

Have MSMEs in Indonesia Focused on Business Sustainability? The Influence of Environmental Orientation, Technology Implementation, Green Marketing, and Innovation Capability

Andri Ardhiyansyah^a, M. Andri Juniansyah^a

^a Universitas Nusa Putra

 andri.ardhiyansyah@nusaputra.ac.id

Received: July 5, 2024

; Accepted: August 15, 2024

; Published: October 13, 2024

ABSTRACT. The aim of this study is to determine the factors that impact MSMEs' sustainability practices and the degree to which they concentrate on business sustainability in Indonesia. This study used a quantitative research approach and collected survey data from MSMEs in Indonesia operating in various industries totaling 350 samples. Partial Least Squares Structural Equation Modeling (PLS-SEM) was used for data analysis to assess the relationship between variables. The study discovered that a focus on the environment, the application of technology, and green marketing greatly improve an organization's capacity for innovation, which in turn has a favorable impact on the sustainability of the firm. MSMEs are more likely to develop and maintain their business practices over time if they invest in green marketing techniques, use cutting-edge technologies, and give priority to environmental issues. In order to attain sustainability, MSMEs should include technology, marketing, and environmental initiatives into their fundamental business operations, according to the research. It is recommended that policymakers provide incentives, subsidies, and training programs to MSMEs in order to encourage the adoption of technology and green marketing. Support like this can encourage sustainable practices throughout the industry and close the digital divide. This study offers insightful information about the combined effects of environmental orientation, technology adoption, and green marketing on MSMEs in Indonesia's capacity for innovation and long-term viability of their businesses. It gives helpful suggestions for boosting MSMEs' sustainability and emphasizes the crucial role that innovation plays in converting these elements into sustainable business practices.

Keyword: MSMEs; Business Sustainability; Environmental Orientation; Technology Implementation; Green Marketing

JEL Classification: L26; Q56; R1; M14

INTRODUCTION

Studies concerning Micro, Small, and Medium-Sized Enterprises (MSMEs) are still expanding. The nature of issues is ever-evolving, and in the past few years, a number of economic sectors—including MSMEs in developed and developing nations—have given considerable attention to the phenomena of business sustainability. Business sustainability refers to an organization's ability to continue operating over the long term while upholding environmental, social, and economic sustainability (Millan-Tudela et al., 2023; Morsing & Spence, 2023; Siswanti & Nawangsari, 2023). To guarantee the ongoing operations and expansion of MSMEs, it is necessary to comprehend alternate working capital financing sources (Syah & Noviaristanti, 2022). In addition, sustainable business administration—which encompasses a number of elements including social responsibility, environmental economics, management functions, and value creation—plays a significant role in this paradigm shift. These elements are all essential for fostering innovation and long-term success in a business environment that is changing quickly (Pallapu & Kate, 2022). I.e., this also represents how MSMEs operate in Indonesia.

MSMEs play a critical role in Indonesia's economy, employing a sizable section of the labor force and adding significantly to GDP (Astuti et al., 2023; Putri & Bangun, 2019). The lack of environmentally friendly practices among MSMEs (Maurina & Rusdianto, 2023), the significance of trademark registration for legal protection and support from local governments (Gunawan & Putra, 2023), and the significance of networking, work culture, and reputation in enhancing business performance and sustainability (Abidin et al., 2023) are just a few of the difficulties that face the industry. MSMEs, however, confront a number of difficulties in the face of globalization and rapid economic expansion, such as fierce rivalry, scarce resources, and mounting environmental demands (Anaman et al., 2023; Prasad et al., 2022). Growing numbers of businesses, especially MSMEs (Alfazzi, 2023), are realizing the value of embracing sustainable practices to secure their long-term viability and contribute positively to the environment and society (Alfazzi, 2023; Anaman et al., 2023; Prasad et al., 2022; Prasetyo & Ellitan, 2023) as the world becomes more conscious of sustainability.

In order to be considered sustainable, a business must incorporate social, economic, and environmental factors into its operations and strategy. The notion underscores the necessity for enterprises to strive for financial gain while taking into account the societal and ecological consequences of their operations (Al Malki, 2023; Belas et al., 2021; González-Masip, 2022). Achieving sustainability in the context of MSMEs is not only morally required, but also strategically imperative to maintain competitiveness in the market and acquire access to markets and funding that are becoming more and more linked with sustainability concerns (Budiarto et al., 2023; Hossain et al., 2023).

The sustainability of Micro, Small, and Medium-Sized Enterprises (MSMEs) in Indonesia is impacted by several difficulties. The slow uptake of sustainable methods is one of the primary issues (Mardhotillah et al., 2023). Conventional production techniques that are harmful to the environment, like the use of non-renewable raw materials and ineffective waste management, are still widely used by MSMEs (Fahrussiam et al., 2023). Limited access to technology is another significant barrier. Many MSMEs lack the resources and infrastructure necessary to use cutting-

edge technology that could increase productivity and lessen their negative effects on the environment (Alayón et al., 2022).

Additionally, MSMEs frequently struggle to market their goods to consumers who are becoming more conscious of environmental issues (Martiningtiyas et al., 2023). Obstacles that must be surmounted include a lack of knowledge about green marketing and limited access to markets. Additionally, one barrier to MSMEs' viability is their capacity for innovation. It is challenging for many MSMEs in Indonesia to compete in a market that is becoming more demanding and changing because they have not prioritized investment in research & development of innovative products or business processes (Simamora, 2022). Therefore, long-term company relevance depends on capacity building in terms of innovation.

Environmental orientation, technological application, green marketing, innovation capability, and business sustainability continue to be prominent themes in research on MSMEs in Indonesia. Nonetheless, further research is necessary to fully comprehend how these factors interact with regard to the sustainability of businesses. (Nguyen-Viet, 2023) looked at environmental orientation and technology application, (Mahmoud et al., 2024) focused more on technology application and green marketing. The association between environmental attitude, green marketing, and innovation capability with corporate sustainability was underlined by (Song-Turner & Polonsky, 2016) as well as (Pandya et al., 2023). The significance of environmental orientation and innovative capability is underscored by (Yildiz et al., 2023) (Ratanavanich & Charoensukmongkol, 2024). (Verma et al., 2023) looked at innovation capacity, neighborhood orientation, and the use of technology. While (Amoako et al., 2021, 2022) looked at green marketing individually, (Shahid & Reynaud, 2022) and (Mittal et al., 2024) concentrate on green marketing and innovation capability. (Giantari & Sukaatmadja, 2021) place a strong emphasis on the application of technology, green marketing, and innovative talents.

Environmental orientation and creative capability are the main topics of (Namagembe et al., 2016, 2017) and (Nagiah & Suki, 2024). The use of technology and capacity for innovation were studied by (Lamperti et al., 2023). (Mostafiz et al., 2024) placed a strong emphasis on green marketing and technology use. By investigating the combined effects of environmental orientation, technological application, green marketing, and innovation aptitude on the business sustainability of MSMEs in Indonesia, this study seeks to close the knowledge gap.

An increasing body of research has focused on the assessment of business sustainability in MSMEs, which entails analyzing a number of variables including environmental orientation, technology implementation, green marketing, and innovation potential (Baig et al., 2023; Lestari & Sunyoto, 2023; Lutfi et al., 2023; Martínez-Peláez et al., 2023). Green practices and environmental orientation are positively correlated. Environmental orientation is a measure of a company's commitment to environmental issues. Adoption of technology is vital for waste reduction, sustainable product/service creation, and operational efficiency—all of which are necessary for being successful in the digital age. Green marketing, which emphasizes eco-friendly features, draws in customers who care about the environment and improves a company's reputation for social responsibility. Furthermore, by making it easier for businesses to respond to changes in the market and outside pressures, innovation capabilities—which allow for the development and application of new ideas—promote corporate sustainability and guarantee long-term viability and success (Sukri et al., 2023).

This study employs five conceptual variables: innovative capability, green marketing, environmental orientation, technology implementation, and company sustainability. To ascertain the relationship between the variables in this study, the researcher in this instance makes use of the findings from the author's earlier research. The findings of numerous studies on this subject, however, still require further development because there are still a great deal of additional elements that affect the sustainability of MSMEs in Indonesia. The objectives of this study are to: (1) evaluate the degree of environmental orientation among MSMEs in Indonesia; (2) evaluate the degree of technology application in MSME operations; (3) evaluate the adoption of green marketing practices by MSMEs; and (4) analyze the innovation capability of MSMEs and its relationship with business sustainability. The study aims to investigate the extent to which MSMEs in Indonesia focus on business sustainability and identify the factors that influence their sustainability practices.

LITERATURE REVIEW

Business Sustainability and MSMEs

The integration of economic, social, and environmental issues into business plans and operations is referred to as business sustainability, sometimes known as corporate sustainability or sustainable business (Crowe, 2017; Li et al., 2023; Mubarik et al., 2023). It encompasses actions intended to preserve resources for upcoming generations while generating long-term benefit for stakeholders (Millan-Tudela et al., 2023). Sustainability is becoming more widely acknowledged in the context of MSMEs as being essential to preserving competitiveness, boosting reputation, and guaranteeing business resilience (Dhanaraj et al., 2022).

MSMEs are crucial to a nation's socioeconomic development, particularly in emerging nations like Indonesia (Ansar et al., 2023). These businesses have a major positive impact on reducing poverty, producing money, and creating jobs (Prasetyo & Ellitan, 2023; Wattanakomol & Silpcharu, 2023). Their tiny size, scarce resources, and restricted access to markets and funding, however, make it difficult for them to pursue sustainability (Dhanaraj et al., 2022; Siswanti & Nawangsari, 2023).

