RGSA – Revista de Gestão Social e Ambiental
ISSN: 1981-982X
Data de submissão: 26/12/2023
Data de aceite: 25/03/2024
DOI: https://doi.org/10.24857/rgsa.v18n6-060
Organização: Comitê Científico Interinstitucional
Editor Chefe: Christian Luiz da Silva
Avaliação: Double Blind Review pelo SEER/OJS

THE EFFECT OF SUSTAINABILITY INNOVATION, PROACTIVE SUSTAINABILITY STRATEGY, AND DIGITAL TRANSFORMATION ON CORPORATE SUSTAINABILITY PERFORMANCE

I Gusti Ayu Diah Dhyanasaridewi[1]
Etty Murwaningsari[2]
Sekar Mayangsari[3]

ABSTRACT

Purpose: Business sustainability is widely accepted as a crucial approach to ensure the long-term success of enterprises. This research aims to explore how proactive sustainability strategies, sustainable innovation, and digital transformation impact a company's sustainability performance.

Method: Additionally, the study will use organizational culture as a moderator and add size and leverage as control variables to evaluate their effects. A total of 705 sample data were collected from the financial statements, annual reports, and sustainability reports of non-financial companies listed on the Indonesia Stock Exchange (IDX) between 2018 and 2022. To test the hypotheses investigated, multiple regression analysis was used.

Results and conclusion: The findings reveal that proactive sustainability strategy, sustainability innovation, and digital transformation have a positive impact on corporate sustainability performance. Secondly, it was found that organizational culture cannot act as a moderator in the relationship between proactive sustainability strategy, sustainability innovation, and digital transformation.

Research implications: The research highlights that to enhance long-term performance, environmental, economic, and social strategies should be supported by stakeholder engagement, governance and leadership, and communication strategies. Among these six elements, stakeholder engagement and communication strategies have the most positive impact on sustainability performance.

Originality/value: This study has introduced three new aspects for measuring the Proactive Sustainability Strategy.

Keywords: Sustainability Innovation, Proactive Sustainability Strategy, Digital Transformation, Corporate Sustainability Performance, Organization Culture.

O EFEITO DA INOVAÇÃO EM MATÉRIA DE SUSTENTABILIDADE, DA ESTRATÉGIA PROACTIVA DE SUSTENTABILIDADE E DA TRANSFORMAÇÃO DIGITAL NO DESEMPENHO DA SUSTENTABILIDADE DAS EMPRESAS

RESUMO

Objetivo: A sustentabilidade empresarial é amplamente aceite como uma abordagem crucial para garantir o sucesso a longo prazo das empresas. Esta investigação visa explorar o impacto das estratégias proactivas de sustentabilidade, da inovação sustentável e da transformação digital no desempenho de sustentabilidade de uma empresa.
Método: Além disso, o estudo usará a cultura organizacional como moderador e adicionará tamanho e alavancagem como variáveis de controle para avaliar seus efeitos. Um total de 705 dados de amostra foram coletados das demonstrações financeiras, relatórios anuais e relatórios de sustentabilidade de empresas não

[1] Universitas Trisakti, Jakarta, Indonesia. E-mail: diah.dhyanasari@gmail.com
Orcid: https://orcid.org/0000-0001-8740-3248
[2] Universitas Trisakti, Jakarta, Indonesia. E-mail: etty.murwaningsari@trisakti.ac.id
Orcid: https://orcid.org/0000-0002-9720-6392
[3] Universitas Trisakti, Jakarta, Indonesia. E-mail: sekar_mayangsari@trisakti.ac.id
Orcid: https://orcid.org/0000-0002-0787-5323

financeiras listadas na Bolsa de Valores da Indonésia (IDX) entre 2018 e 2022. Para testar as hipóteses investigadas, foi utilizada a análise de regressão múltipla.

Resultados e conclusão: Os resultados revelam que a estratégia proactiva de sustentabilidade, a inovação em sustentabilidade e a transformação digital têm um impacto positivo no desempenho da sustentabilidade empresarial. Em segundo lugar, verificou-se que a cultura organizacional não pode atuar como moderador na relação entre a estratégia proactiva de sustentabilidade, a inovação em matéria de sustentabilidade e a transformação digital.

Implicações da pesquisa: A investigação salienta que, para melhorar o desempenho a longo prazo, as estratégias ambientais, económicas e sociais devem ser apoiadas pelo envolvimento das partes interessadas, pela governação e liderança e por estratégias de comunicação. Entre estes seis elementos, o envolvimento das partes interessadas e as estratégias de comunicação têm o impacto mais positivo no desempenho da sustentabilidade

Originalidade/valor: Este estudo introduziu três novos aspectos para medir a Estratégia Proactiva de Sustentabilidade.

Palavras-chave: Inovação em Matéria de Sustentabilidade, Estratégia Proactiva de Sustentabilidade, Transformação Digital, Desempenho da Sustentabilidade Empresarial, Cultura Organizaciona.

EL EFECTO DE LA INNOVACIÓN SOBRE LA SOSTENIBILIDAD, LA ESTRATEGIA DE SOSTENIBILIDAD PROACTIVA Y LA TRANSFORMACIÓN DIGITAL EN EL DESEMPEÑO DE LA SOSTENIBILIDAD EMPRESARIAL

RESUMEN

Objetivo: La sostenibilidad empresarial está ampliamente aceptada como un enfoque crucial para garantizar el éxito a largo plazo de las empresas. Esta investigación tiene como objetivo explorar el impacto de las estrategias proactivas de sostenibilidad, la innovación sostenible y la transformación digital en el desempeño sostenible de una empresa.

Método: Además, el estudio utilizará la cultura organizacional como moderador y añadirá tamaño y apalancamiento como variables de control para evaluar sus efectos. Entre 2018 y 2022 se recogieron un total de 705 datos de muestra de los estados financieros, los informes anuales y los informes de sostenibilidad de las empresas no financieras que cotizan en la Bolsa de Valores de Indonesia (IDX). Para probar las hipótesis investigadas se utilizó el análisis de regresión múltiple.

Resultados y conclusión: Los resultados muestran que la estrategia de sostenibilidad proactiva, la innovación en sostenibilidad y la transformación digital tienen un impacto positivo en el desempeño de la sostenibilidad empresarial. En segundo lugar, se encontró que la cultura organizacional no puede actuar como moderadora en la relación entre la estrategia de sostenibilidad proactiva, la innovación en sostenibilidad y la transformación digital.

