all indicators are concluded to be valid. The AVE value also shows a value above 0.5 so that the variable is also categorized as valid. Furthermore, the discriminant validity test is conducted by comparing the AVE square root value with the maximum correlation between variables or constructs. The AVE square root value is shown in the Fornell-Larcker Criterion table. The criterion used is the AVE root value generated by the correlation of each construct must be greater than the correlation between other constructs.

Table 3. Discriminant Validity Test with Fornell-Larcker Criterion

	Business Performance	Green Competitive Advantage	Green Creativity	Digital	Green Innovation
Business Performance	**0.923**				
Green Competitive Advantage	0.069	**0.900**			
Green Creativity	-0.617	0.105	**0.930**		
Digital	0.393	0.551	-0.173	**0.819**	
Green Innovation	0.670	0.277	-0.534	0.519	**0.876**

Based on table 3, it can be seen that the Fornell-Larcker Criterion value and the AVE root value generated by the correlation of each construct are greater than the correlations between other constructs. Therefore, it can be concluded that the model in this study is valid because it has a good discriminant validity value. The reliability test used is to determine the reliability of the data used. The criterion used is the composite reliability value which is required to have a value of ≥ 0.7 and the required Cronbach alpha value of ≥ 0.6. Table 4 explains that all variables are reliable.

Table 4. Reliability Analysis

	Cronbach's Alpha	Composite Reliability	Reliability
Business Performance	0.957	0.966	Reliable
Green Competitive Advantage	0.883	0.928	Reliable
Green Creativity	0.970	0.975	Reliable
Digital	0.745	0.857	Reliable
Green Innovation	0.924	0.943	Reliable

4.3. Structural Model Evaluation

Evaluation of the structural model analyzes the relationship between variables. In the first stage, it is necessary to know the value of the coefficient of determination which shows the influence magnitude of exogenous variables on endogenous. The coefficient of determination shows that the green competitive advantage variable has an R2 value of 0.358 which indicates that this variable is influenced by endogenous variables in the study of 35.8%. The business performance variable has an R2 value of 0.481 which indicates that this variable is influenced by endogenous variables in the study of 48.1%.

