


## Analysis of the influence of green intellectual capital on the sustainable performance advantage of catering SMEs in Batam city

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Article Info	ABSTRACT
<p><b>Keywords:</b> Green Intellectual Capital, Sustainability Performance, Covid-19, Batam</p>	<p>Over the course of time, the enterprise as a social institution, not only plays a role in promoting economic development, but also has a certain negative impact on the ecological environment and has an indispensable responsibility for the sustainable development of resources and the environment. If an enterprise fulfills its social responsibilities, and through technological innovation, it can not only reduce energy consumption, but also save resources, reduce enterprise production costs, and thereby enhance enterprise competitiveness. Moreover, the global challenges from COVID-19 directly impacted 82.9% of small, medium, and micro businesses. Therefore, this study will examine the impact of Sustainability Performance to increase product competitiveness. by using 3 aspects that influence Sustainability Performance, namely Green Human Capital, Green Structural Capital, and Green Relational Capital.</p>
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### INTRODUCTION

The global challenges of the New-Normal era of COVID-19 continue to impact all SMEs globally, including those in Indonesia. A total of 82.9% of SMEs have felt the negative effects of the pandemic, affecting 63.9% of SMEs with a 30% decline in revenue [1]. These global challenges have spurred global awareness of the importance of sustainability through the implementation of ESG aspects, consisting of Environmental, Social, and Governance, in all business and development activities. Therefore, collaborative efforts are needed to address the negative impacts caused by the New-Normal era of COVID-19 on various aspects.

The primary goal of all companies is to achieve maximum profit. This concept has been applied since the early days of trade, leading corporations to exploit natural resources and communities uncontrolledly to meet the needs of investors. However, over time, the implementation of sustainability performance in business has become a means of accountability for investors. Sustainable business performance is an indicator of long-term success for a company in facing competition, often correlated with the size of the firm [2]. Despite being tested in the current pandemic, the competitiveness of SMEs (Micro, Small, and Medium Enterprises) remains an interesting topic for researchers.

Sustainable development has become a popular topic among academics and practitioners, emphasizing the importance of implementing sustainable performance concepts and how to achieve them. Economic business activities improve global prosperity and living conditions but also directly or indirectly contribute to environmental degradation and social inequality [3].

However, most businesses claim that environmental corruption is not caused by their activities and do not consider it a significant concern. Moreover, not all organizations prioritize sustainability, even though the Sustainable Development Goals (SDGs) agenda should be in the minds of every country. The implementation of SDGS principles greatly helps Indonesian state-owned enterprises (BUMN), and SMEs are one of the business entities positively impacted by SDGS principles. The Sustainable Development goals include 5 principles expected to balance business in the economic sector, comprising People, Planet, Prosperity, Peace, and Partnership, aiming to drive the creation of new, innovative, and environmentally friendly business solutions for sustainable business.

Moreover, the indirect impact of SDGS principles also supports Indonesia in implementing Sustainable Development goals. Intellectual Capital (IC) is one approach to sustainable development to address current economic and environmental issues. Incorporating tangible and intangible assets, especially Green Intellectual Capital (GIC), is crucial in managing environmental issues and achieving sustainability through knowledge openness, technology, and other initiatives [4].

According to Fitri [5], the influence of GIC (Green Intellectual Capital) plays a crucial role in achieving sustainable performance. However, there is no integrated model showing the relationship between GIC and Sustainable Performance. Therefore, this research aims to investigate the relationship between GIC and Sustainable Performance in Catering SMEs in Batam, Indonesia.

Green Intellectual Capital (GIC) consists of three different dimensions, namely GHC, GSC, and GRC, which are significant in the context of this study. Empirical and theoretical perspectives have recognized the significant role of SMEs in the economic growth of countries worldwide, such as Indonesia. The primary purpose of implementing GIC for a country or business owner is to reduce the negative impact of business activities on the environment. Additionally, it aims to improve public health where all humans live while maximizing profits for the business owner.

However, many organizations are still unsure of what to do and which strategies to use. Stringent environmental regulations and government activities are not sufficient to achieve sustainable development. Responding to changes in environmental trends requires every organization to develop new strategies that are no longer optional but necessary and crucial for all organizations [3]. Due to the lack of research on GIC and Sustainable Performance previously, this research introduces a new concept, as many studies have not focused on the relationship between GIC and Sustainable Performance. Thus, the goal of this research is to investigate the relationship between GIC and Sustainable Performance in Catering SMEs in Batam.