Implicaciones de la investigación: La investigación subraya que para mejorar el rendimiento a largo plazo, las estrategias ambientales, económicas y sociales deben estar respaldadas por la participación de las partes interesadas, la gobernanza y el liderazgo y las estrategias de comunicación. Entre estos seis elementos, la participación de los interesados y las estrategias de comunicación son las que tienen un impacto más positivo en el desempeño de la sostenibilidad.

Originalidad/valor: Este estudio introdujo tres nuevos aspectos para medir la Estrategia de Sostenibilidad Proactiva.

Palabras clave: Innovación En Sostenibilidad, Estrategia Proactiva de Sostenibilidad, Transformación Digital, Desempeño en Sostenibilidad Empresarial, Cultura Organizacional.

1 INTRODUCTION

The sustainable performance of a corporation is attracting the attention of an increasing number of scholars and industry players due to major environmental issues brought on by rapid economic expansion (Jiang et al., 2018). Companies often exploit limited resources excessively, resulting in threats to the sustainability of nature, the business world and society (Barnett et al., 2018). Sustainability issues are very complex and have many aspects, including environmental issues, social problems and economic challenges. The next challenge is the circular economy because it requires fundamental changes in the way we produce, consume and dispose of goods and services (Obeidat et al., 2023). As a result, in addition to internal pressure to maximize profits, corporations are now under external pressure to develop a system of environmental and social responsibility.

Mixed findings have been found in previous research on the relationship between sustainability innovation and business sustainability performance. Because innovations have a lengthy return time, large initial costs, and little environmental impact. They are viewed as cost drivers by certain companies (Cai & Li, 2018; Qiu et al., 2020). Indeed, as per (Aguilera et al.,2013) companies that carry out sustainability innovations have no higher financial performance than companies that do not carry out sustainability innovations. On the other hand, several other studies such as (Cai & Li, 2018; Kneipp et al., 2019a) which link investment in sustainability innovation to corporate sustainability performance argue that sustainability innovation can improve company value, lowering expenses and adverse environmental effects. The results exhibit contradictions, indicating a need for further investigation into the connection between corporate sustainability performance and sustainability innovation.

A corporation that implements a sustainability strategy makes sure that social, environmental, and economic factors are taken into account when carrying out commercial operations (Wardhani & Rahadian, 2021). Scholars have investigated the correlation between business sustainability performance and sustainability strategy; nonetheless, the findings remain inconsistent. (Maletič et al., 2016) demonstrated that businesses might enhance their sustainability performance by including sustainability concerns into their business strategy, while (Jusoh et al., 2023; Solovida & Latan, 2017) discovered that the only connection between sustainability strategy and performance is an indirect one, and that relationship can only be fulfilled by implementing a more comprehensive management accounting; control; system. According to Roy et al. (2020), prior research has tended to concentrate more on

specific element like corporate social and environmental strategy. A typology of sustainability strategies that only focuses on one dimension will limit future empirical research. By adding new elements, such as stakeholder engagement, governance and leadership and communication strategies, to the existing environmental, economic, and social strategies, this research will create a framework for measuring proactive sustainability strategy. This measurement was created because, businesses in the fourth industrial revolution need to be able to react faster to stakeholder expectations and sustainable development goals. As a result, environmental, social, and economic strategies are no longer considered to be sufficient to enhance a company's sustainability performance. Apart from adding measurement dimensions, what differentiates this research from previous studies is that this research uses information that is publicly available, namely information contained in annual reports, sustainability reports and company websites. The sustainability strategy of the organization was not well described by the questionnaires used in earlier studies on sustainability strategies, which often had very straightforward items. Stakeholder engagement is a strategy that can assist organizations in proactively considering the needs and desires of anyone who has an interest in the organization. When implemented effectively, this can foster stronger relationships, enhance the organization's reputation, and promote positive change. Strong corporate governance will enhance internal skills to handle long-term sustainable difficulties and raise the standard of oversight and control. The governance and leadership strategy factor is necessary to measure proactive sustainability strategy. In addition, effective governance has been shown to enhance business performance. One of the most important factors in defining the sustainability strategy outlook and plan implementation is strong leadership (Boyles, 2023; Wardhani & Rahadian, 2021). Furthermore, the addition of the communication strategy dimension is motivated by the idea that with a communication strategy, companies can provide information regarding sustainability goals and strategies to their stakeholders. Conversely, businesses can actively include their stakeholders by talking about particular subjects and priorities and sharing information on sustainability- related issues. The objectives are to foster trust and a common knowledge of sustainability concerns (Köhler & Zerfass, 2019). Thus, in this research, the proactive Sustainability Strategy variable is measured using seven dimensions, namely environmental, economic, social strategy, stakeholder involvement, governance and leadership, and communication.

Digitalization not only creates opportunities but also creates challenges for organizations. Previous researchers such as (Forcadell et al., 2020; Truant et al., 2021) argue

that in many cases digitalization can create opportunities to increase efficiency and improve company performance. Digitalization presents challenges for businesses. For instance, the massive volumes of customer data and information (big data) that are made feasible by digitalization can breed mistrust and skepticism, which can have an impact on the company's earnings. Divergent views have been expressed in earlier research regarding the connection between corporate sustainability performance and digital transformation. By lowering green-house gas emissions, improving energy efficiency, shortening transportation and distribution distances, and optimizing logistics resources, digital transformation can promote greater environmental sustainability (Feroz et al., 2021;Junge & Straube, 2020). However, implementing digital transformation also necessitates significant financial and human resource investments, as well as organizational structure and operational process redesign on the part of businesses. According to Saunila et al. (2019), companies' performance may suffer if they lack the necessary resources or do not modify their processes and structures in order to facilitate digital transformation.

Achieving business sustainability has been demonstrated to be significantly influenced by organizational culture (Shwairef et al., 2021), so this research includes it as a moderating variable. (Al-Hakimi et al., 2022; Cameron & Quinn, 2006) state that organizational culture is the cornerstone that consists of employee work practices, habits, norms, and values that produce higher quality performance and ultimately lead to the sustainability of the company. Superior sustainability performance is a reflection of a certain organizational culture in companies.