Environmental Orientation

The degree to which an organization gives environmental issues top priority in its operations and decision-making processes is known as its environmental orientation (Alola et al., 2022; Tyagi et al., 2022). MSMEs that prioritize the environment are more likely to implement sustainable practices, like cutting back on waste, using less energy, and preventing pollution (Cheglakova et al., 2023). They understand how critical it is to lessen the environmental risks connected to their commercial operations and to leave as little of an ecological imprint as possible (Ajibike et al., 2023).

Studies indicate that MSMEs' sustainability performance is positively impacted by environmental focus (Cheglakova et al., 2023; Shah et al., 2024). Businesses that place a high priority on environmental sustainability are more likely to use green technologies, abide by environmental laws, and act in an ecologically conscious manner (Jamil et al., 2023; Tariq et al., 2020). On the other hand, a variety of factors, including industry features, market dynamics, and organizational culture, may influence the degree of environmental orientation (N. U. Khan et al., 2021).

Technology Implementation

MSMEs can enhance their sustainability performance with the use of technology (Akberdina et al., 2023; S. A. R. Khan et al., 2023; Ramasamy & Sampath, 2023). MSMEs can improve operational efficiency, decrease their environmental impact, and maximize resource efficiency by implementing sustainable technology and practices (Gupta et al., 2021). Renewable energy sources, energy-efficient equipment, and ecologically friendly production techniques are a few examples of sustainable technology (Nurwulandari, 2023).

Studies have indicated a significant correlation between MSMEs' sustainability outcomes and their usage of technology (Fuerst et al., 2023; Lestari & Sunyoto, 2023; Martínez-Peláez et al., 2023). Businesses that invest in sustainable technologies benefit from lower costs, more innovative products, and competitive advantages (Fuerst et al., 2023; Yousef et al., 2024). MSMEs' capacity to use technology for sustainability, however, may be hampered by adoption constraints such as high upfront expenditures, technical complexity, and lack of awareness (Lestari & Sunyoto, 2023).

Green Marketing

Promoting a good or service according to its environmental qualities is known as "green marketing" (Singh & Pandey, 2012). MSMEs can enhance their brand image, stand out in the marketplace, and draw in environmentally sensitive customers by implementing green marketing techniques (Ćalasan et al., 2021; Costa et al., 2021; Sharma & Singh, 2015). Eco-labeling, environmental certification, and eco-packaging are examples of green marketing techniques (Duque et al., 2022; Mahanta & Singh, 2021).

According to research, green marketing can support the sustainability of businesses by growing market share, client loyalty, and brand recognition (Chauhan & Naznin, 2023; Manunggal, 2022). Customers are willing to support companies that exhibit environmental responsibility as their concerns about environmental issues grow (Costa et al., 2021; Duque et al., 2022). To prevent charges of greenwashing, green marketing campaigns must be genuine, open, and in line with real environmental performance (Pacevičiūtė & Razbadauskaitė-Venskė, 2023).

Innovation Capability

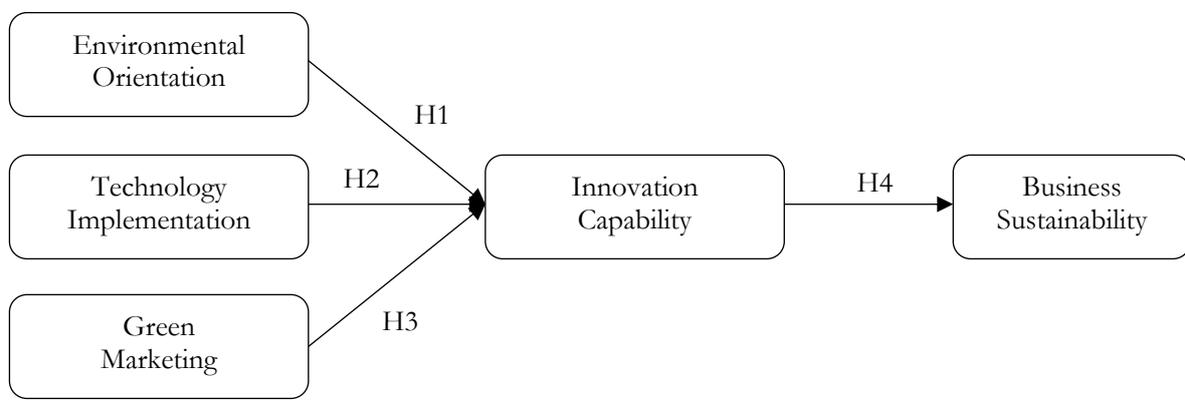
The ability of an organization to create novel concepts, goods, procedures, or business models is referred to as innovation capability (Shahmiri et al., 2012; Xu, 2012). MSMEs with robust innovation capacities are more equipped to tackle sustainability issues, spot areas for development, and create fresh approaches that advance social and environmental objectives (López-Sánchez & Santos-Vijande, 2022). Product, process, and business model innovation are just a few examples of the various shapes that innovation can take (Patterson et al., 2022). Research indicates that MSMEs' sustainability performance is positively impacted by their capacity for innovation (Heenkenda et al., 2022; Jawad & Sohail, 2022; Sari et al., 2022).

In a fast-paced business world, companies that invest in innovation are more flexible, robust, and competitive. MSMEs may produce sustainable goods, increase resource efficiency, and add value for both customers and society through innovation (Somwethee et al., 2023). Nonetheless, it takes financial backing from the research and development community, human resources, and supportive organizational procedures to cultivate an innovative culture (Nascimento et al., 2023).

Conceptual and Gap

Although prior studies have emphasized the significance of each of these factors in promoting business sustainability, more research is still needed to fully comprehend how environmental orientation, technology adoption, green marketing, and innovation capability all work together to support business sustainability. Thus, the purpose of this study's gap is to thoroughly investigate these connections and offer more profound understanding of how MSMEs in Indonesia can use these tactics to increase the sustainability of their businesses. The purpose of this study is to investigate how environmental orientation, technology adoption, green marketing, and innovation capacity affect the long-term viability of MSMEs in Indonesia. The study's hypotheses are presented and the relationship between the variables is demonstrated in the proposed conceptual framework.

Figure 1. Conceptual and Hypothesis



Source : Processed by author

METHODS

Research Design

The focus of Micro, Small, and Medium Enterprises (MSMEs) in Indonesia on business sustainability and the impact of environmental orientation, technology adoption, green marketing, and innovation capability are investigated in this study using a quantitative research design. Data from a sample of MSMEs operating in various sectors across several areas of Indonesia was gathered using survey methodology.

Sampling

The process of choosing a sufficient number of items from a particular population to enable learning and knowledge of the properties of the population that allow it to be generalized is known as sampling (Sekaran & Bougie, 2016). This investigation employed non-probability sampling. Because the researcher was unsure of the precise size of the research population, this technique was chosen (Schindler, 2019). Purposive sampling was the technique utilized because the study's samples and respondents used a variety of criteria. Sampling that is done with a purpose involves using predetermined criteria (Schindler, 2019). MSMEs that have been in business for a minimum of a year make up the sample requirements for this study. (2) Owners or managers who actively participate in making strategic decisions, and (3) MSMEs with five to two hundred employees. According to (Hair et al., 2019), the sample requirements for this study are to multiply the number

of indicators by five or ten. Since this study contains 31 indicators, multiplying that number by ten results in a minimum sample size of 310.

Data sources and data collection

Primary and secondary data are used in this study as supporting information. Whereas primary data is collected directly from respondents by means of distributing questionnaires in West Java, Banten, Jakarta, and its environs, both offline and online with the aid of enumerators for surveys with the use of Google Form, WhatsApp, LinkedIn, and Facebook. Then secondary data from publications including news, magazines, reports, and novels. Men and women 16 years of age and older who sell or operate MSME businesses who prioritize business sustainability by adopting environmentally friendly products are the study's data sources.

Survey Instrument

The structured questions in the survey instrument were created to measure the relevant factors. Respondents were asked to use a Likert scale that went from 1 (strongly disagree) to 5 (strongly agree) to indicate how much they agreed with the statements. The following constructs are covered by the survey's questions:

Table 1. Research Instrument

Variable, Code, and Items	Source
Environmental Orientation	
EO.1: Our company always considers customer needs and wants in every business decision.	(Mahmoud et al., 2024)
EO.2: Our company continuously monitors competitor strategies and activities.	(Nguyen-Viet, 2023)
EO.3: Our company routinely gathers and analyzes market information.	(Song-Turner & Polonsky, 2016)
EO.4: Our company actively develops innovative new products.	(Mahmoud et al., 2024)
EO.5: The products we offer have unique features that differentiate them from competitors' products.	(Nguyen-Viet, 2023)
EO.6: Our company quickly adapts to changes in the business environment.	(Song-Turner & Polonsky, 2016)
EO.7: Our company fosters an entrepreneurial spirit in every employee.	(Mahmoud et al., 2024)
Technology Implementation	
TI.1: Our company produces environmentally friendly products.	(Ismail, 2023)
TI.2: Our company uses environmentally friendly packaging.	(Ismail, 2023)
TI.3: Our company's production process minimizes negative environmental impact.	(Ismail, 2023)
TI.4: Our product advertisements emphasize environmental friendliness.	(Ismail, 2023)
TI.5: Our company avoids greenwashing practices in marketing.	(Ismail, 2023)
TI.6: Our company prioritizes marketing local products.	(Ismail, 2023)
Innovation Capability	
IC.1: Our company has a clear strategy for innovation.	(Shahid & Reynaud, 2022)
IC.2: The innovation process in our company is well-structured.	(Shahid & Reynaud, 2022)
IC.3: Our company has a network that supports innovation.	(Shahid & Reynaud, 2022)
IC.4: Our company continuously learns and adapts to new developments.	(Shahid & Reynaud, 2022)