The focus of this research is to examine the influence of GIC on the sustainable performance of Catering SMEs. The main reason for choosing this location as a research sample is the abundance of Catering SMEs in Batam and easy accessibility. The structure of this research is as follows: First, review the literature on developing theoretical models and propose all hypotheses. Second, explain the methodology used in this research. Third, present the results, and finally, discuss the findings and implications of the research.

### **Literature Review**

Businesses implementing sustainable systems not only safeguard their own interests but also have responsibilities towards the environment and society. With the growth of sustainability, it is generally believed that the core of sustainable thinking is divided into three dimensions: environmental, social, and economic sustainability. Sustainable development issues pose significant challenges for companies but also bring great opportunities. Sustainable operating companies are more likely to enhance their reputation and image, improve their financial and environmental performance, thereby increasing their competitive advantage.

Similarly, Yong [6] indicates that in developing countries, green issues become apparent due to increased energy consumption and depletion of natural resources. For instance, the People's Republic of China (PRC) is reported to have a CO<sub>2</sub> emission of 7.42%. Previous research has emphasized the importance of integrating sustainability into all aspects of business, such as supply chain management, operations management, and project management. These studies confirm that sustainability integration and business processes are crucial for achieving effective outcomes, highlighting that organizational strategies are being restructured according to efficient energy consumption, which can reduce carbon footprints.

Furthermore, Yuzliza [6] highlight the role of organizations, such as environmental protection, and the need for organizations to be more socially responsible than simply achieving their economic goals. Organizations should leverage their human resources to pursue green goals, associated with sustainable performance. Yuzliza [6] building on previous research recommendations, emphasize that company performance evaluation should include non-financial indicators and not be limited to economic indicators. They also stress that business performance should consider intangible assets, such as relationships with customers, employees, and other stakeholders.

### **The Influence of GHC on Sustainable Performance**

Green Human Capital (GHC) is considered to grow as employees acquire new knowledge, skills, and expertise. The availability of human resources (HR) plays a crucial role in improving product design and quality, differentiating the company's products from competitors, and subsequently enhancing high sustainable environmental performance [7]. Therefore, the position of GHC regarding BS becomes important. Strong evidence of GHC's impact on green human resource management has been identified. Sihombing [7] define that employee characteristics are an irreplaceable asset of an organization, ensuring effective and efficient environmental management methods, reducing policy errors, and becoming more productive and achieving better results.

The correlation between GHC and green innovation success is also verified. The study reports that green intellectual capital can help organizations respond to strict international environmental regulations, build corporate interests, and respond to high environmental client demands [4]. Research on the impact of sustainability reports and GIC on the financial performance value of companies (Arsyad, 2021), the impact of GIC on return on assets (ROA) [8], the influence of GIC on company sustainability [9], the impact of Gender Diversity and GIC on sustainable performance [10]. Nevertheless, empirical studies have not explored the relationship between GHC and BS. Some studies indicate that GHC is necessary for sustainable development. Based on the above discussion, the following hypothesis is proposed:

H1: Green Human Capital (GHC) has a positive effect on Sustainable Performance

#### **The Influence of GSC on Sustainable Performance**

Green Structural Capital (GSC) is an essential device of organizational infrastructure and organizational processes used to obtain goods and services [11]. Compared to Human Capital, Structural Capital is more inherent in the organization and does not disappear when employees leave the company [11]. According to all previous studies, scholars have recognized the importance of enhancing organizational performance through the Structural Capital variable. Green Structural Capital correlates positively with green product innovation. The significant impact of Green Structural Capital on company performance has been explained in research [4]. The influence of GIC on SME performance [12], the impact of GIC on the company's future, the impact of GIC on sustainable development [13]. However, empirical studies have not investigated the relationship between GSC and BS. Therefore, the following research hypothesis is proposed:

H2: Green Structural Capital (GSC) has a positive effect on Sustainable Performance