2 LITERATURE REVIEW

a. Stakeholder Theory

In order to accomplish the goal, you need to establish strong relationships with a variety of stakeholders, according to the stakeholder theory, which was established by Freeman & David in 1983. The relationship between stakeholders and the company is reciprocal, where stakeholders contribute to improving company performance, and good company performance will improve their welfare. Individuals or groups with interests that are influenced by or have the potential to be influenced by organizational activities are referred to as stakeholders. Stakeholders can have more than one interest that can be influenced negatively or positively by organizational activities. An organization needs to be able to identify stakeholders based on how their interests relate to the actions of the organization in order to manage and recognize both positive and negative repercussions. Stakeholder theory states that a company's performance and sustainability activities boost its long-term value (Rezaee, 2016). Every company activity that benefits stakeholders contributes to increasing company sustainability (Kantabutra & Ketprapakorn, 2020). Therefore, it is highly likely that in the process of meeting stakeholder demands, companies will become sustainable (Barnett et al., 2018).

b. Resource-Based View Theory

Barney (1991) introduced the concept of Resource-Based View (RBV) as an effort to address the shortcomings of environmental models of competitive advantage. RBV aims to establish a connection between an organization's strategic or competitive advantage and the mobility of its diverse resources within a given industry. RBV is the idea that organizations must strive to eventually gain a long-lasting competitive advantage. By identifying resources in the organization, which have four characteristics, namely valuable, rare, inimitable, and non-substitutable (Dyck et al., 2019).

c. Hypotheses development

1) Sustainability Innovation and Corporate Sustainability Performance

RBV theory predicts that a business will employ strategic resources to outlast its rivals in the long run. RBV also looks within the organization to identify the assets, proficiencies, and capabilities that will provide the business with a competitive advantage over rivals (Johl & Toha, 2021). Research conducted by (Hojnik & Ruzzier, 2016; Saunila et al., 2018) found that investment in innovation related to environmental issues is a driver for saving production

costs and reducing emission costs, which can ultimately improve economic performance. Furthermore, organizations invest in sustainability innovations to increase productivity by minimizing industrial production waste, thereby generating positive economic development (Canh; et al., 2019). As state by (Qiu et al., 2020; Soto-acosta et al., 2015), organizational sustainability and sustainable innovation are positively correlated. Because sustainability innovation helps to promote business sustainability. According to (Przychodzen & Przychodzen, 2015), sustainable innovation is typically characterized by lower profit retention and greater returns on equity and assets. In addition, businesses typically have more free cash flow than traditional businesses. This foundation allows for the formulation of the hypothesis as follows.

H1: Sustainability Innovation has a positive--influence on Company Sustainability Performance

2) Proactive Sustainability Strategy and Corporate Sustainability Performance

A proactive approach to sustainability strategy can improve sustainability performance by reducing waste and optimizing resources (Wijethilake, 2017). A proactive sustainability strategy has been shown to have a positive impact on a company's sustainability performance in earlier research (Teh & Corbitt, 2015; Tjahjadi et al., 2023). As a results, the researchers came up with the following hypothesis:

H2: Proactive Sustainability Strategy; has a positive influence on Company Sustainability Performance

3) Digital Transformation and Corporate Sustainability Performance

The organization and management of manufacturing have undergone drastic changes because of the digital transformation, which impacts economic performance. By connecting this to sustainability, digital transformation should assist businesses in boosting revenue, improving their community impact, and minimizing adverse environmental effects. According to earlier research (Côrte-Real et al., 2020; Esses et al., 2021), digital transformation improves environmental-sustainability and also has a beneficial effect on an organization's sustainability. Therefore, theiihypothesis can be made asssfollows:

H3: Digital transformation has a positive influence on Company Sustainability Performance

4) Organization Culture as Moderating Variable

Previous research has shown that organizational culture can change how organizations think (Imran et al., 2021). A market-oriented culture focuses on the results obtained and

evaluating whether the work produced is following the targets set at the beginning. It can create innovative employee behavior that supports sustainability efforts so that by the end, it will improve the company's Sustainability Performance (Aksoy, 2017).

An organization's success is strongly influenced by its dynamic organizational culture, which is crucial for the sustainable strategy of the company to be implemented successfully (Isac & Remes, 2018; Kemp & Dwyer, 2001; Scholz, 1987). Sustainability performance and strategy are strongly influenced by organizational culture. Supportive cultures can improve a company's success in sustainability and reinforce sustainability policies.

An organization's "digital transformation world" consists of more than just a collection of digital procedures, it also consists of a work culture, as well as a number of essential behaviors and attitudes. Digital transformation will not be successful if the organization does not have a ready to change mindset (Steiber & Alvarez, 2023).

Based on the explanation above, the researcher formed the following hypothesis:

H4: Organization Culture strengthens the relationship between Sustainability Innovation and Corporate Sustainability Performance

H5: Organization Culture strengthens the relationship between Proactive Sustainability Strategy and Corporate Sustainability Performance

H6: Organization Culture strengthens the relationship between Digital transformation and Corporate Sustainability Performance

d. Conceptual Framework

Organizational Sustainability Performance is the dependent variable in this study and is measured holistically using a mixture of three dimensions: economic, environmental, and social performance. Digital transformation, proactive sustainability strategy, and sustainability innovation are used as independent variables. We thought of include the Organizational Culture variable as a moderating variable because any change implemented by the companies needs to be supported by all organizational aspects. In the meantime, control variables like size and leverage are employed (Figure 1).

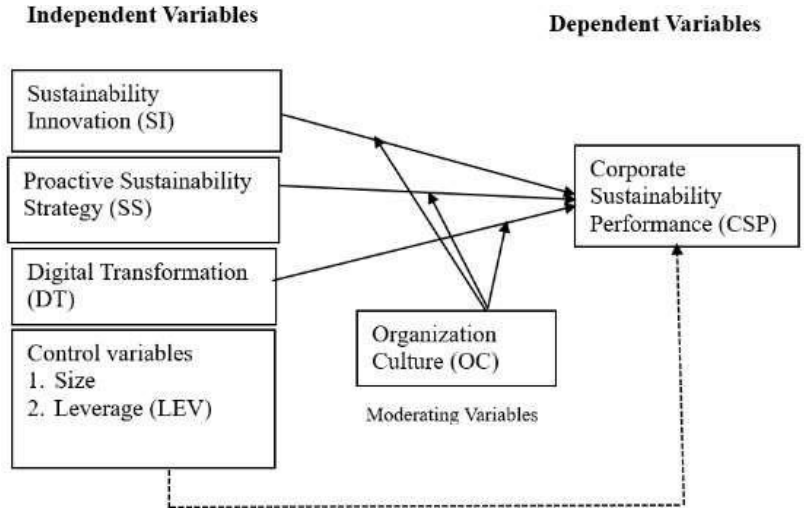
3 METHOD

a. Data and Samples

This research was employed the purposive sampling method in conjunction with a quantitative approach utilizing secondary panel data. The samples data includes 705 firm year observations from 141 non-financial companies listed on IDX in the period covering 2018 - 2022. The sampled company must meet the following criteria: (1) non-financial company listed on the IDX for the period of 2018–2022; (2) having annual reports with complete information for the period of 2018–2022; (3) having sustainability reports or statements for the period 2018–2022. Using an index for content analysis, the data used in the study came from secondary sources, including sustainability reports, annual reports, and corporate websites. Content Analysis was applied in the data analysis procedures. Understanding social phenomena through content analysis is an attractive method.