IC.5: Our company often introduces innovative products.	(Giantari & Sukaatmadja, 2021)
IC.6: Our company uses innovative approaches in marketing.	(Giantari & Sukaatmadja, 2021)
Green Marketing	
GM.1: Our company implements green marketing strategies.	(Mittal et al., 2024)
GM.2: Our products perform well and satisfy customers.	(Mittal et al., 2024)
GM.3: Our products have a positive image in the eyes of consumers.	(Mittal et al., 2024)
GM.4: Consumers are more likely to buy our products because of their environmental friendliness.	(Namagembe et al., 2016)
GM.5: Our company actively raises awareness about green marketing.	(Namagembe et al., 2016)
GM.6: Our green marketing strategy positively contributes to the company's economic performance.	(Namagembe et al., 2016)
Business Sustainability	
BS.1: Our company manages natural resources wisely and sustainably.	(Giantari & Sukaatmadja, 2021)
BS.2: Our company always seeks ways to improve operational efficiency.	(Giantari & Sukaatmadja, 2021)
BS.3: Our company contributes to the well-being of the surrounding community.	(Giantari & Sukaatmadja, 2021)
BS.4: Our company continuously develops innovative products and services.	(Giantari & Sukaatmadja, 2021)
BS.5: Our marketing strategy is effective in reaching target markets.	(Giantari & Sukaatmadja, 2021)
BS.6: Our company has a good and sustainable human resource management system.	(Giantari & Sukaatmadja, 2021)

Source: Results of data analysis (2024)

Data Analysis

The Partial Least Squares Structural Equation Modeling (PLS-SEM) method was used to analyze the data from this investigation using SMARTPLS 3.3.0. The model was constructed using Confirmatory Factor Analysis (CFA), and theoretical study was utilized to find the indicators for each latent variable. Both internal and exterior model evaluations are part of PLS-SEM study. By assessing convergent and discriminant validity and computing Cronbach's alpha (CA) and Composite Reliability (CR) to guarantee instrument reliability, the Outer Model is utilized to assess construct validity and reliability. A construct is deemed legitimate by Ghozali & Imam (2018) if the Variance Inflation Factor (VIF) is less than 3,000, the Average Variance Extracted (AVE) value is greater than 0.50, and the CA and CR values are greater than 0.70. To evaluate the conceptual model's predictive power, the Inner Model calculates the variance of the independent and dependent variables. R² and variance inflation factor (VIF) analysis of variable relationships were employed, along with bootstrapping using 5000 subsamples to evaluate direct and indirect path coefficients, to ascertain the impact of attributes on relationships. The p-value of less than 0.50 and the t-statistic indicated significance. Lastly, the Blindfolding approach, SRMR, NFI, Chi-Square value predictive relevance analysis, and Goodness of Fit were used to assess the entire structural model.

RESULT AND DISCUSSION

Descriptive Statistics

The minimal sample size for this study was 310, as stated (Hair et al., 2019). The demographics of the MSMEs included in this study give background for the analysis of their sustainable policies. In an effort to reduce the number of missing outliers, the authors issued 350 questionnaires in total. However, because of the diligent work of the authors and enumerators, 100% of the questionnaires were returned. The demographic distribution of the sample by business age, size (number of employees), and industry sector is shown in Table 2.

Table 2. Demographic Characteristics of the Sample

Demographic Variable	Category	Frequency	Percentage
Industry Sector	Manufacturing	100	28.6%
	Services	120	34.3%
	Retail	80	22.9%
	Agriculture	50	14.3%
Size (Number of Employees)	Micro (1-10)	150	42.9%
	Small (11-50)	120	34.3%
	Medium (51-250)	80	22.9%
Age of Business	Less than 5 years	80	22.9%
	5-10 years	130	37.1%
	More than 10 years	140	40.0%

Source: Results of data analysis (2024)

MSMEs from a variety of industry sectors are included in the sample; the services sector accounts for the biggest share of respondents (34.3%), followed by manufacturing (28.6%), retail (22.9%), and agricultural (14.3%). This distribution offers a broad perspective on sustainable practices across several industries and shows the heterogeneous character of MSMEs in Indonesia. MSMEs of various sizes make up the sample; the largest group is made up of micro firms (1–10 employees), which is followed by small enterprises (11–50 employees) at 34.3% and medium enterprises (51–250 employees) at 22.9%. This distribution guarantees representation from companies of different sizes and enables the analysis of variations in sustainability practices related to size. The sample also includes recently created as well as long-standing MSMEs; companies with fewer than five years in operation make up 22.9% of the sample, followed by those with five to ten years in operation (37.1%) and those with more than ten years in operation (40.0%). An examination of how business age affects sustainability practices is made possible by the combination of younger and more established companies.

Table 3. Descriptive Statistics of Survey Responses

Variable Code	Mean	SD	Likert Perception				
			1	2	3	4	5

BS	3.85	0.72	10 (2.9%)	35 (10.0%)	75 (21.4%)	150 (42.9%)	80 (22.9%)
EO	3.67	0.68	15 (4.3%)	45 (12.9%)	90 (25.7%)	140 (40.0%)	60 (17.1%)
TI	3.45	0.75	20 (5.7%)	60 (17.1%)	95 (27.1%)	120 (34.3%)	55 (15.7%)
GM	3.55	0.70	18 (5.1%)	55 (15.7%)	100 (28.6%)	125 (35.7%)	52 (14.9%)
IC	3.72	0.65	12 (3.4%)	40 (11.4%)	85 (24.3%)	145 (41.4%)	68 (19.4%)

Source: Results of data analysis (2024)

The majority of respondents agreed (42.9%) or strongly agreed (22.9%) that their businesses value sustainability, according to the mean score of 3.85 (SD = 0.72) which shows that MSMEs in Indonesia generally place a high focus on sustainability measures. MSMEs have a moderate to high level of environmental orientation, as evidenced by their mean score of 3.67 (SD = 0.68), wherein the majority of respondents agree (40.0%) or are neutral (25.7%) about the significance of environmental considerations in their decision-making processes. With a mean score of 3.45 (SD = 0.75), MSMEs appear to have adopted technology at a moderate rate. A sizable percentage of respondents agreed (34.3%) or were ambivalent (27.1%) on the level of technology implementation. The majority of respondents were either neutral (28.6%) or agreed (35.7%) with the use of green marketing tactics, as indicated by the mean score of 3.55 (SD = 0.70), which indicates a moderate adoption of green marketing techniques. MSMEs have a relatively high level of innovation capability, as seen by their mean score of 3.72 (SD = 0.65), where a sizable portion of respondents agree (41.4%) or strongly agree (19.4%) that their companies can innovate.

Measurement Model

Outer Model

The Outer Model employs convergent and discriminant validity, Cronbach's alpha (CA), and Composite Reliability (CR) to assess construct validity and reliability, hence guaranteeing instrument dependability. According to (Ghozali, 2018), a construct is deemed credible if the CA and CR values are greater than 0.70 and valid if the Average Variance Extracted (AVE) value is greater than 0.50. The Variance Inflation Factor (VIF) must be less than 3.000 and the Loading Factor (LF) must reach 0.70.

Table 4. Validity and Reliability Assessment

Variable	Code	LF	VIF	CA	CR	AVE
Environmental Orientation	EO			0.861	0.895	0.589
	EO.1	0.746	1.947			
	EO.2	0.755	2.025			
	EO.3	0.779	2.010			
	EO.4	0.745	1.821			
	EO.5	0.770	2.824			
	EO.6	0.827	2.298			

	EO.7	0.765	1.843		
Technology Implementation	TI			0.886	0.911 0.593
	TI.1	0.717	1.611		
	TI.2	0.755	1.624		
	TI.3	0.787	2.107		
	TI.4	0.701	1.367		
	TI.5	0.762	1.613		
	TI.6	0.804	2.072		
Green Marketing	GM			0.802	0.853 0.534
	GM.1	0.723	1.382		
	GM.2	0.775	1.572		
	GM.3	0.752	1.567		
	GM.4	0.773	1.836		
	GM.5	0.788	1.810		
	GM.6	0.782	1.799		
Innovation Capability	IC			0.860	0.896 0.592
	IC.1	0.724	1.385		
	IC.2	0.800	2.011		
	IC.3	0.786	1.914		
	IC.4	0.772	1.791		
	IC.5	0.801	1.997		
	IC.6	0.816	2.033		
Business Sustainability	BS			0.817	0.868 0.525
	BS.1	0.798	2.605		
	BS.2	0.819	2.754		
	BS.3	0.781	1.795		
	BS.4	0.701	1.835		
	BS.5	0.775	2.035		
	BS.6	0.817	2.103		

Source: Results of data analysis (2024)

All of the study's instruments—EO, TI, GM, IC, and BS—have loading factors more than 0.70, indicating that they accurately capture the concept being investigated. Table 4 illustrates that both the Composite Reliability (CR) and Cronbach's alpha (CA) values are over the 0.70 threshold. A result greater than 0.50 for Average Variance Extracted (AVE) indicates that the instrument is reliable. Furthermore, the Heterotrait-Monotrait (HTMT) value is used in the outer model to measure the model fit and evaluate the discriminating power of the instrument. This is how discriminant validity is confirmed. According to Heseler et al. (2018), an instrument is deemed dependable if its HTMT ratio is less than 0.90.

Table 5. Discriminant Validity HTMT

	BS	EO	TI	GM	IC
Business Sustainability					
Environmental Orientation	0.641				
Technology Implementation	0.872	0.763			

Green Marketing	0.774	0.551	0.794	
Innovation Capability	0.755	0.836	0.822	0.575

Source: Results of data analysis (2024)

The HTMT ratios for every variable in Table 5 are less than 0.90, demonstrating the validity of the research instrument in assessing the developed model. Additionally, PLS-SEM is used to overcome the multicollinearity issue between construct variables and indicators in the outer model. PLS approaches can be used to determine the internal VIF measurement that is required to meet this criteria. If more than three is found in the Variance Inflation Factor (VIF), then more than one indication is deemed multicollinear.