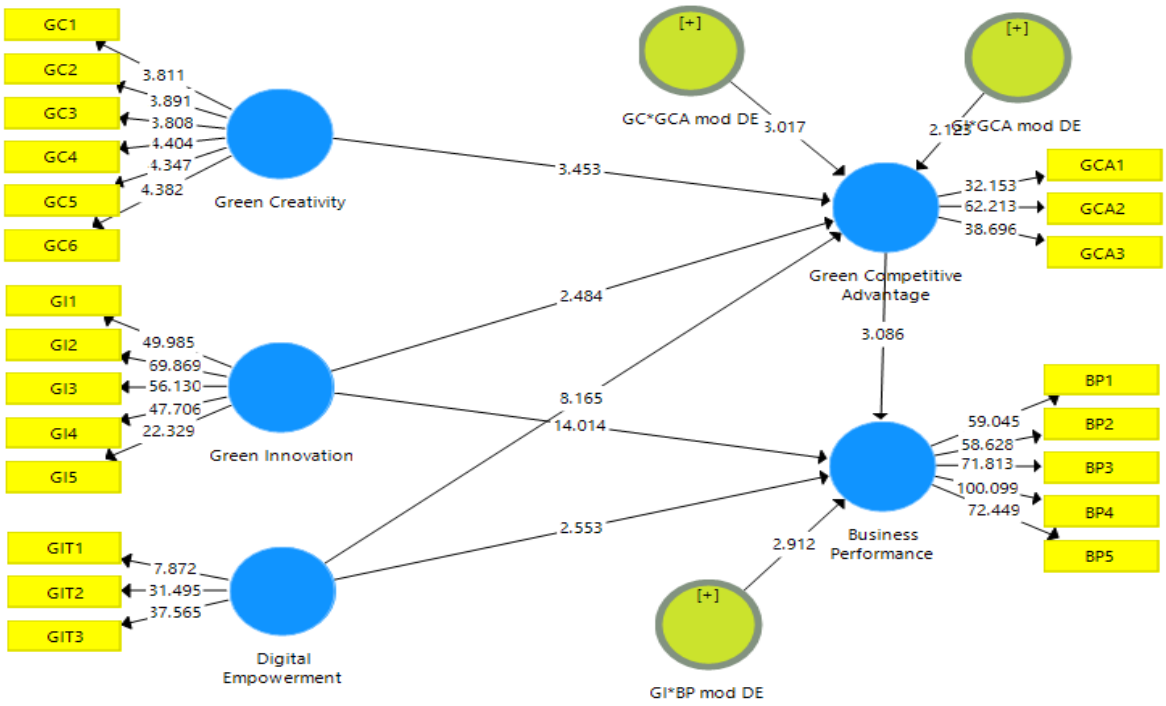

Fig.1: Path Diagram

Next step, researchers testing the research hypothesis. In this study, there are 7 hypotheses to be analyzed with 4 hypotheses indicating a direct effect and 3 hypotheses indicating a moderating effect.

Figure 1 shows the path analysis diagram. Furthermore, the analysis in this study used a one-tailed test with significance criteria referring to a statistical t value > 1.64 and a p value < 0.05. The direction of influence is known from the original sample value where the original sample value is positive, then the direction of influence is positive and vice versa. The results of the analysis are shown in Table 5.

Table 5. Path Coefficients

	Original Sample	T Statistics	P Values	Hypothesis Result
Green Creativity -> Green Competitive Advantage	0.359	3.543	0.000*	Positive and Significant (H1 accepted)
Green Competitive Advantage -> Business Performance	0.242	2.949	0.002*	Positive and Significant (H2 accepted)
Green Innovation -> Green Competitive Advantage	0.233	2.425	0.008*	Positive and Significant (H3 accepted)
Green Innovation -> Business Performance	0.695	13.860	0.000*	Positive and Significant (H4 accepted)
GC*GCA mod GIT -> Green Competitive Advantage	0.267	2.871	0.002*	Moderate Positively and Significantly (H5 accepted)
GI*GCA mod GIT -> Green Competitive Advantage	0.129	2.113	0.018*	Moderate Positively and Significantly (H6 accepted)
GI*BP mod IT -> Business Performance	0.146	2.833	0.002*	Moderate Positively and Significantly (H7 accepted)

Note: * =sign alpha 5%

5. Discussion

Batik is one of the industry icons that has unique characteristics that belong to Indonesia. Even SMEs have some limitations possessed by the batik industry, it turns out that this study has succeeded in making a significant contribution in increasing theoretical and managerial contributions in the academic world and practitioners. The results prove that green creativity has positive effect on green competitive advantage (H1 accepted). Several studies have proven that creativity plays an important role in innovation and the future sustainability of organizations (Ghimire, et al., 2021). SMEs that have creative human resources will be able to create creative and innovative products and services so that they can continue to survive in creating competitive advantages (Chang & Hung, 2021; Nasifoglu et.al., 2020). Currently, the demands of the world community have shifted from chemical and pollutant-based products/services to green and environmental friendly products/services. Consumers have switched to consuming products that are unique and do not pollute the environment. Therefore, SMEs must have a culture and work system that can embed strong values in creating and producing green creativity for their employees. If this condition has been conducted, it became a habit for employees to always have green creative-based ideas. Having high green creativity will increase green competitive advantage (Zameer et al., 2020; Anning-Dorson (2018; Bhutto et al., 2021). When a green competitive advantage has been achieved, the company would be strongly motivated to improve sustainable SME performance. At the same time, it also strengthens the finding that competitive advantage has positive effect on SME performance (H2 accepted). In addition Shahzad et.al (2016) state that it shows that creativity in

organizations can have a broad impact on sustainable development which is contributed by the accumulation of creativity produced by companies. Furthermore, the results prove that green innovation has positive effect on competitive advantage (H3 accepted). Likewise, the research results provide findings that Green innovation has a positive effect on SME performance (H4 proven). Study results also prove that; Empowerment of digital strengthens the relationship between creativity and competitive advantage (H5 accepted). Empowerment of information technology strengthens the relationship between green innovation and competitive advantage (H6 accepted) and empowerment of digital strengthens the relationship between green innovation and sustainable SME performance (H7 accepted).

Theory Implication

This research provides strengthening and theory enrichment in the relationship between green creativity, green innovation, green competitive advantage and sustainable SME performance moderated by digital empowerment. There are several important points that can be generated: (1) green creativity and green innovation make an important contribution in increasing green competitive advantage, (2) green competitive advantage and green innovation are also no less important in making relevant contributions to sustainable SME performance. Furthermore, in the current era, digital empowerment is able to bring significant changes in strengthening the relationship between green creativity and green innovation to green competitive advantage, and is able to strengthen the relationship between green innovation and sustainable SME performance. This study also validates that digital empowerment can play a significant role in the growth of sustainable SME performance and green competitive advantage.