Figure 1

Conceptual framework



source: Prepared by Authors (2024)

It is an analytical instrument as well as a research technique for drawing reproducible and accurate conclusions from texts to the contexts in which they are used (Aras et al., 2017). Content analysis, as a research technique, provides fresh insights, improves a researcher's understanding of certain phenomena, or guides practical actions. This information is believed to be reliable and has been confirmed by documents that have been distribute to stakeholders and shareholders.

The following are the outcomes of the tests for heteroscedasticity and multicollinearity. First, it was discovered that there are no problems with multicollinearity in the study models, since the VIF of each independent variable is less than 10 (Table 1). Second, none of the models had heteroscedasticity issues, as shown by the results of the Breusch-Pagan tests.

Table 1

Multicollinearity test

Variables	Variance Inflation Factor (VIF)
SI	1.10848
SS	1.08384
DT	1.01244
SIZE	1.07306
LEV	1.04107
SI*OC	6.96203
SS*OC	5.68879
DT*OC	5.25682

source: Prepared by Authors (2024)

This study has investigated the effect of Sustainability innovation, proactive sustainability strategy and digital transformation on corporate sustainability performance with organization culture as moderating variabel. Size and leverage have been added as control variables. Employing multiple linear regression analysis, the models were formulated as follows:

$$CSP_{it} = \alpha + \beta_1 SI_{it} + \beta_2 SS_{it} + \beta_3 DT_{it} + \beta_4 SI_{it}*OC_{it} + \beta_5 SS_{it}*OC_{it} + \beta_6 DT_{it}*OC_{it} + \beta_7 SIZE_{it} - \beta_8 LEV_{it} + \varepsilon \quad (1)$$

b. Development of Measurement of Sustainability Innovation

The study employs three constructs of sustainability innovation: product, process, and managerial (Hermundsdottir & Aspelund, 2020). Below are brief explanations of these constructs. Product innovation related to sustainability is measured in terms of improving product quality, utilizing recyclable materials, eco-labeling, reusing, using ecologically friendly materials and packaging, and having greater longevity. Process innovation related to sustainability can be assessed by considering four crucial factors. First, fewer emissions, noise pollution, and air pollution. Using efficient waste processing techniques is the second. The third point is a reduction in the consumption of materials and energy, including coal, gas, electricity, and water. Finally, the integration of cleaner technology in the production process.

The managerial aspect can be measured by implementing an environmental management system, green marketing, and complying with relevant international standards. Using one to three categories, content analysis of secondary data was used in these research to measure the major constructs. According to this categorization, 0 denotes information that could not be located, 1 if only have a plain description without implementation details, value of 2 if the information state rich details, such as detailed implementation processes, showing that a firm was in fact carrying out a related type of innovation, and 3 if rich details along with quantitative terms, pictures and video. Then the formulation of Sustainability Innovation index as follows:

$$SI_j = \frac{\sum X_{ij}}{n_j} \quad (2)$$

Note:

SI j : sustainability Innovation index for j company
nj: total items on j company, nj 12
X ij : Total items for sustainability innovation. 0 ≤ SIj ≤ 3

Table 2

Proactive Sustainability Strategy indicators.

Dimension	Indicator
Environmental Strategy	Promote sustainable management of resources
	Reduce emissions into the land, air, water
	Promote and conserve biodiversity
	Reduce the negative effects that goods and services have on the environment
Economy Strategy	Promoting a circular economy
	Engage in sustainability learning
	Develop sustainable business processes
Social Strategy	Ensure employee health and safety
	Invest in human resource development
	Promote ethical behavior and protect human rights
	Avoid controversial activities, corruption, or cartels
	Promoting corporate citizenship
Stakeholder engagement Strategy	Identify relevant stakeholders
	Understand stakeholder needs to achieve business sustainability
	Active involvement of stakeholders in decision making
	Regular feedback and evaluation.
Governance & leadership Strategy	Board of Directors is in charge of setting the company's strategic course.

	Sustainability concerns are a part of the company's vision and mission.
	The company has plans in place for the short, medium, and long terms to handle the substantial effects of social, environmental, and economic challenges on the business.
	The company's top governing body includes a sustainability organ.
	The business participates in both internal and external sustainability activities.
Communication Strategy	Clear and transparent communication
	Visualization of sustainability strategies
	Education for internal and external stakeholders

source: Prepared by Authors (2024)

c. Development of Measurement of Proactive Sustainability Strategy

In this study, we are measuring the variable of proactive sustainability strategies, which is an extension of the previous study conducted by (Wijethilake, 2017). The measurement now includes six dimensions, namely environmental strategy, economic strategy, social strategy, stakeholder engagement strategy, governance and leadership strategy, and communication strategy. As previous reseach by Wijethilake (2017), The environmental strategy has four indicators, the economic strategy has three indicators, and the social strategy has five indicators. In addition, we develope indicators for the others three dimensions. In this research, we are using the Stakeholders Engagement Standard (AccountAbility, 2018; Wardhani & Rahadian, 2021) as our primary reference to measure stakeholder engagement. Based on these standards, we have turned the element of stakeholder angagement into four operational indicators. To measure the Governance and Leadership elements, we are using five indicators with the GRI Standards (2016) as our primary reference for determining indicators. Additionally, we have three indicators to measure communication elements. The Proactive Sustainability Strategy's variable is measured using the metrics shown in Table 2. The content analysis method is used to assess each disclosure indicator. Scores are given based on (Köhler & Zerfass, 2019) utilizing 1 to 3 categories with the following criteria: The numbers zero if no information related the item found, one for a straightforward description without implementation details, two for rich details, such as detailed implementation procedures or quantitative terms related type of strategy, and three for rich details with a plan for the completeness of content regarding target hierarchy and strategy levels as well as the use of strategy-related videos, images, and documents.