Table 6. Outer VIF Relationship

	Business Sustainability	Innovation Capability
Business Sustainability		
Environmental Orientation		2.100
Technology Implementation		2.121
Green Marketing		2.412
Innovation Capability	1.000	

Source: Author (2024)

A VIF score of less than three, according to (Hair et al., 2017), suggests that their analysis does not include multicollinearity. Furthermore, the effectiveness of external models as well as internal or structural models is assessed through Model Fit testing. The non-fidelity index (NFI) should be greater than 0.9 or almost 1, the root mean square (RMS) should be less than 0.102, and the standardized root mean square (SRMR) should be less than 0.10 or 0.08, according to the official SMART PLS website.

Table 7. Model Fit Assessment

	Saturated Model	Estimated Model
SRMR	0.078	0.078
d_ULS	4.570	4.581
d_G	1.547	1.555
Chi-Square	1.555.240	1.566.023
NFI	0.774	0.779

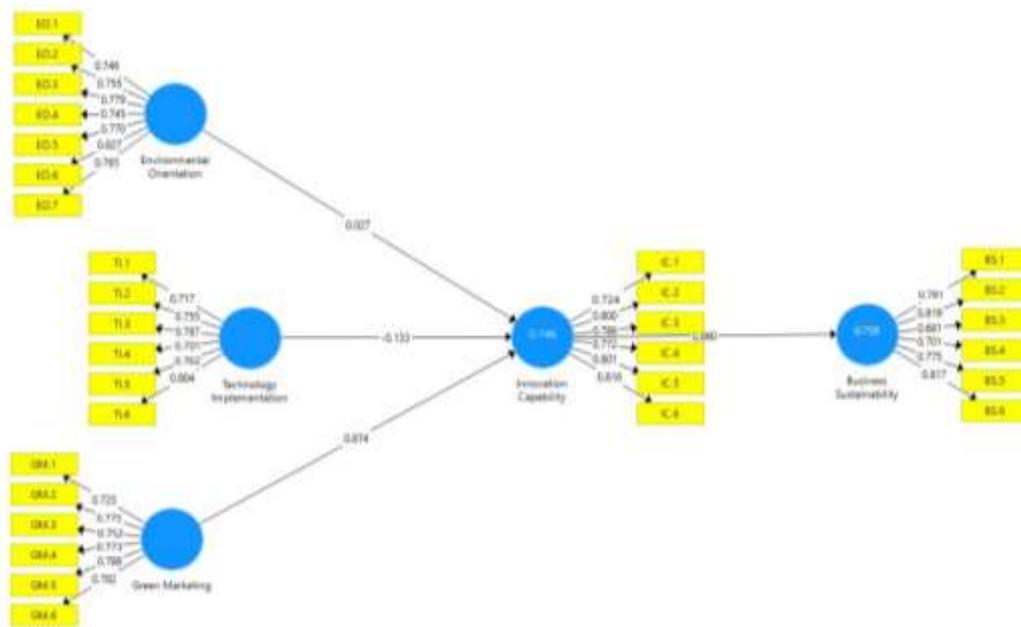
Source: Author (2024)

(Hair et al., 2019)) criteria are met by Table 7, where the NFI is 0.759, or extremely near to 1, and the SRMR is 0.072, or 0.10. From this, we can infer conclusions. The GoF-expressed Goodness of Fit assumption is met by this research model.

Structural Model

Inner Model

Figure 2. Inner Model Assessment



Source: Author (2024)

Calculating the coefficient of determination, or R², using the Partial Least Squares (PLS) method is a crucial initial step in assessing the structural model. According to (Hair et al., 2017), the R² figure is used to determine if the outcome is at a high (0.75), medium (0.50), or weak (0.25) level. According to (Hair et al., 2017), the R² number is used to determine if the finding is at a high (0.75), medium (0.50), or weak (0.25) level. The three independent variables of environmental orientation, technology implementation, and green marketing account for 64.6% of the variability in innovation capability (IC), according to the R² value of 0.646. This number, which is rather high, shows that the three factors significantly influence innovation capability. With an R² of 0.739 for Business Sustainability (BS), Innovation Capability accounts for 73.9% of the variability in Business Sustainability. The fact that this number is so high suggests that innovation capability has a significant impact on business sustainability.

Blindfolding Ratio Analysis was utilized to examine the model's performance by examining the Q² value in order to give a more comprehensive assessment of the model's validity. When the Q² score is higher than 0.05, it means that the model can accurately describe the phenomenon being studied. The findings of the investigation demonstrate the model's strong predictive usefulness. The innovation capability Q² value is 0.5, meaning that 50% of innovation capability can be predicted by the model. In the meantime, the model's predictive power for business sustainability is 73.3%, as indicated by the Q² for business sustainability, which is 0.733. With a high Q² value, environmental orientation, green marketing, and technology implementation all predict innovation potential, which in turn has a significant impact on business sustainability in Indonesian MSMEs.

Hypothesis Assessment

Using the bootstrapping method, hypothesis testing is the last stage in the analysis of the inner model. In accordance with (Hair et al., 2017) advice, the researchers employed 5000 subsamples to confirm the structural model's accuracy. The frequently used significance level in the fields of management and economics is between 5 and 10%, and this percentage is regarded as quite significant.

Table 8. Direct Effects

Hypothesis	Path	OS	SD	T	p
H1	EO -> IC	0.327	0.075	4.359	0.004
H2	TI -> IC	0.433	0.066	6.002	0.000
H3	GM -> IC	0.874	0.067	12.950	0.000
H4	IC -> BS	0.860	0.019	44.692	0.000

Notes: OS = Original Sample, SD= Standard Deviation, T= T Statistics, P= P values

Source: Author (2024)

Table 8 lists the direct effects on trash reduction and sustainable behavior of the study's tested hypotheses. The results of the first hypothesis (H1), which looks at how environmental orientation (EO) affects innovation capability (IC), indicate a significant positive influence. The path coefficient is 0.327, with a standard deviation of 0.075, a t-value of 4.359, and a p-value of 0.004. With a path coefficient of 0.433, a standard deviation of 0.066, a t-value of 6.002, and a p-value of 0.000, Hypothesis 2 (H2) examines the relationship between Technology Implementation (TI) and IC and shows substantial statistical significance. The influence of Green Marketing (GM) on IC is evaluated by Hypothesis 3 (H3), which shows a very strong positive effect with a path coefficient of 0.874, a standard deviation of 0.067, a t-value of 12.950, and a p-value of 0.000. Finally, Hypothesis 4 (H4) examines how IC affects Business Sustainability (BS). It finds that there is a statistically significant and very strong positive effect, with a path coefficient of 0.860, a standard deviation of 0.019, a t-value of 44.692, and a p-value of 0.000. These results suggest that environmental focus, green marketing, and technology adoption greatly improve innovation capacity, which is essential for attaining long-term corporate sustainability.

Table 9. Indirect Effects

No	Path	OS	SD	T	p
1	EO -> IC -> BS	0.323	0.065	2.359	0.004
2	GM -> IC -> BS	0.751	0.065	11.497	0.000
3	TI -> IC -> BS	0.414	0.057	5.005	0.002

Notes: OS = Original Sample, SD= Standard Deviation, T= T Statistics, P= P values

Source: Author (2024)

In addition to explicitly assessing the study hypotheses, we also looked at the indirect effects in the structural model, outlining the pathways and statistical estimations. A significant positive effect is indicated by an indirect effect with a path coefficient of 0.323, a standard deviation of 0.065, a t-value of 2.359, and a p-value of 0.004, as Path 1 analyzes the impact of Environmental Orientation (EO) on Business Sustainability (BS) through Innovation Capability (IC). This implies that businesses that give environmental concerns top priority might increase their level of commercial sustainability by developing their innovative capacity. Path 2 looks at how Green Marketing (GM) affects BS through IC and finds an indirect influence (t-value = 11.497, $p = 0.000$, path coefficient = 0.751, standard deviation = 0.065). This finding emphasizes a highly significant and statistically significant beneficial effect, highlighting the vital role that green marketing techniques play in encouraging innovative, sustainable corporate practices. With an indirect effect denoted by a path coefficient of 0.414, a standard deviation of 0.057, a t-value of 5.005, and a p-value of 0.002, Path 3 evaluates the impact of Technology Implementation (TI) on BS via IC. This noteworthy benefit suggests that implementing new technologies fosters creativity, which in turn promotes higher economic sustainability.

Discussion

The Role of Environmental Orientation

This study shows that environmental orientation is a significant factor in promoting innovative capacities in the MSME sector. When it comes to innovation, businesses that prioritize environmental factors in their decision-making process typically have an advantage. The company's reputation is improved and new environmentally friendly goods and services are encouraged to be developed when environmental sustainability is incorporated into the main business plan (Diez-Martinez et al., 2023; Liboni et al., 2023; Paula/FAPERJ et al., 2022). Companies can preserve their competitiveness by adapting to changes in environmental rules and consumer preferences by keeping an eye on sustainability-related market trends and customer needs (Javeed et al., 2022; Xin et al., 2024; Yuan et al., 2023).

This study demonstrates how environmental orientation greatly improves MSMEs' capacity for innovation in Indonesia. This result is in line with earlier studies that support the notion that integrating environmental factors into corporate strategies is crucial for promoting innovation (Amir & Prabawani, 2023; Lestari & Sunyoto, 2023; Yuniarti et al., 2023). Businesses that place a high priority on sustainability are better positioned to adapt in Indonesia, where environmental rules are becoming increasingly strict. Furthermore, as consumers become more conscious of the value of eco-friendly products, businesses are encouraged to keep coming up with new ideas (Anis et al., 2023; Taba et al., 2023). Previous studies have demonstrated that organizations with a significant focus on the environment typically set the standard for innovation because they are more aggressive in implementing sustainable practices and creating new environmentally friendly goods (Amir & Prabawani, 2023; Dewi & Hermanto, 2023; Diez-Martinez et al., 2023; Paula/FAPERJ et al., 2022).