Manajerial Implication

Green innovation of products/services offered to the public is believed to reduce pollution to the surrounding environment (Gao & Li, 2021; Ghimire, et al., 2021; Chen et al., 2015; 2006). Companies will relatively be able to survive in the long term when they can operate with business processes that can generate new ideas that are innovative and environmental friendly (Anning-Dorson (2018; Chen et.al (2006). In Indonesia, it means the company has implemented technology with the principles of environmental preservation, protection, and management are in accordance with the Regulation of the Minister of Environment and Forestry No. 5 of 2019. Several companies have also collaborated with the government and other institutions to minimize waste and carbon emissions in anticipation of the global climate crisis. This also provides another implication that digital enablement can contribute to resource theory to improve company performance in a sustainable manner.

Some of the strategies and policies that can be implemented include; (a) produce and implement environment-based business processes, (b) minimize and reduce carbon footprints by adopting energy-saving behavior and using renewable or natural-based energy, (c) have a commitment to conduct 3R (reduce, reuse, recycle) on all waste produced so that it can be efficient and effective, (d) reduce and have avoidance behavior from air, water, or soil pollution. Everything is done in order to protect the earth. Selling products/services that are environmental friendly has the potential to increase greater profits for the company. This also answers the finding that green innovation has positive effect on SME performance (H4 accepted). The Body Shop is a brand that consistently applies green innovation when promoting its products. They claim that besides their products are natural and do not use ingredients from animals, it turns out that The Body Shop has developed sustainable packaging innovations. The Body shop is known for its goal of preserving the environment and protecting endangered habitats.

Currently, SMEs are required to be able to use information technology, of course, with all company sizes and the level of competition is very tight. This felt very hard considering they have limitations in terms of human resources and technology ownership. The behavior of managers and employees is a strategic aspect for the company because it will impact creativity, innovative behavior and creative tasks (Siswanti & Muafi, 2020; Lin & Chen, 2017; Mehta & Zhu, 2016; Mariani & Imam, 2012; Hsu et al. , 2011; Newman et al., 2018). Companies can empower information technology by providing continuous

and consistent training to all of their employees as well as mentoring for employees and members of the SME community. Training and mentoring efforts that can be done; (a) multimedia, for example making catalog, label and designing product packaging, (b) internet, (by making social media, creating blog, Instagram, Facebook), (c) web management of online markets and their applications, (d) strengthening literacy strategies for utilizing green-based IT for the Batik SME community, (e) capacity building at the local level which functions as a driving force in the process of developing the use of green IT. Empowerment of digital in batik SMEs in the long term is very important for increasing creativity and green innovation so that competitive advantage and sustainable UKM performance can be achieved.

6. Conclusion

This research provides empirical study on the significant impact of the relationship pattern between green creativity, green innovation, green competitive advantage, and sustainable SME performance moderated by digital empowerment. These findings indicate developing employee green creativity, pursuing green innovation, and leveraging digital empowerment are important strategies for SMEs to achieve sustainability performance. Managers need to have strategies and policies that can make employees highly motivated to be creative and innovative. This can also be supported by conditioning a culture of innovation by providing training and mentoring to employees supported by strengthening digital empowerment so that it can have an impact on the green competitive advantage and sustainable performance of SMEs.

7. Research Limitations and Future Research Agenda

The limitations and future research agenda are:

1. This study only covers 3 provinces where each province is represented by a group in the association that has natural-colored batik SME centers. Meanwhile, SME natural-colored batik has an uneven distribution in each region of each province. This condition does not yet describe the actual conditions in the 3 provinces, so it is feared that it will not be able to generalize the population. In the future, the sampling technique should use random sampling using area random sampling so that it is more representative of the population in the 3 provinces studied.
2. Self-reports are used in this study and tend to be based on the perceptions of SME managers or owners, especially for questions that focus on competitive advantage and sustainable SME performance so that it is necessary to cross check with similar companies, especially competing companies. In the future, we recommend using mixed methods so that the research results are more comprehensive.
3. The need for other considerations that can be included in the research model, for example conditions of environmental uncertainty and limited capital and technology owned by each SMEs.

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