$$SS_j = \frac{\sum X_{ij}}{n_j} \quad (3)$$

SS j : Proactive sustainability Strategy index-for j company
nj: total items on j company, nj 24
X_{ij} : Total items for proactive sustainability strategy disclo sure. $0 \leq SS\ j \leq 3$

d. Development of Measurement of Digital Transformation

Digital Transformation measurement employs content analysis techniques to assess annual and sustainability reports based on four dimensions, namely (1) strategy and investment, (2) customers, (3) human capital, and (4) technology. Scores are given based on (Köhler & Zerfass, 2019) utilizing 1 to 3 categories. A number of 0 denotes the absence of digital transformation within the organization, while a value closer to 3 indicates a higher level of digital transformation by the company. Table 3 provides a clear representation of the DT variable measurement.

Table 3

representation of the DT variable measurement.

$$DTI_j = \frac{\sum X_{ij}}{n_j} \quad (3)$$

SSI_j: Digital Transformation index for j company
nj : total items on j company, nj 9
Xij: Total items for digital transformation disclosure.
So, $0 \leq DTI_j \leq 3$

This study differs from previous ones that have relied on interviews or questionnaires to gather information about organizational culture. Instead, by utilizing already existing data, this study employs a quantitative method to quantify organizational culture aspects. With this approach, testing hypotheses is simpler, which is more objective and permits systematic comparisons (Dwianika & Murwaningsari, 2019; Wahid ElKelish & Kamal Hassan, 2014). This study employs the organizational culture of market model, which was first presented by Cameron and Quinn (2006). The concept aims to maximize profitability, productivity, and a premium return on assets. According to Cameron and Quinn (1999), the primary standards for

effectiveness include reaching objectives, surpassing rivals, growing market share, and obtaining superior financial returns. In light of this, financial metrics like return on assets (ROA) were employed as stand-ins for Market's organizational culture.

e. Development of measurement of Corporate Sustainability Performance

The indicators of CSP are referred to the Indonesian financial services authority framework, which includes a total of 27 items. Specifically, there are two economic, eleven environmental, and fourteen social indicators in total. Sustainability performance is assessed using the corporate sustainability disclosure index, which has 1 to 3 categories. Value 0 if the item is not disclosed. Value 1 is merely a basic explanation without specifics about how it will be implemented, and rich details, such as thorough plans and implementation procedures, or quantitative words, are represented by the number 2. Value 3 represents rich details with videos, images, and documents related to sustainability performance (A. A. Zaid et al., 2020; Tjahjadi et al., 2021).

$$CSPI_j = \frac{\sum X_{ij}}{n_j} \quad (4)$$

Note:

CSPIj: Corporate sustainability disclosure index for j company
nj: total itens on j company, nj 27
Xij: total items for sustainability disclosure
$0 \leq CSPIj \leq 3$

f. Control variables

Firm size can influence Corporate Social Performance (CSP) as larger firms attract more attention from stakeholders, governments, and the general public. The following formula is used to determine the firm size:

Size = Ln Total Assets

The leverage ratio calculation used in this research is by comparing total debt with total assets.

$$Lev = \frac{debt}{assets} \quad (5)$$

4 RESULTS AND DISCUSSION

A. Statistic Descriptive

Table 3 presents the research's descriptive statistics. It displays the mean, standard deviation, and maximum and minimum values for each variable investigated. Considering the mean and standard deviation values, it seems that the key variables have a low degree of data diversity. The Chow test results indicate that the Fixed Effect Model is the chosen model, as the Prob value is 0.0000, which is less than 0.05. Additionally, a statistical test called the Hausman Test was run to contrast the random effect model with the fixed effect model. The fixed effect model is the most suitable, according to the Hausman test results, since the prob value is 0.0142, which is less than 0.05. The fixed effect model appears to be the best choice based on the findings of the Chow and Hausman tests.

Table 3

Statistic Descriptive Result

Variables	N	Mean	Std. Deviation	Max	Min
CSP	705	0,77	0,12	0,96	0,40
SI	705	0,53	0,20	0,86	0,14
SS	705	0,69	0,11	0,86	0,36
DT	705	0,55	0,32	0,96	0,04
Size	705	29,48	1,57	33,66	25,63
Lev	705	0,51	0,54	7,11	0,03
OC	705	0,07	0,13	1,29	-0,44

Source: Data processed using Eviews 12.

B. Result and Discussion

Table 4 below displays the statistical values for the t test, F test, and coefficient of determination. The value of the R- squared is 0.9459. This statistical measure stands for the proportion of the dependent variable's variance that the independent variables explain collectively. A positive coefficient value of 0.0650 and a probability value of 0.0800<0.10 indicate that sustainability innovation has a posit if effect on CSP. Therefore, Hypothesis 1 is supported. Previous research (García Granero et al., 2018; Kneipp et al., 2019b; Qiu et al., 2020) supports that sustainability innovation positively contributing to business sustainability. An organization can improve its sustainability performance while achieving its business goals by implementing innovation in various operational (product and process) and strategic (managerial) aspects. The innovation aims to create solutions that are more efficient, effective, and sustainable.

The Proactive Sustainability Strategy (SS) variable have a positive effect on Corporate Sustainability Performance (CSP), according to the research findings. The coefficient is 0.4879 and it is significant with a Prob value of 0.0000 < 0.05, proving the acceptance of the second hypothesis. These results support previous research by (Tjahjadi et al., 2023; Wijethilake, 2017; Yasir et al., 2020). When a proactive Sustainability Strategy is implemented, involving stakeholders and fostering good communication, participation, and commitment among employees and managers increase, leading to improved company performance.

Table 4, indicates that there is a significant Prob value of 0.0333<0.05 and a positive coefficient of 0.1342, respectively, between Digital Transformation (DT) and Corporate Sustainability Performance (CSP), supporting the acceptance of the third hypothesis. Previous study (El Hilali et al., 2020; Guo & Xu, 2021) supports this conclusion by showing that digital transformation positively affects company sustainability performance. Sustainable digital transformation can also help companies decrease their environmental impact, enhance energy efficiency, meet customer expectations for sustainable practices, and create new business opportunities and markets (Feroz et al., 2021; Junge & Straube, 2020).