Impact of Technology Implementation

One of the main factors influencing innovative capability is the application of technology. The use of cutting-edge technology not only makes industrial processes more effective, but it also has a positive environmental impact (Liyang & Ismail, 2023; Roberts et al., 2021; Yi & Xiao-li, 2018).

MSMEs can enhance operations, cut waste, and create more sustainable products by investing in technology (Sarfraz et al., 2022; Shahadat et al., 2023). These technical developments are becoming more and more crucial to staying competitive in a market where consumers are becoming more concerned of the environment (Lestari & Sunyoto, 2023; Yousef et al., 2024). These results demonstrate that, in addition to increasing operational effectiveness, technology also serves as a catalyst for sustainable innovation (Martínez-Peláez et al., 2023; Plinta & Radwan, 2023), empowering MSMEs to adjust to novel possibilities and challenges in the sustainability domain.

Technology implementation has been found to be a critical component in fostering innovative capacities. This is particularly true in the Indonesian setting, where a large number of MSMEs struggle with restricted access to cutting-edge technologies (Kurniawan et al., 2023; Shahadat et al., 2023). On the other hand, the ability of those who made technological investments to innovate and run sustainably improved significantly (Huda & Noviaristanti, 2022). Previous research (Maninggar et al., 2023; Sarfraz et al., 2022; Yi & Xiao-li, 2018) that demonstrates how adopting technology leads to increased productivity, decreased waste, and enhanced product development supports this conclusion. Technology plays a critical role in promoting sustainability in a nation like Indonesia, where the digital gap is still a problem (Huda & Noviaristanti, 2022; Maninggar et al., 2023). Businesses that successfully use technology are not only more inventive but also more resilient to external factors and competitive challenges (Ananda et al., 2023; Dhewanto et al., 2023).

Effect of Green Marketing

Of the variables examined, green marketing stands out as having the most significant effect on innovativeness. This suggests that MSMEs with green marketing strategies are notably more creative (Becker, 2023; Martínez-Ros & Merino, 2023). Consumers who care about the environment are drawn to green marketing tactics, which highlight the advantages of products for the environment and foster brand loyalty (Lestari & Sunyoto, 2023). Green marketing has a significant impact on innovation, which implies that businesses are encouraged to create innovative solutions to satisfy the growing demand for eco-friendly products through sustainability-focused promotional initiatives (Becker, 2023; Negassa, 2023; Pacevičiūtė & Razbadauskaitė-Venskė, 2023). This strengthens one's position in the market and encourages innovation with an eye toward environmental sustainability (Lestari & Sunyoto, 2023; Pacevičiūtė & Razbadauskaitė-Venskė, 2023).

These research have shown that the most significant element influencing innovation capabilities is green marketing, underscoring the significance of sustainability in the decision-making process of consumers (Chang & Zhang, 2019; Doyduk, 2018). Green marketing is becoming a differentiator in the market in Indonesia, where environmental consciousness is rising (Arbaina & Suresh, n.d.; Chang & Zhang, 2019). Green marketing has also been demonstrated to have a good effect on customer happiness and brand loyalty, both of which stimulate innovation (Becker, 2023; Lestari & Sunyoto, 2023; Negassa, 2023). Businesses can create a positive feedback loop whereby customer demand for environmentally friendly products drives companies to keep developing by highlighting the environmental benefits of their products as a means of attracting and retaining customers who place a high value on sustainability (Negassa, 2023; Zheng et al., 2022).

Innovation Capability as Mediator

Additionally, the ability to innovate is crucial for converting environmental focus, technology adoption, and green marketing into sustainable business practices. Businesses with a strong innovation culture are better able to put into place long-term survival strategies through the use of sustainable practices (Shah et al., 2024; Sriboonlue et al., 2015; Sukri et al., 2023). This research demonstrates that innovation capability serves as the link between technical and environmental strategy and real-world sustainability results. This supports the idea that MSMEs seeking to achieve sustainable growth must establish a robust culture of innovation (Nascimento et al., 2023; Somwethee et al., 2023). Businesses can match their business models, procedures, and products with sustainability goals by continuously improving them through innovation (Nascimento et al., 2023; Shah et al., 2024; Sriboonlue et al., 2015).

When it comes to converting environmental orientation, technology adoption, and green marketing into sustainable business practices, innovation capability is a critical mediator. This result is in line with earlier research (Balan & Lindsay, 2010; Shah et al., 2024; Weidner, 2012) that found innovation to be a major force behind sustainable business practices. To achieve long-term sustainability in Indonesia, where MSMEs are the foundation of the economy, it is imperative to enhance innovative skills (Sánchez-García et al., 2022; Zhang et al., 2022). These companies can ensure their survival and expansion by using their ability to innovate to create new products, enhance existing ones, and adjust to shifting market conditions (Sánchez-García et al., 2022; Somwethee et al., 2023; Weidner, 2012). This demonstrates that innovation is both a prerequisite for sustainability and one of its constituents (Sari et al., 2022; Sukri et al., 2023).

Business Sustainability Outcomes

Moreover, enhancing corporate sustainability is the primary goal of combining environmental orientation, technological application, and green marketing. The study demonstrates how these elements (Anaman et al., 2023), support sustainable business practices when mediated by innovative capabilities (Wibowo et al., 2023). MSMEs that effectively apply these components can improve resource management, lessen their impact on the environment, and add value for all parties involved. This all-encompassing strategy for sustainability guarantees that companies are not just lucrative but also accountable to the environment and society. The results emphasize how critical it is to have a comprehensive, integrated approach to sustainability, with innovation playing a major role in fostering long-term success.

The study highlights the significance of a comprehensive strategy for corporate sustainability by incorporating green marketing, technological adoption, and environmental orientation into a firm's strategic framework (Alkhodary, 2023; Lestari & Sunyoto, 2023; Prasetyo & Ellitan, 2023). This strategy is especially pertinent to MSMEs in Indonesia, as they deal with particular difficulties such as scarce resources, intense rivalry in the market, and legal constraints. MSMEs can enhance their sustainability practices by concentrating on four important areas, which will increase value creation for stakeholders, decrease environmental effects, and manage resources more effectively. According to earlier studies, companies who implement these integrated sustainability strategies have a higher chance of long-term resilience and success.

Implications

The study's conclusions have a number of significant ramifications for Indonesian stakeholders, policymakers, and MSMEs.

Green marketing, technology adoption, and environmental focus should all be incorporated into MSMEs' strategic plans. This all-encompassing strategy can improve their capacity for innovation, resulting in more environmentally friendly business operations. MSMEs can increase their market competitiveness, comply with regulations, and meet consumer demand for eco-friendly products by concentrating on these areas.

Policies that encourage technological developments in MSMEs are necessary, as evidenced by the noteworthy influence of technology implementation on innovation capabilities. Policymakers must to think about offering training programs, subsidies, and incentives to MSMEs in order to facilitate their adoption and efficient use of new technologies. This assistance can close the digital gap and encourage environmentally friendly business practices in the industry.

Given that green marketing has a significant impact on innovation capacity, companies ought to give green marketing strategies top priority. Businesses may draw in environmentally sensitive customers and foster brand loyalty by emphasizing the advantages of their products for the environment. This can be aided by industry associations and policymakers who support green certification programs and increase public awareness of the value of sustainable consumption.

In order to attain enduring sustainability, MSMEs need to foster an innovative culture. This entails promoting a learning atmosphere, funding research and development, and stimulating innovation. Corporate executives should make innovation a top priority and allocate the funds and assistance required to promote ongoing development.

Limitations

This study has a number of shortcomings in spite of its insightful findings. By concentrating on MSMEs in Indonesia, the study's sample size and generalizability are limited, which restricts its wider applicability. Larger and more varied sample sizes should be used in future studies. As a result of the cross-sectional design's restriction on causal conclusions, longitudinal research may be necessary to establish causal links. Since self-reported data may include biases such as social desirability bias, it is advised to include objective measures and data from outside sources. Furthermore, because the study was limited to Indonesian MSMEs, it is possible that the conclusions won't hold true in other situations, calling for more investigation into how cultural and economic variations affect these factors.

CONCLUSION

This study demonstrates that the innovativeness and long-term viability of MSMEs in Indonesia are greatly increased by environmental focus, technology adoption, and green marketing. MSMEs with an emphasis on the environment, cutting-edge technology, and eco-friendly marketing techniques are more likely to be innovative and stick with sustainable business practices over the long term. These results highlight the need of a comprehensive strategy for corporate sustainability, where innovation is essential to long-term resilience and success. Support from policymakers and the development of an innovative culture are essential for enhancing sustainable practices in the MSME sector.

Acknowledgements

We express our profound gratitude to BIMA KEMENDIKBUD for their financial support, which was crucial in conducting this research. Special thanks to our survey participants across Indonesia, whose responses have been invaluable. We also extend our appreciation to Universitas Nusa Putra. And also, our team of dedicated researchers and student volunteers who worked tirelessly to gather and analyze the data. Their commitment and hard work have been essential to the success of this study.