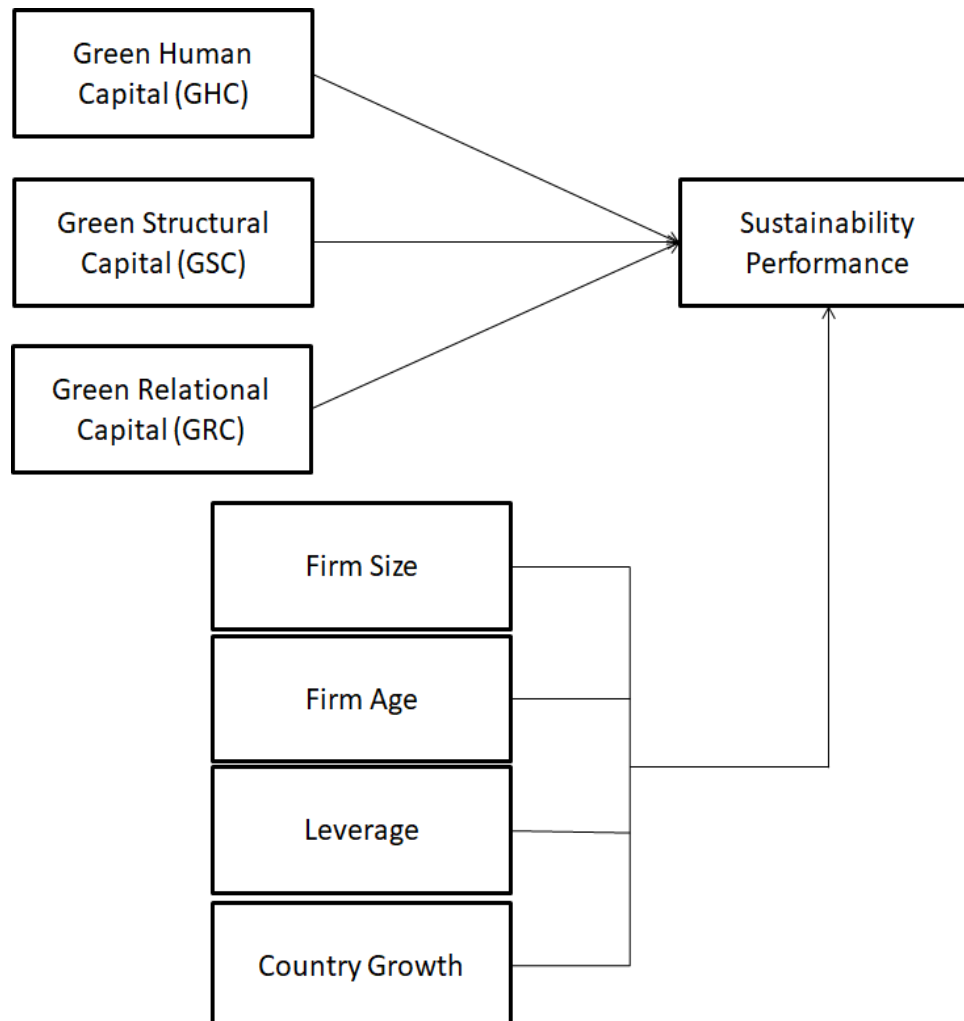
#### **The Influence of GRC on Sustainable Performance**

According to Josephine [9], Trust Quality distinguishes GRC from other types of GIC. Compared to other types, GRC refers more to the company's ability to build relationships with stakeholders and targets in a sustainable and stable environment, and the ability to build interpersonal relationships based on trust [11]. Furthermore, it is concluded that information exchange and cooperation are important for implementing a sustainable approach. Many previous studies have shown that green relational capital has a significant positive impact on performance [4]. As mentioned earlier, Research on factors of green intellectual capital leading to business sustainability [14], Relationship between Green Intellectual Capital (GIC) and competitive advantage [15], [16], Impact of sustainability report and green intellectual capital (GIC) on the financial performance value of companies [17]. However, these studies argue that GRC is crucial for sustainable development. Nevertheless, the relationship between GRC and Sustainable Performance has not been explored through empirical studies. Therefore, the analysis assumes:

H3: Green Relational Capital (GRC) has a positive effect on Sustainable Performance

### Conceptual framework

Green Intellectual Capital (GIC) investments related to improving the organizational environment not only enable environmental management but also bring competitive advantages. Therefore, the main objective of the research is to be the first step towards the development of a meaningful Sustainable Performance research model that can be used and replicated in future models. The following is the research model of this study.