The findings demonstrate that the association between and sustainable innovation (SI) and corporate sustainability performance (CSP) is not moderated by organizational culture (OC). That is shown by a coefficient of 0.0249 and a probability value of 0.3898>0.05. Therefore, the hypothesis H4 is rejected. The study's findings are consistent with (Fietz, 2021) which states that the market organizational culture approach is not sufficient to achieve true sustainability because it does not explicitly emphasize the implementation of innovation. The results showed that the coefficient for OC was negative (-0.1168), and the Prob value; was 0.0572, which is less than the significance; level of 0.10. These findings indicate that OC cannot strengthen the relationship between SS and CSP.

Table 4

Hypothesis Result

Variables	**Prediction**	**Coefficient**	**Prob**		**-**
C		-0.5365	-	-	-
SI	+	0.0650	0.0800	*	H1 Accepted
SS	+	0.4879	0.0000	***	H2 accepted
DT	+	0.1342	0.0333	**	H3 accepted
SI*OC	+	0.0249	0.3898		H4 rejected
SS*OC	+	-0.1168	0.0572	*	H5 rejected
DT*OC	+	0.0208	0.3728		H6 rejected
SIZE	+	0.0294	0.0001	***	

LEV	-	-0.0080	0.2146		
R-squared	0.9459		Prob(F-statistic)		0.0000
Adj. R-squared	0.9314				
Note: *p-value<0.1,**p-value<0.05,***p-value<0.01.					
SI=Sustainability Innovation, SS=Proactive Sustainability Strategy, DT= Digital transformation, Size= company size, Lev=Debt ratio, OC= Organization culture					

Source: Data processed using Eviews 12.

Additionally, Table 4 shows that the fifth hypothesis is disproved. The relation between Proactive Sustaibaility strategy and Corporate sustainability performance are not moderated by Organization culture. Therefore, it is crucial for companies to establish an organizational culture that supports sustainability strategies in order to enhance their sustainability performance.

With a Prob value of 0.3728>0.05 and a positive coefficient of 0.0208, the Organizational Culture (OC) variable cannot strengthen the link between DT and CSP, leading to the rejection of hypothesis H6. Organizations should foster a culture that supports digital transformation, which can improve sustainability by encouraging the use of technology and innovation and increasing employee engagement

Sensitivity tests are carried out to analyze whether new measurements of research variables are better than previous measurements. It has been concluded that the addition of three new dimensions to the Proactive Sustainability Strategy (SS) measurement in model 1 provides better results compared to model 2, which had an old measurement of SS variables with three dimensions. This conclusion is supported by the following points:

1) The Adj R-squared value in model 1 is higher (0.9314) than in model 2 (0.9286).
2) The Prob value for model 1 (0.0000 <0.05) indicates a statistically significant result, while for model 2 the Prob value (0.2631 > 0.05) is not statistically significant.

Organizations can benefit significantly from developing a stakeholder engagement strategy. This involves considering the needs and desires of all those with an interest in the organization. By doing so, the organization can build stronger relationships, improve reputation, and drive positive change. In addition to reducing possible risks and disputes, effective stakeholder engagement can also assist reduce missed chances to generate long-term value, uncertainty, dissatisfaction, and resistance to change (Nuttall, 2020; Ross & Ph, 2014; Sedmak, 2021). The Governance and Leadership Strategy dimension includes strengthening internal capacity to address long-term sustainability challenges and enhancing the quality of control and supervision. Good governance practices can also improve company performance, as reported by (Deloitte & Nyenrode, 2016; Tjahjadi et al., 2021). Furthermore, strong

leadership is crucial in determining the outlook of sustainability strategy and its implementation, as asserted by (Boyles, 2023; Wardhani & Rahadian, 2021). The communication strategy dimension enables companies to actively engage their stakeholders by exchanging information about sustainability issues, discussing certain topics and priorities, and creating a shared understanding of sustainability challenges to build trust(Köhler & Zerfass, 2019).

To see the influence between each dimension of the Proactive Sustainability Strategy variable on the Company's Sustainability Performance variable, we conducted an expansion test. According to the expansion test results, only the communication strategy with p-value 0.0002 <0.05 and stakeholder engagement strategies p-value 0.0000 <0.05, positively affect the sustainability0performance of the business when the six dimensions of the proactive sustainability strategy variable are functioned as independent variables. The environmental, economic, social, governance, and leadership strategies have no discernible impact on the company's sustainability performance. This is conceivable since a poorly developed strategy will not be successfully implemented if the key players are not included and communication is poor.

5 FINAL CONSIDERATIONS

The aim of the research was to ascertain how sustainability innovation, proactive sustainability strategy, and digital transformation affect the sustainability performance of businesses and how organizational culture functions as a moderator in the link between the aforementioned variables. Three of the six theories were accepted, while the other three were rejected. Therefor. this research proves that sustainability innovation, practical sustainability strategy and digital transformation have a positive influence on a company's sustainability performance, but this relationship cannot be strengthened by an organizational culture that is only market oriented. Companies need to develop an organizational culture model that can support innovation as well as the adoption of digital technology.

For theoretical contributions, this research contributes to the RBV and Stakeholder theories, which claim that in order for businesses to achieve better sustainability performance, they must identify their primary stakeholders and their primary resources. Innovation, strategy creation, and digital transformation require the participation of all key stakeholders and all organizational resources. In addition, this study offers twelve new indicators and three

perspectives for evaluating proactive sustainability strategies. The statistical data processing results indicate that the three new dimensions were successful in raising the significance level.

The information analyzed for this study came -from secondary sources, including annual reports and corporate sustainability reports. Thus, there are limitations, such as the small sample size resulting from insufficient data and the utilization of secondary data in conjunction with content analysis techniques. Additionally, there is still a chance of mistakes in the data collection process due to the-possibility of researchers introducing bias or their own subjective interpretations during the analysis phase.

To make the research findings more comparable and generalizable, future research can enlarge the sample in Indonesia and other ASEAN nations to increase the0number of respondents in subsequent studies. In order to better comprehend the study problem, mixed method research can be used in subsequent studies to blend quantitative and qualitative data.