REFERENCES

- Abidin, Z., Majid, J., & Hamid, N. (2023). MSME Business Performance: Affecting Factors of Networking, Work Culture and Reputation. *Jurnal Minds: Manajemen Ide Dan Inspirasi*, 10(1), 173–186.
- Ajibike, W. A., Adeleke, A. Q., Nawi, M. N. M., Bamgbade, J. A., Riazi, S. R. M., Fauzi Ahmad, M., & Panda, S. (2023). *Validating the Effects of Organizational Internal Factors and Technology Orientation on Environmental Sustainability Performance of Malaysian Construction Firms*.
- Akberdina, V., Strielkowski, W., Linder, N., Kashirin, S., & Shmeleva, L. (2023). Information Technology and Digital Sufficiency for Building the Sustainable Circular Economy. *Energies*, 16(3), 1399.
- Al Malki, M. (2023). A Review of Sustainable Growth challenges faced by Small and Medium Enterprises. *International Journal for Global Academic & Scientific Research*, 2(1), 53–67.
- Alayón, C. L., Säfsten, K., & Johansson, G. (2022). Barriers and enablers for the adoption of sustainable manufacturing by manufacturing SMEs. *Sustainability*, 14(4), 2364.
- Alfazzi, F. (2023). the Analysis of Challenges and Prospects Faced By Entrepreneurs To Ensure Sustainable Growth of Small and Medium Enterprises. *Academic Review*, 1(58), 175–186. <https://doi.org/10.32342/2074-5354-2023-1-58-13>
- Alkhodary, D. (2023). Integrating sustainability into strategic management: a path towards long-term business success. *International Journal of Professional Business Review*, 8(4), e01627–e01627.
- Alola, U. J. U., Alola, A., Cop, S., & Tarkang, M. (2022). Environmental Sustainability Goal and the Effect of Resources Extrication: A. *International Journal of Renewable Energy Development*, 11(4).
- Amir, M. T., & Prabawani, B. (2023). Sustainability-oriented innovation through shaping the ecosystem; a case of an e-bus industry in Indonesia. *Cogent Business & Management*, 10(2), 2218681.
- Amoako, G. K., Doe, J. K., & Dzugbenuku, R. K. (2021). Perceived firm ethicality and brand loyalty: the mediating role of corporate social responsibility and perceived green marketing. *Society and Business Review*, 16(3), 398–419.
- Amoako, G. K., Dzugbenuku, R. K., Doe, J., & Adjaison, G. K. (2022). Green marketing and the SDGs: emerging market perspective. *Marketing Intelligence & Planning*, 40(3), 310–327.
- Anaman, P. D., Ahmed, I. A., Suleman, A.-R., & Dzakah, G. A. (2023). Environmentally Sustainable Business Practices in Micro, Small, and Medium Enterprises: A Sub-Saharan African Country Perspective. *Business Perspectives and Research*, 22785337231162740.
- Ananda, A. S., Murwani, I. A., Tamara, D., & Ibrahim, I. I. (2023). Adoption of Digital Marketing Toward Digital Transformation in Indonesian Micro-and Small-Sized Enterprises. *2023 8th International Conference on Business and Industrial Research (ICBIR)*, 877–882.
- Anis, I., Gani, L., Fauzi, H., Hermawan, A. A., & Adhariani, D. (2023). The sustainability awareness of banking institutions in Indonesia, its implication on profitability by the mediating role of operational efficiency. *Asian Journal of Accounting Research*, 8(4), 356–372.
- Ansar, M. C., Tsusaka, T. W., Nitivattananon, V., & Rusli, A. M. (2023). *Social Sustainability of Micro, Small, and Medium Enterprises: The Case of Makassar City, Indonesia*.
- Arbaina, S., & Suresh, A. S. (n.d.). *Determinants of Drivers of Green Marketing and its Impact on Consumer*

Awareness and Purchase Intention: An India Perspective.

- Astuti, A., Mulianingsih, F., Pujiati, A., & Krismawanto, A. H. (2023). A Study on the Impact of Globalization on MSMEs in Indonesia. *Journal of Management and Business Environment (JMBE)*, 5(1), 1–15.
- Baig, M. I., Yadegaridehkordi, E., & Nizam Bin Md Nasir, M. H. (2023). Influence of big data adoption on sustainable marketing and operation of SMEs: a hybrid approach of SEM-ANN. *Management Decision*, 61(7), 2231–2253.
- Balan, P., & Lindsay, N. (2010). *Innovation capability: exploring the factors that make up this construct in the services sector*. Swinburne.
- Becker, B. (2023). Green innovation strategies, innovation success, and firm Performance—Evidence from a panel of spanish firms. *Sustainability*, 15(2), 1656.
- Belas, J., Čera, G., Dvorský, J., & Čepel, M. (2021). Corporate social responsibility and sustainability issues of small-and medium-sized enterprises. *Corporate Social Responsibility and Environmental Management*, 28(2), 721–730.
- Budiarto, D. S., Prabowo, M. A., & Azman, N. B. (2023). Evaluating the important role of women in maintaining the sustainability of SMEs. *Journal of Telecommunications and the Digital Economy*, 11(2), 180–193.
- Ćalasan, V., Slavković, R., & Rajković, J. (2021). Application of green tools in green marketing. *Serbian Journal of Engineering Management*, 6(1), 72–77.
- Chang, Y., & Zhang, T. (2019). The effects of product consistency and consumer resistance to innovation on green product diffusion in China. *Sustainability*, 11(9), 2702.
- Chauhan, S., & Naznin, N. (2023). Green Marketing: An Ethical and Anti-Environmental Resilient Approach for Sustainable Business. *Problemy Ekorožwoju*, 18(2), 141–147.
- Cheglakova, L. M., Bataeva, B. S., & Melitonyan, O. A. (2023). Environmentally responsible behavior: Attitudes of Russian SMEs. *Voprosy Ekonomiki*, 5.
- Costa, R., Conceição, M. M., da Silva, A. R., & Conceição, J. T. P. (2021). Marketing verde—A importância do consumo sustentável para as empresas. *Research, Society and Development*, 10(7), e26310716812–e26310716812.
- Crowe, C. T. (2017). Business sustainability: an analysis of three enterprises in charlotte, north carolina. *The Winthrop McNair Research Bulletin*, 3(1), 3.
- Dewi, D. R. S., & Hermanto, Y. B. (2023). Indonesia in the headlight: fighting sustainability through the implementation of the product-oriented Product–Service Systems. *Indonesia in the Headlight: Fighting Sustainability through the Implementation of the Product-Oriented Product–Service Systems*, 1, 1–9.
- Dhanaraj, V. T., Mohanapriya, M., Priyadharshini, M., & Sruthi, C. K. (2022). A Study on Challenges and Opportunities of Entrepreneurs in Micro, Small and Medium Enterprises (MSME). *Initiatives*, 30(4).
- Dhewanto, W., Belgiawan, P. F., Hanifan, R., & Umbara, A. N. (2023). *Strengthening Entrepreneurial Ecosystem to Achieve Sustainability Through Digitalization and Innovation: A Case of Indonesian MSMEs Ecosystem*.
- Diez-Martinez, I., Peiro-Signes, A., & Segarra-Oña, M. (2023). The links between active cooperation and eco-innovation orientation of firms: A multi-analysis study. *Business Strategy and the Environment*, 32(1), 430–443.
- Doyduk, H. B. B. (2018). Asseing the effect of product innovations on consumer satisfaction: A green perspective. *Yönetim Bilimleri Dergisi*, 16(31), 41–58.
- Duque, M., Mejía, L., Nieto, J., & Rojas De Francisco, L. (2022). Green marketing: esfuerzos por el cuidado y la preservación del medio ambiente con negocios sostenibles. *Revista Universidad y Empresa*, 24(42).
- Fahrussiam, F., Chaerani, N., Lestari, D., Shabrina, H., Prasetyo, A. R., & Ningsih, R. V. (2023). Pengaplikasian Metode Finishing Ramah Lingkungan Yakisugi pada UMKM Pengolahan Kayu Desa Perina. *Jurnal Siar Ilmuwan Tani*, 4(1), 64–68.

- Fuerst, S., Sanchez-Dominguez, O., & Rodriguez-Montes, M. A. (2023). The Role of Digital Technology within the Business Model of Sustainable Entrepreneurship. *Sustainability*, *15*(14), 10923.
- Ghozali, I. (2018). *Aplikasi analisis multivariate dengan program IBM SPSS 25*.
- Giantari, I. G. A. K., & Sukaatmadja, I. P. G. (2021). Effects of environmental orientation, green marketing mix and social capital on the competitive advantage of real estate developers in Bali. *Property Management*, *39*(2), 193–209.
- González-Masip, J. (2022). Corporate sustainability, business sustainability, or corporate social responsibility: Some relevant criteria for choosing the right one. In *Research Anthology on Developing Socially Responsible Businesses* (pp. 393–411). IGI Global.
- Gunawan, G., & Putra, E. R. M. (2023). Perlindungan dan Pendampingan Hukum Kekayaan Intelektual dalam Pendaftaran Merek Dagang bagi Pelaku UMKM di Desa Cililin. *AL-MANHAJ: Jurnal Hukum Dan Pranata Sosial Islam*, *5*(1), 891–898.
- Gupta, H., Lawal, J. N., Orji, I. J., & Kusi-Sarpong, S. (2021). Closing the gap: the role of distributed manufacturing systems for overcoming the barriers to manufacturing sustainability. *IEEE Transactions on Engineering Management*, *70*(5), 1754–1773.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modelling (PLS-SEM). 2e Edition*. SAGE Publications.
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2–24. <https://doi.org/https://doi.org/10.1108/EBR-11-2018-0203>
- Heenkenda, H., Xu, F., Kulathunga, K., & Senevirathne, W. A. R. (2022). The role of innovation capability in enhancing sustainability in SMEs: An emerging economy perspective. *Sustainability*, *14*(17), 10832.
- Hossain, M., Yoshino, N., & Tsubota, K. (2023). Sustainable Financing Strategies for the SMEs: Two Alternative Models. *Sustainability*, *15*(11), 8488.
- Huda, Y. M., & Noviaristanti, S. (2022). Factors affecting the adoption of new innovation technology on MSMEs in Indonesia. In *Sustainable Future: Trends, Strategies and Development* (pp. 77–80). Routledge.
- Ismail, I. J. (2023). The influence of green dynamic capabilities on brand sustainability among manufacturing enterprises in Tanzania: mediation of green technology innovation. *Technological Sustainability*, *2*(4), 388–403.
- Jamil, N. A., Ibrahim, I., Senathirajah, A. R. S., & Semawi, A. R. (2023). Environmental Management Practices (EMP) Implementation in Small and Medium-Size Businesses. *International Journal of Professional Business Review: Int. J. Prof. Bus. Rev.*, *8*(6), 1.
- Javeed, S. A., Zhou, N., Cai, X., & Latief, R. (2022). How does corporate management affect green innovation via business environmental strategies? *Frontiers in Environmental Science*, *10*, 1059842.
- Jawad, A. B., & Sohail, A. (2022). Innovative Capability as Mediator Between Corporate Social Responsibility, Organizations Performance and Value Creation. *Gomal University Journal of Research*, *38*(4), 402–414.
- Khan, N. U., Wu, W., Saufi, R. B. A., Sabri, N. A. A., & Shah, A. A. (2021). Antecedents of sustainable performance in manufacturing organizations: a structural equation modeling approach. *Sustainability*, *13*(2), 897.
- Khan, S. A. R., Ahmad, Z., Sheikh, A. A., & Yu, Z. (2023). Green technology adoption paving the way toward sustainable performance in circular economy: a case of Pakistani small and medium enterprises. *International Journal of Innovation Science, ahead-of-print*.
- Kurniawan, -, Maulana, A., & Iskandar, Y. (2023). The Effect of Technology Adaptation and Government Financial Support on Sustainable Performance of MSMEs during the COVID-19 Pandemic. *Cogent Business & Management*, *10*(1), 2177400.
- Lamperti, S., Sammut, S., & Courrent, J.-M. (2023). From incubator's knowledge transfer to