Gambar 1 Conceptual framework

### Research Hypothesis

Based on the problem formulation and conceptual framework above, the research hypothesis put forward by the researcher is as follows:

1. GHC tidak berpengaruh signifikan terhadap Kinerja Berkelanjutan.
2. GSC berpengaruh positif signifikan terhadap Kinerja Berkelanjutan.
3. GRC berpengaruh positif signifikan terhadap Kinerja Berkelanjutan.

## METHOD

### Types of research

This research uses qualitative research. This research uses a survey method, which in its implementation collects data using a questionnaire.

### Location and Time of Research

The target sample of this research is all Catering SMEs in Batam, Indonesia. The data collection method involves selecting research samples from owners or top managers using questionnaires and purposeful sampling. The sample selection includes individuals with influence and experience in their workplace.

### Sampling technique

In this research, a questionnaire survey is used to test the study. Questionnaires were distributed to owners and managers of Catering SMEs in Batam City through digital technologies such as email, WhatsApp, and others. Previous literature has recommended a minimum sample size necessary for specific analyses. A total of 624 questionnaires were distributed to target respondents, ultimately obtaining a total of 162 valid questionnaires, with a recovery rate of 16.7%.

The response rate for this research is considered acceptable, as suggested by Sekaran and Bougie [18], with an ideal response rate for social science research ranging from 5% to 35%. This is supported by Visser et al. as lower response rates around 20% generally yield more accurate results. In this study, a low response rate is considered acceptable.

### Types of Research Data

Research variables are attributes or characteristics or values of individuals, objects, or activities that the researcher identifies for specific changes to be studied and then draws conclusions [19]. The following is a table explaining the variables along with their operationalizations, consisting of Independent Variable (GIC) and Dependent Variable (Sustainable Performance).

Variabel	Definisi	Indikator	Skala
Green Human Capital	Jumlah pengetahuan, keterampilan, kemampuan, pengalaman, sikap, kebijaksanaan, kreativitas, komitmen karyawan, dll. untuk perlindungan lingkungan atau inovasi hijau, yang berakar pada karyawan daripada organisasi	GHC 1 Karyawan di perusahaan ini terlibat dalam produktivitas dan kontribusi positif terhadap perlindungan lingkungan. GHC 2 Karyawan di perusahaan ini memiliki kompetensi yang memadai terhadap perlindungan lingkungan. GHC 3 Karyawan perusahaan ini memberikan kualitas produk dan layanan yang tinggi terhadap perlindungan lingkungan. GHC 4 Tingkat kerja sama tim untuk perlindungan lingkungan dilakukan di tingkat tinggi di perusahaan ini. GHC 5 Manajer dapat mendukung penuh karyawannya untuk mencapai pekerjaannya dalam perlindungan lingkungan.	Likert 1 (sangat tidak setuju) hingga 5 (sangat setuju)
Green Structural Capital	Stok+D19 kapasitas organisasi, komitmen organisasi, sistem manajemen pengetahuan, sistem penghargaan, sistem teknologi informasi, basis data, mekanisme manajemen, proses operasi, filosofi manajemen, budaya organisasi, citra perusahaan, paten, hak cipta, merek dagang, dan perlindungan lingkungan lainnya atau inovasi hijau dalam perusahaan	GSC 1 Perusahaan ini memiliki sistem manajemen perlindungan lingkungan yang unggul. GSC 2 Perusahaan ini memiliki rasio karyawan yang tinggi dalam pengelolaan lingkungan terhadap total karyawannya. GSC 3 Perusahaan ini melakukan investasi yang memadai dalam fasilitas perlindungan lingkungan. GSC 4 Keseluruhan proses operasi menuju perlindungan lingkungan di perusahaan ini berjalan dengan efisien. GSC 5 Sistem manajemen pengetahuan di perusahaan ini mendukung akumulasi dan berbagi pengetahuan pengelolaan lingkungan. GSC 6 Perusahaan ini telah membentuk sebuah komite untuk memajukan isu-isu kunci dalam perlindungan lingkungan. GSC 7 Perusahaan ini telah menetapkan aturan dan peraturan yang terperinci untuk perlindungan lingkungan GSC 8 Perusahaan ini telah menetapkan sistem penghargaan untuk menyelesaikan tugas-tugas lingkungan	Likert 1 (sangat tidak setuju) hingga 5 (sangat setuju)
Green Relational Capital	Stok interaksi perusahaan dengan pelanggan, pemasok, anggota jaringan, dan mitra di lingkungan perusahaan	GRC 1 Perusahaan ini mendesain produk atau layanannya sesuai dengan keinginan lingkungan pelanggannya. GRC 2 Pelanggan puas dengan perlindungan lingkungan perusahaan ini. GRC 3 Hubungan kerja sama perusahaan ini dengan pemasoknya terhadap perlindungan lingkungan stabil. GRC 4 Hubungan kerja sama perusahaan ini dengan kliennya terhadap perlindungan lingkungan stabil. GRC 5 Hubungan kerja sama perusahaan ini dengan mitra strategisnya terhadap perlindungan lingkungan stabil.	Likert 1 (sangat tidak setuju) hingga 5 (sangat setuju)
Environmental Performance	Kemampuan organisasi untuk mengurangi emisi udara, konsumsi energi, zat berbahaya, penggunaan material, dan kepatuhan terhadap standar lingkungan	ENP1: Tingkatkan kepatuhan terhadap standar lingkungan. ENP2: Mengurangi emisi gas buang. ENP3: Kurangi konsumsi energi. ENP4: Kurangi penggunaan material. ENP5: Kurangi konsumsi zat berbahaya.	Likert 1 (sangat tidak setuju) hingga 5 (sangat setuju)
Economic Performance	Kemampuan organisasi untuk mengurangi biaya yang terkait dengan pengadaan material, konsumsi energi, pembuangan limbah, pembuangan limbah dan denda untuk insiden lingkungan	ECP1: Penurunan biaya bahan yang dibeli. ECP2: Mengurangi biaya konsumsi energi. ECP3: Mengurangi biaya pembuangan limbah. ECP4: Mengurangi biaya pembuangan limbah. ECP5: Mengurangi denda untuk kecelakaan lingkungan.	Likert 1 (sangat tidak setuju) hingga 5 (sangat setuju)
Social Performance	Kemampuan organisasi untuk meningkatkan dan meningkatkan kesejahteraan sosial, risiko kesehatan dan keselamatan masyarakat bagi publik, kesehatan dan keselamatan kerja karyawan	SCP1: Meningkatkan kesejahteraan keseluruhan pemangku kepentingan. SCP2: Meningkatkan kesehatan dan keselamatan masyarakat. SCP3: Mengurangi dampak dan risiko lingkungan terhadap publik. SCP4: Meningkatkan kesehatan dan keselamatan kerja karyawan. SCP5: Meningkatkan kesadaran dan perlindungan klaim dan hak orang-orang di komunitas yang mereka layani.	Likert 1 (sangat tidak setuju) hingga 5 (sangat setuju)