REFERENCES

A. A. Zaid, M., Wang, M., Adib, M., Sahyouni, A., & T. F. Abuhijleh, S. (2020). Boardroom nationality and gender diversity: Implications for corporate sustainability performance. Journal of Cleaner Production, 251, 119652. https://doi.org/10.1016/j.jclepro.2019.119652

Accountability. (2018). Accountability 2018 principles. Accountability, 40. https://www.accountability.org/standards/

Aguilera-Caracuel, J., & Ortiz-de-Mandojana, N. (2013). Green Innovation and Financial Performance: An Institutional Approach. Organization and Environment, 26(4), 365–385. https://doi.org/10.1177/1086026613507931

Aksoy, H. (2017). How do innovation culture, marketing innovation and product innovation affect the market performance of small and medium-sized enterprises (SMEs)? Technology in Society, 51, 133– 141. https://doi.org/10.1016/j.techsoc.2017.08.005

Al-Hakimi, M. A., Al-Swidi, A. K., & Gelaidan, H. M. (2022). The influence of green manufacturing practices on the corporate sustainable performance of SMEs under the effect of green organizational culture: A moderated mediation analysis. Journal of Cleaner Production, 376(20 November 2022), 134346. https://doi.org/https://doi.org/10.1016/j.jclepro.2022.134346

Aras, G., Tezcan, N., Furtuna, O. K., & Kazak, E. H. (2017). Corporate sustainability measurement based on entropy weight and TOPSIS: A Turkish banking case study. Meditari Accountancy Research, 25(3), 391–413. https://doi.org/10.1108/MEDAR-11-2016-0100

Asadi, S., OmSalameh Pourhashemi, S., Nilashi, M., Abdullah, R., Samad, S., Yadegaridehkordi, E., Aljojo, N., & Razali, N. S. (2020). Investigating influence of

green innovation on sustainability performance: A case on Malaysian hotel industry. Journal of Cleaner Production, 258, 120860. https://doi.org/10.1016/j.jclepro.2020.120860

Barnett, M. L., Henriques, I., & Husted, B. W. (2018). Governing the void between stakeholder management and sustainability. Advances in Strategic Management, 38, 121–143.https://doi.org/10.1108/S0742-332220180000038010

Boyles, M. (2023). Organizational Leadership: what it is & why it's important. Harvard Business School. https://online.hbs.edu/blog/post/what-is-organizational-leadership

Cai, W., & Li, G. (2018). The drivers of eco-innovation and its impact on performance: Evidence from China. Journal of Cleaner Production. https://doi.org/10.1016/j.jclepro.2017.12.109

Cameron, K. S., & Quinn, R. E. (2006). Diagnosing and changing organizational culture. Revised edition. In Jossey-Bass (Vol. 16, Issue 1).

Canh, N. T., Liem, N. T., Thu, P. A., & Khuong, N. V. (2019). The impact of innovation on the firm performance and corporate social responsibility of Vietnamese manufacturing firms. Sustainability (Switzerland), 11(13). https://doi.org/10.3390/su11133666

Côrte-Real, N., Ruivo, P., & Oliveira, T. (2020). Leveraging internet of things and big data analytics initiatives in European and American firms: Is data quality a way to extract business value? Information and Management, 57(1), 103141. https://doi.org/10.1016/j.im.2019.01.003

Deloitte, & Nyenrode. (2016). Good Governance driving Corporate Performance? A meta-analysis of academic research & invitation to engage in the dialogue. Deloitte, December, 4–19. https://www2.deloitte.com/content/dam/Deloitte/nl/Documents/risk/deloitte-nl-risk-good-governance-driving-corporate- performance.pdf

Dwianika, A., & Murwaningsari, E. (2019). The Effect of Asean's Corporate Governance Scorecard and Company Culture on Profit Management with Ultimate Ownership as A Moderating Variable. Journal of Business, Economics and Law …, 18(5), 197–207. http://ijbel.com/wp-content/uploads/2019/06/ijbel5- VOL18_283.pdf

Dyck, B., Walker, K., & Caza, A. (2019). Antecedents of sustainable organizing : A look at the relationship between organizational culture and the triple bottom line. Journal of Cleaner Production, 231, 1235–1247. https://doi.org/10.1016/j.jclepro.2019.05.287

El Hilali, W., El Manouar, A., & Janati Idrissi, M. A. (2020). Reaching sustainability during a digital transformation: a PLS approach. International Journal of Innovation Science, 12(1), 52–79. https://doi.org/10.1108/IJIS-08-2019-0083

Esses, D., Csete, M. S., & Németh, B. (2021). Sustainability and digital transformation in the visegrad group of central european countries. Sustainability (Switzerland), 13(11). https://doi.org/10.3390/su13115833

Feroz, A. K., Zo, H., & Chiravuri, A. (2021). Digital transformation and environmental sustainability: A review and research agenda. Sustainability (Switzerland), 13(3), 1–20. https://doi.org/10.3390/su13031530

Fietz, B. (2021). Changing Organizational Culture to Establish • Sustainability. 32–40.

Forcadell, F. J., Aracil, E., & Úbeda, F. (2020). The Impact of Corporate Sustainability and Digitalization on International Banks' Performance. Global Policy, 11(S1), 18–27. https://doi.org/10.1111/1758-5899.12761

García-Granero, E. M., Piedra-Muñoz, L., & Galdeano-Gómez, E. (2018). Eco-innovation measurement: A review of firm performance indicators. Journal of Cleaner Production, 191, 304–317. https://doi.org/10.1016/j.jclepro.2018.04.215

Guo, L., & Xu, L. (2021). The effects of digital transformation on firm performance: evidence from China's manufacturing sector. Sustainability (Switzerland), 13(22), 1–18. https://doi.org/10.3390/su132212844

Hermundsdottir, F., & Aspelund, A. (2020). Sustainability innovations and firm competitiveness: A review. Journal of Cleaner Production, xxxx, 124715. https://doi.org/10.1016/j.jclepro.2020.124715

Hojnik, J., & Ruzzier, M. (2016). What drives eco-innovation? A review of an emerging literature. Environmental Innovation and Societal Transitions, 19, 31–41. https://doi.org/10.1016/j.eist.2015.09.006

Imran, M., Arshad, I., & Ismail, F. (2021). Green Organizational Culture and Organizational Performance: the Mediating Role of Green Innovation and Environmental Performance. Jurnal Pendidikan IPA Indonesia, 10(4), 515–530.https://doi.org/10.15294/jpii.v10i4.32386