- sustainability start-ups' impact: a case study in a French support program. *Journal of Knowledge Management*, 27(9), 2393–2413.
- Lestari, E. R., & Sunyoto, N. M. S. (2023). Fostering green innovation in achieving sustainable performance. *Natural Resources Forum*, 47(3), 413–434.
- Li, W., Bhutto, M. Y., Waris, I., & Hu, T. (2023). The nexus between environmental corporate social responsibility, green intellectual capital and green innovation towards business sustainability: an empirical analysis of Chinese automobile manufacturing firms. *International Journal of Environmental Research and Public Health*, 20(3), 1851.
- Liboni, L. B., Cezarino, L. O., Alves, M. F. R., Chiappetta Jabbour, C. J., & Venkatesh, V. G. (2023). Translating the environmental orientation of firms into sustainable outcomes: the role of sustainable dynamic capability. *Review of Managerial Science*, 17(4), 1125–1146.
- Liyang, H., & Ismail, K. (2023). Identifying the contribution of technology innovation in driving sustainability in higher educational institutions through political influence, performance-based budgeting, organizational culture. *Economic Research-Ekonomika Istraživanja*, 36(2).
- López-Sánchez, J. Á., & Santos-Vijande, M. L. (2022). Key capabilities for frugal innovation in developed economies: Insights into the current transition towards sustainability. *Sustainability Science*, 17(1), 191–207.
- Lutfi, A., Alqudah, H., Alrawad, M., Alshira'h, A. F., Alshirah, M. H., Almaiah, M. A., Alsyouf, A., & Alardi, M. F. (2023). *Green Environmental Management System To Support Envi-Ronmental Performance: What Factors Influencing SMEs To Adopt Green Innovations?*
- Mahanta, P., & Singh, A. K. (2021). Green Marketing a Journey Driven towards Sustainable Development. *Turkish Online Journal of Qualitative Inquiry*, 12(8).
- Mahmoud, M. A., Seidu, A. S., Tweneboah-Koduah, E. Y., & Ahmed, A. S. (2024). Green marketing mix and repurchase intention: the role of green knowledge. *African Journal of Economic and Management Studies*.
- Maninggar, N., Kusharsanto, Z. S., Suhandoyo, Maulidya, D., & Fitriana, N. (2023). The Role of Social Infrastructure in ICT Adoption Program: A Perspective from the Indonesian Regional Innovation System. *International Journal of Innovation and Technology Management*, 20(06), 2350038.
- Manunggal, W. T. K. (2022). Green marketing for eco-friendly vegetable products at Wanita Tani Karya Manunggal Group. *Jurnal Pengabdian Masyarakat Universitas Merdeka Malang*, 7(4), 814–823.
- Mardhotillah, R. R., Anshori, M. Y., & amalia Elfita, R. (2023). Pemberdayaan Masyarakat Melalui Pelatihan Pengembangan Bisnis dan Swot Bagi UMKM di Desa Karangrejo Kediri. *Prosiding Seminar Nasional Pengabdian Kepada Masyarakat*, 3(1), 171–178.
- Martínez-Peláez, R., Ochoa-Brust, A., Rivera, S., Félix, V. G., Ostos, R., Brito, H., Félix, R. A., & Mena, L. J. (2023). Role of digital transformation for achieving sustainability: mediated role of stakeholders, key capabilities, and technology. *Sustainability*, 15(14), 11221.
- Martínez-Ros, E., & Merino, F. (2023). Green innovation strategies and firms' internationalization. *Industrial and Corporate Change*, 32(4), 815–830.
- Martiningtiyas, C. R., Darasih, R., Kusumasari, R. A. H. P., Shabrina, O. P., & Kurniawan, A. (2023). Manajemen Rantai Pasok Ramah Lingkungan Sebagai Upaya Meningkatkan Hasil Penjualan Pada UMKM. *Dirkantara Indonesia*, 2(1), 57–60.
- Maurina, A. C., & Rusdianto, R. Y. (2023). Strategi Peningkatan Daya Saing UMKM Terhadap Perdagangan Internasional. *Jurnal Pengabdian Kepada Masyarakat*, 2(2), 70–76.
- Millan-Tudela, L. A., Marco-Lajara, B., Martínez-Falcó, J., & Poveda-Pareja, E. (2023). Corporate Sustainability and Long-Lived Companies: A Lesson From the Oldest Firms in the World. In *Corporate Sustainability as a Tool for Improving Economic, Social, and Environmental Performance* (pp. 24–39). IGI Global.
- Mittal, A., Raheja, K., Raut, R., & Deshpande, A. (2024). Fostering perceived wealth among SMEs through green business: unveiling the mediating influence of consumers' green attitude. *Management of Environmental Quality: An International Journal*, 35(2), 341–357.

- Morsing, M., & Spence, L. J. (2023). Multinationals, Small and Medium-sized Enterprises and Sustainability. In *Corporate Sustainability: Managing Responsible Business in a Globalised World* (pp. 155–169). Cambridge University Press.
- Mostafiz, M. I., Ahmed, F. U., Ibrahim, F., & Tarba, S. Y. (2024). Innovation and commercialisation: the role of the international dynamic marketing capability in Malaysian international entrepreneurial firms. *International Marketing Review*, 41(1), 199–236.
- Mubarik, L. D., Iskanto, B. K., & Sakib, K. N. (2023). Entrepreneurial Competencies and Success of SMEs in Changwon, South Korea. *Journal of Entrepreneurship & Project Management*, 7(8 SE-Articles), 1–11. <https://doi.org/10.53819/81018102t5206>
- Nagiah, G. R., & Suki, N. M. (2024). Linking environmental sustainability, social sustainability, corporate reputation and the business performance of energy companies: insights from an emerging market. *International Journal of Energy Sector Management*, ahead-of-print.
- Namagembe, S., Ryan, S., & Sridham, R. (2017). Enviropreneurial orientation in SME supply chains: Construct measurement development. *World Journal of Entrepreneurship, Management and Sustainable Development*, 13(2), 128–150.
- Namagembe, S., Sridharan, R., & Ryan, S. (2016). Green supply chain management practice adoption in Ugandan SME manufacturing firms: The role of enviropreneurial orientation. *World Journal of Science, Technology and Sustainable Development*, 13(3), 154–173.
- Nascimento, L. da S., da Rosa, J. R., da Silva, A. R., & Reichert, F. M. (2023). Social, environmental, and economic dimensions of innovation capabilities: theorizing from sustainable business. *Business Strategy and the Environment*.
- Negassa, G. (2023). *Exploring the Influence of Green Brand Innovation and Perceived Value on Brand Loyalty Examining the Role of Green Knowledge as a Moderator*.
- Nguyen-Viet, B. (2023). The impact of green marketing mix elements on green customer based brand equity in an emerging market. *Asia-Pacific Journal of Business Administration*, 15(1), 96–116.
- Nguyen, T. T. T., Malek, L., Umberger, W. J., & O'Connor, P. J. (2022). Household food waste disposal behaviour is driven by perceived personal benefits, recycling habits and ability to compost. *Journal of Cleaner Production*, 379, 134636.
- Nurwulandari, A. (2023). Analysis of the Impact of Financial Technology and Financial Literacy on MSME Business Sustainability. *Lead Journal of Economy and Administration*, 1(4), 92–97.
- Pacevičiūtė, A., & Razbadauskaitė-Venskė, I. (2023). The role of green marketing in creating a sustainable competitive advantage. *Regional Formation and Development Studies: Journal of Social Sciences*, 2, 89–98.
- Pallapu, A. V., & Kate, A. (2022). Investigating Sustainable Strategies for Small and Medium Enterprises in the USA. *Sustain. Dev. Plan*, 258, 177.
- Pandya, D., Kumar, G., & Singh, S. (2023). Aligning sustainability goals of industrial operations and marketing in Industry 4.0 environment for MSMEs in an emerging economy. *Journal of Business & Industrial Marketing*.
- Patterson, E., Pugalia, S., & Agarwal, R. (2022). Innovation Management as a Dynamic Capability for a Volatile, Uncertain, Complex and Ambiguous World. In *Innovation* (pp. 378–396). Routledge.
- Paula/FAPERJ, F. D. O., Tarraço, E., Borini, F. M., & Bernardes, R. C. (2022). How Sustainable is an Innovation Strategic Orientation? *Academy of Management Proceedings*, 2022(1), 12651.
- Plinta, D., & Radwan, K. (2023). Implementation of Technological Innovation in a Manufacturing Company. *Applied Sciences*, 13(10), 6068.
- Prasad, S., Rao, A. N., & Lanka, K. (2022). Analysing the Barriers for Implementation of Lean-Led Sustainable Manufacturing and Potential of Blockchain Technology to Overcome These Barriers: A Conceptual Framework. *International Journal of Mathematical, Engineering and Management Sciences*, 7(6), 791.
- Prasetyo, V. W. T., & Ellitan, L. (2023). The Role of Internal and External Environment For The