Gambar 2 Definition and Indicator of Research Variables

### Data Analysis Techniques

The selection of analysis techniques in a study can affect sample size decisions, and the SPSS program is considered a popular statistical tool. According to Soecahyadi [20], SPSS interprets research data summaries such as mean, standard deviation, variance, mode, etc., and provides descriptive procedures to calculate descriptive statistics. Skewness and kurtosis measurements can also be performed in the SPSS program to describe the normal distribution of data, and there are several tests to determine data normality, namely the Kolmogorov-Smirnov test and the Shapiro-Wilk test.

In this discussion, only descriptive analysis, data quality testing, and classical hypothesis testing are conducted. The sample-to-variable ratio implies a minimum 5:1 observation-to-variable ratio, meaning that at least 5 respondents should be considered for each independent variable in the model. The preferred recommendation for most studies is a ratio of 15:1 or 20:1 [21]. The 5:1 ratio is not recommended by Hair et al. since 2018 because it leads to underpowered studies. For example, a model with 5 independent variables only requires 25 respondents when using a 5:1 ratio. In practice, there is a chance that most inferential analyses fail to convince the examiner that the analysis detects real effects. However, this occurs when there are too few independent variables, and a lower margin of error requires a larger sample size.

## RESULT AND DISCUSSION

The following are the results of t test data processing and analysis using the SPSS application as follows.

**Tabel 1** Hypothesis test

Hipotesis	Relationship	Std. Beta	Std. Error	t-value	p-value	Decision
H1	GHC>SBP	0.015	0.174	0.005	0.932	Not supported
H2	GSC>SBP	0.358	0.115	0.225	0.002	Supported
H3	GRC>SBP	0.811	0.137	0.385	0.000	Supported

Based on the results of data processing and analysis in table 1, it shows the results of the t test where decision making is adjusted to the following conditions: If the t value > t table or sig < 0.05 then the research hypothesis is accepted. The explanation of the results of hypothesis testing is as follows.