Jiang, Q., Liu, Z., Liu, W., Li, T., Cong, W., Zhang, H., & Shi, J. (2018). A principal component analysis based three-dimensional sustainability assessment model to evaluate corporate sustainable performance. Journal of Cleaner Production, 187, 625–637. https://doi.org/10.1016/j.jclepro.2018.03.255

Junge, A. L., & Straube, F. (2020). Sustainable supply chains - Digital transformation technologies' impact on the social and environmental dimension. Procedia Manufacturing, 43, 736–742. https://doi.org/10.1016/j.promfg.2020.02.110

Jusoh, R., Yahya, Y., Zainuddin, S., & Asiaei, K. (2023). Translating sustainability strategies into performance: does sustainability performance management matter? Meditari Accountancy Research, 31(2), 258–293. https://doi.org/10.1108/MEDAR-02-2021-1203

Kantabutra, S., & Ketprapakorn, N. (2020). Toward a theory of corporate sustainability: A theoretical integration and exploration. Journal of Cleaner Production, 270, 122292. https://doi.org/10.1016/j.jclepro.2020.122292

Kneipp, J. M., Gomes, C. M., Bichueti, R. S., Frizzo, K., & Perlin, A. P. (2019a). Sustainable innovation practices and their relationship with the performance of industrial

companies. Revista de Gestao, 26(2), 94–111. https://doi.org/10.1108/REGE-01-2018-0005

Kneipp, J. M., Gomes, C. M., Bichueti, R. S., Frizzo, K., & Perlin, A. P. (2019b). Sustainable innovation practices and their relationship with the performance of industrial companies. Revista de Gestão, 26(2), 94–111. https://doi.org/10.1108/rege-01-2018-0005

Köhler, K., & Zerfass, A. (2019). Communicating the corporate strategy: An international benchmark study in the UK, the USA, and Germany. Journal of Communication Management, 23(4), 348–374. https://doi.org/10.1108/JCOM-10-2018-0106

Maletič, M., Maletič, D., Dahlgaard, J. J., Dahlgaard-Park, S. M., & Gomišček, B. (2016). Effect of sustainability-oriented innovation practices on the overall organisational performance: an empirical examination. Total Quality Management and Business Excellence,27(9–10), 1171–1190. https://doi.org/10.1080/14783363.2015.1064767

Nuttall, L. G. and R. (2020). The pivotal factors for effective external engagement. Mckinsey. https://www.mckinsey.com/capabilities/strategy-and-corporate- finance/our-insights/the-pivotal-factors-for-effective-external- engagement

Qiu, L., Jie, X., Wang, Y., & Zhao, M. (2020). Green product innovation, green dynamic capability, and competitive advantage: Evidence from Chinese manufacturing enterprises. Corporate Social Responsibility and Environmental Management. https://doi.org/10.1002/csr.1780

Rezaee, Z. (2016). Business sustainability research: A theoretical and integrated perspective. Journal of Accounting Literature, 36, 48– 64. https://doi.org/10.1016/j.acclit.2016.05.003

Ross, L., & Ph, D. (2014). Are ESG tilts consistent with value creation ?

July, 1–14.

Saunila, M., Ukko, J., & Rantala, T. (2018). Sustainability as a driver of green innovation investment and exploitation. Journal of Cleaner Production. https://doi.org/10.1016/j.jclepro.2017.11.211

Sedmak, J. (2021). What is Stakeholder Engagement, and Why is it Important for Strategic Planning? SMEStrategy. https://www.smestrategy.net/blog/stakeholder-engagement-management-for-strategic-planning#What-is

Shwairef, A. M., Abdulrahim, M. O., & Sukoharsono, E. G. (2021). Organizational Culture , Governance Structure and Sustainability Disclosure Quality : Evidence from Indonesia , Malaysia , Singapore , and Thailand ARTICLE Organizational Culture , Governance Structure and Sustainability Disclosure Quality : Evidence from. January. https://doi.org/10.15294/aaj.v10i2.45846

Solovida, G. T., & Latan, H. (2017). Linking environmental strategy to environmental performance: Mediation role of environmental management accounting. Sustainability Accounting, Management and Policy Journal, 8(5), 595–619.

https://doi.org/10.1108/SAMPJ-08-2016-0046

Steiber, A., & Alvarez, D. (2023). Culture and technology in digital and How transformations : how large companies could renew and change into ecosystem businesses. https://doi.org/10.1108/EJIM- 04-2023-0272

Teh, D., & Corbitt, B. (2015). Building sustainability strategy in business.

Journal of Business Strategy, 36(6), 39–46. https://doi.org/10.1108/JBS-08-2014-0099

Tjahjadi, B., Soewarno, N., Karima, T. El, & Sutarsa, A. A. P. (2023). Business strategy, spiritual capital and environmental sustainability performance: mediating role of environmental management process. Business Process Management Journal, 29(1), 77–99. https://doi.org/10.1108/BPMJ-11-2021-0718

Tjahjadi, B., Soewarno, N., & Mustikaningtiyas, F. (2021). Good corporate governance and corporate sustainability performance in Indonesia: A triple bottom line approach. Heliyon, 7(3), e06453. https://doi.org/10.1016/j.heliyon.2021.e06453

Truant, E., Broccardo, L., & Dana, L. P. (2021). Digitalisation boosts company performance: an overview of Italian listed companies. Technological Forecasting and Social Change, 173(August). https://doi.org/10.1016/j.techfore.2021.121173

Wahid ElKelish, W., & Kamal Hassan, M. (2014). Organizational culture and corporate risk disclosure: An empirical investigation for United Arab Emirates listed companies. International Journal of Commerce and Management, 24(4), 279–299. https://doi.org/10.1108/IJCoMA-06-2012-0035

Wardhani, R., & Rahadian, Y. (2021). Sustainability strategy of Indonesian and Malaysian palm oil industry: a qualitative analysis. Sustainability Accounting, Management and Policy Journal, 12(5), 1077–1107. https://doi.org/10.1108/SAMPJ-07-2020-0259

Wijethilake, C. (2017). Proactive sustainability strategy and corporate sustainability performance: The mediating effect of sustainability control systems. Journal of Environmental Management, 196, 569– 582. https://doi.org/10.1016/j.jenvman.2017.03.057

Yasir, M., Majid, A., & Qudratullah, H. (2020). Promoting environmental performance in manufacturing industry of developing countries through environmental orientation and green business strategies. Journal of Cleaner Production, 275, 123003.

https://doi.org/10.1016/j.jclepro.2020.123003