- Sustainability of MSMEs. *J-CEKI: Jurnal Cendekia Ilmiah*, 2(3), 312–323.
- Putri, A. J., & Bangun, M. Y. R. (2019). *Identifying Environmental, Social, and Governance (ESG) Implementation towards Growth and Sustainability: A Case Study at Assisted Micro, Small, and Medium Enterprise (MSME) by Bank Indonesia*.
- Ramasamy, P., & Sampath, V. (2023). Technology readiness of micro, small and medium enterprises. *World Review of Entrepreneurship, Management and Sustainable Development*, 19(1–2), 121–135.
- Ratanavanich, M., & Charoensukmongkol, P. (2024). The interaction effect of goal orientation and mindfulness of entrepreneurs on firm innovation capability and its impact on firm performance. *VINE Journal of Information and Knowledge Management Systems*, ahead-of-print.
- Roberts, R., Flin, R., & Corradi, L. (2021). Accelerating technology adoption: a benchmarking study of organisational innovation adoption culture in upstream oil and gas. *SPE Offshore Europe Conference and Exhibition*, D021S004R001.
- Sánchez-García, E., Marco-Lajara, B., Seva-Larrosa, P., & Martínez-Falcó, J. (2022). Driving innovation by managing entrepreneurial orientation, cooperation and learning for the sustainability of companies in the energy sector. *Sustainability*, 14(24), 16978.
- Sarfraz, M., Zhixiao, Y. E., Dragan, F., Ivascu, L., & Artene, A. (2022). Digital transformation strategy and environmental performance: A case study. *International Journal of Computers Communications & Control*, 17(6).
- Sari, Y., Oktarina, Y., & Kenamon, M. (2022). The Role of Innovation Capability in MSME Sustainability During the Covid-19 Pandemic. *International Journal of Social Science and Business*, 6(4).
- Schindler, P. S. (2019). Business research methods. (No Title).
- Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. John Wiley & sons.
- Shah, N., Moawad, N. F., Bhatti, M. K., Abdelwahed, N. A. A., & Soomro, B. A. (2024). Orientation and absorptive capacity towards sustainability: a missing link between sustainability and performance. *International Journal of Productivity and Performance Management*, 73(5), 1535–1562.
- Shahadat, M. H., Nekomahmud, M., Ebrahimi, P., & Fekete-Farkas, M. (2023). Digital technology adoption in SMEs: What technological, environmental and organizational factors influence SMEs' ICT adoption in emerging countries. *Global Business Review*, 09721509221137199.
- Shahid, S., & Reynaud, E. (2022). Individuals' sustainability orientation and entrepreneurial intentions: the mediating role of perceived attributes of the green market. *Management Decision*, 60(7), 1947–1968.
- Shahmiri, F., Shabani, R., Amanpour, N., & Norouzi, N. (2012). Offering a Model to Identify the Tools to Formulate Innovation Strategy Using Integrating Innovative Capabilities and Decision Making Methods. *Research Notes in Information Science*, 9(1), 1–11.
- Sharma, M., & Singh, M. (2015). Green marketing: Challenges and ways to green your business. *International Journal of Managerial Studies and Research (IJMSR)*, 3(7), 142–147.
- Simamora, V. (2022). Meningkatkan Pengetahuan Inovasi UMKM Kedai Kopi, Tanjung Priok Di Jakarta Utara. *BERDIKARI*, 5(2).
- Singh, P. B., & Pandey, K. K. (2012). Green marketing: policies and practices for sustainable development. *Integral Review*, 5(1), 22–30.
- Siswanti, I., & Nawangsari, L. C. (2023). Various Sources Working Capital Financing For The Sustainability Micro, Small And Medium Enterprises (MSMEs) Business In Rancabungur-Bogor. *Jurnal Abdimas Perbanas*, 4(1), 28–32.
- Somwethee, P., Aujirapongpan, S., & Ru-Zhuc, J. (2023). The influence of entrepreneurial capability and innovation capability on sustainable organization performance: Evidence of community enterprise in Thailand. *Journal of Open Innovation: Technology, Market, and Complexity*, 9(2), 100082.

- Song-Turner, H., & Polonsky, M. (2016). Enviropreneurial marketing in greening corporate activities: Evidence from four Chinese green firms. *European Business Review*, 28(5), 506–531.
- Sriboonlue, P., Ussahawanitchakit, P., & Raksong, S. (2015). Strategic innovation capability and firm sustainability: Evidence from auto parts businesses in Thailand. *AU-GSB e-JOURNAL*, 8(1).
- Sukri, N. K. A., Zulkiffli, S. N., 'Atikah, Mat, N. H. N., Omar, K., Mawardi, M. K., & Zaidi, N. F. Z. (2023). An Analysis of Eco-Innovation Capabilities among Small and Medium Enterprises in Malaysia. *Administrative Sciences*, 13(4), 113.
- Syah, F., & Noviaristanti, S. (2022). Analysis of the effect of digital transformation strategy on business sustainability of micro, small, and medium enterprises (MSMEs) in Indonesia. In *Acceleration of Digital Innovation & Technology towards Society 5.0* (pp. 253–258). Routledge.
- Taba, S., Mulyadi, M., & Sharin, F. H. (2023). Business Sustainability within the Dynamic Business Climate Change in Indonesia: The Role of Leadership Style and Innovation Culture. *Journal of Digitainability, Realism & Mastery (DREAM)*, 2(06), 1–13.
- Tariq, M., Yasir, M., & Majid, A. (2020). Promoting employees' environmental performance in hospitality industry through environmental attitude and ecological behavior: Moderating role of managers' environmental commitment. *Corporate Social Responsibility and Environmental Management*, 27(6), 3006–3017.
- Tyagi, P., Singh, A., Tyagi, P., & Kumar, D. (2022). *Green Orientation & Organisation Performance in the Context of Sustainability*. <https://doi.org/10.1109/ICISTSD55159.2022.10010610>
- Verma, R., Arya, V., Thomas, A., Bolognesi, E., & Mueller, J. (2023). Does startup culture in the emerging country grow around societal sustainability? An empirical study through the lens of co-creational capital and green intellect. *Journal of Intellectual Capital*, 24(4), 1047–1074.
- Wattanakomol, S., & Silpcharu, T. (2023). Characteristics of entrepreneurs in sustainably successful micro, small, and medium enterprises. *Uncertain Supply Chain Management*, 11(3), 1359–1368.
- Weidner, K. L. (2012). *Sustainable Innovation: Drivers, Conditions, and Impact on Triple Bottom Line Performance*. University of Illinois at Chicago.
- Wibowo, F., Putra, F. I. F. S., Izzudien, M., & Sulastri, S. (2023). Stimbut: Initiation of a Sustainable Business Strategy Model in Improving MSME Capability to Meet Consumer Expectations. *Jurnal Penelitian Ekonomi Dan Bisnis*, 8(1), 1–9.
- Xin, Y., Laila, U., & Zhang, S. (2024). Modeling the influence of green innovation on environmental sustainability of small and medium-sized enterprises: A way towards sustainable development. *Energy & Environment*, 35(2), 779–794.
- Xu, Q. (2012). *Leverage innovation capability: Application of total innovation management in China's SMEs' study*. World Scientific.
- Yi, S., & Xiao-li, A. (2018). Application of threshold regression analysis to study the impact of regional technological innovation level on sustainable development. *Renewable and Sustainable Energy Reviews*, 89, 27–32.
- Yildiz, H., Tahali, S., & Trichina, E. (2023). The adoption of the green label by SMEs in the hotel sector: a leverage for reassuring their customers. *Journal of Enterprise Information Management*.
- Yousef, H. A., ElSabry, E. A., & Adris, A. E. (2024). Impact of technology management in improving sustainability performance for Egyptian petroleum refineries and petrochemical companies. *International Journal of Energy Sector Management*, 18(3), 517–538.
- Yuan, M., Wang, X., Lin, H., Wu, H., Yu, M., & Chen, X. (2023). Crafting enviropreneurial marketing through green innovation: a natural resource-based view. *IEEE Transactions on Engineering Management*.
- Yuniarti, E., Nurmala, N., Asliana, E., Mursalin, M., Satpathy, M., Attiya, A. A., & Seccean, N. A. (2023). Environmental innovation and financial performance: A case study of mediating role of environmental management. *Electronic Journal of Education, Social Economics and Technology*, 4(1), 38–42.
- Zhang, Z., Zhu, H., Zhou, Z., & Zou, K. (2022). How does innovation matter for sustainable

performance? Evidence from small and medium-sized enterprises. *Journal of Business Research*, 153, 251–265.

Zheng, S., Ye, X., Guan, W., Yang, Y., Li, J., & Li, B. (2022). Assessing the influence of green innovation on the market performance of small-and medium-sized enterprises. *Sustainability*, 14(20), 12977.