### GHC has no significant effect on Sustainable Performance

Based on the results in Table 1 data, GHC does not have a significant influence on the sustainability performance of catering MSMEs. This is proven by the results of data processing with a coefficient value of -0.021, t-statistics of -0.252 and p-values of 0.802. This research finds an insignificant relationship between GHC and sustainable company performance, thereby rejecting H1.

The negligible results in this study could be caused by several things. Most previous research on human capital is related to sustainable corporate performance. However, this study is different because it is the first to examine the non-significant relationship between GHC and sustainable corporate performance. This new concept is still relatively new in the



Indonesian context, especially in the small and medium scale catering industry. The result of this research is shows that GSC does not have a significant influence on MSMEs.

### **GSC has a significant positive effect on Sustainable Performance**

Based on the data results in Table 1, GSC has a significant influence on the sustainability performance of MSME restaurants and cafes. This is proven by the results of data processing with a coefficient value of 0.231, t-statistics of 2.434 and p-values of 0.016. This research shows a significant relationship between GSC and sustainable company performance, so H2 is accepted.

The results of this research show that catering MSMEs have good structural capital that helps accumulate and store appropriate information, knowledge, systems, and procedures related to environmental protection with each customer and other stakeholders. This accumulated knowledge stored in structural capital is used to improve sustainable company performance because it acts as a database that allows people to examine, discuss, and ultimately learn to improve performance. The result of this study is shows that GSC has a significant influence on MSMEs.

### **GRC has a significant positive effect on Sustainable Performance**

Based on the data results in Table 1, GRC has a significant influence on the sustainability performance of catering MSMEs. This is proven by the results of data processing with a coefficient value of 0.407, t-statistics of 4.948 and p-values of 0.000. There is a positive relationship between GRC and sustainable company performance, so H3 is accepted.

This research shows that catering MSMEs seek knowledge from their relationships with other parties, because they have few resources, knowledge, and expertise to address sustainability issues. By establishing stable relationships, they can more easily understand market needs and business situations. They are becoming more aware and focused on the sustainability impact of current activities and improving the company's sustainable performance. The result of this research is shows that GRC has a significant influence on MSMEs.

### **Uji R Square**

The R-Square test is used to test how much influence the independent variable (exogenous) has on the dependent variable (endogenous). The R-Square value is usually between 0 and 1, and the closer the R-Square value is to 1, the stronger the contribution ability of the R-Square value to the dependent and independent variables.

**Tabel 2 Uji R-Square**

Model	R	R Square	Adj R Square
1	.554 <sup>a</sup>	.307	.299

Based on Table 4.15, it shows that the value of the coefficient of determination or R-Square, namely the GIC variable, is 0.554, which means that all independent variables simultaneously have an influence of only 55.4% on the sustainability performance variable. And there is 44.6% influenced by other variables that were not researched. in models.

## CONCLUSION

Based on the results known in research regarding "Analysis of the influence of Green Intellectual Capital on the sustainable performance of catering MSMEs in Batam City" the aim is to determine the impact of GIC on the company's sustainability performance in small and medium scale catering businesses in Batam City, Indonesia. Through a questionnaire survey, a sample of 267 catering MSMEs in Batam, Indonesia. The results of this research show that the negative impact that green intellectual capital (GHC) has on a company's sustainability performance is very limited. This is due to the lack of potential value of investment in technology and human resources (HR) to predict ecological impacts. However, there is a good relationship between green relational capital (GRC) and green structural capital (GSC) and the success of MSMEs. In terms of control variables, firm size, country growth, and leverage have a significant relationship with GIC, while firm age and have no effect. The role of the control variable firm size, leverage strengthens the impact of green structural capital (GSC) and green relational capital (GRC) on company performance, and country growth weakens the impact of green human capital (GHC) on company performance. From the results of the research above, it can be concluded that by implementing good environmental performance, it is hoped that catering business owners can build good relationships and loyalty with their suppliers. Most MSMEs can take steps towards sustainable growth by building close relationships with suppliers. This will help MSMEs produce new products quickly and more cheaply, improve product creation and quality, increase internal design development to reduce environmental damage, and develop physical products and services that improve the company's environment, which ultimately improves the company's sustainability performance thereby benefiting MSMEs for business sustainability.

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