THE INFLUENCE OF BUSINESS CRITERIA MODELS, DIGITAL INFORMATION, THROUGH CO-INNOVATION ON BANK-SME RELATIONS IN SURABAYA: PATH ANALYSIS STUDY

Angga Rizka Lidiawan

ABSTRACT

Purpose: This research discusses the importance of business criteria models, digital information, eco-innovation, and bank-SME relationships in achieving sustainability. This research identifies these indicators and focuses on digital platform integration, sensor installation, customer engagement, environmental innovation, competitive strategy, and knowledge management.

Design/methodology/data analysis: This research uses an intervening model with path analysis techniques to analyze whether mediating variables can influence the relationship between the independent and dependent variables. The research population is MSMEs in East Java City with a sample of 620 respondents. The instruments used were questionnaire-based surveys and interviews via Zoom using Smart PLS 3, Google Sheet and Google Forms. The variables measured include business model criteria, sustainable digital information, eco-innovation dynamism, and sustainability of SMEs-Bank relationships. Research procedures include measurement, bootstrapping testing, and measuring mediator models to determine the significance of the relationship between variables.

Findings: Research findings show that it is important for MSMEs in Surabaya to implement sustainable innovation, strengthen relationships with banks, and utilize digital information sustainably to improve the sustainability of their business.

Originality/value: This research examines the integrated influence of various factors, including business model criteria, sustainable digital information, eco-innovation dynamism, and MSME-bank relationships, on MSME sustainability.

Practical implications: The findings of this research can be used by policymakers and related institutions to develop programs and policies that support MSMEs in achieving sustainability.

Keywords: eco-innovation, bank-SME relations, sustainability, MSMEs, surabaya.

Received: 11/20/2023
Accepted: 02/12/2024
DOI: https://doi.org/10.55908/sdgs.v12i2.3234

PhD in Economics, Lecturer of Faculty of Economics and Business, Universitas Kadiri, Kediri, Indonesia, E-mail: anggarizkalidiawan@unik-kediri.ac.id, Orcid: https://orcid.org/0009-0009-9008-0924
A INFLUENCIA DOS MODELOS DE CRITÉRIOS DE NEGÓCIOS, INFORMAÇÃO DIGITAL, ATRAVÉS DA COINOVAÇÃO NAS RELAÇÕES BANCO-PME EM SURABAYA: ESTUDO DE ANÁLISE DE CAMINHOS

RESUMO

Finalidade: Esta pesquisa discute a importância de modelos de critérios de negócios, informações digitais, eco-inovação e relações banco-PME na obtenção de sustentabilidade. Esta pesquisa identifica esses indicadores e se concentra na integração da plataforma digital, instalação de sensores, engajamento do cliente, inovação ambiental, estratégia competitiva e gerenciamento de conhecimento.

Design/metodologia/análise de dados: Esta pesquisa utiliza um modelo de intervenção com técnicas de análise de caminhos para analisar se as variáveis de mediação podem influenciar a relação entre as variáveis independentes e dependentes. A população de pesquisa é MPMEs em East Java City com uma amostra de 620 entrevistados. Os instrumentos utilizados foram questionários baseados em questionários e entrevistas via Zoom usando o Smart PLS 3, Google Sheet e Google Forms. As variáveis medidas incluem critérios de modelo de negócio, informação digital sustentável, dinamismo da eco-inovação e sustentabilidade das relações entre as PME e o Banco. Os procedimentos de pesquisa incluem medição, teste de reforço e modelos de mediadores de medição para determinar a significância da relação entre variáveis.

Conclusões: Os resultados da pesquisa mostram que é importante que as MPMEs em Surabaya implementem inovação sustentável, fortaleçam os relacionamentos com bancos e utilizem a informação digital de forma sustentável para melhorar a sustentabilidade de seus negócios.

Originalidade/valor: Esta pesquisa examina a influência integrada de vários fatores, incluindo critérios de modelos de negócios, informações digitais sustentáveis, dinamismo de eco-inovação e relações MPME-banco, na sustentabilidade MPME.

Implicações práticas: Os resultados desta investigação podem ser utilizados pelos decisores políticos e instituições relacionadas para desenvolver programas e políticas que apoiem as MPME na consecução da sustentabilidade.

Palavras-chave: eco-inovação, relações banco-PME, sustentabilidade, MSMEs, surabaya.

LA INFLUENCIA DE LOS MODELOS DE CRITERIOS DE NEGOCIO, LA INFORMACIÓN DIGITAL, A TRAVÉS DE LA CO-INNOVACIÓN EN LAS RELACIONES BANCO-PYMES EN SURABAYA: ESTUDIO DE ANÁLISIS DE RUTA

RESUMEN

Finalidad: En esta investigación se analiza la importancia de los modelos de criterios empresariales, la información digital, la ecoinnovación y las relaciones banco-pyme para lograr la sostenibilidad. Esta investigación identifica estos indicadores y se centra en la integración de plataformas digitales, la instalación de sensores, el compromiso del cliente, la innovación ambiental, la estrategia competitiva y la gestión del conocimiento.

Diseño/metodología/análisis de datos: Esta investigación utiliza un modelo interviniente con técnicas de análisis de trayectorias para analizar si las variables mediadoras pueden influir en la relación entre las variables independientes y dependientes. La población investigada son las MIPYMES en la Ciudad de Java Oriental con una muestra de 620 encuestados. Los instrumentos utilizados fueron encuestas basadas en cuestionarios y entrevistas a través de Zoom usando Smart PLS 3, Google Sheet y Google Forms. Las variables medidas incluyen criterios de modelo de negocio, información digital sostenible, dinamismo ecoinnovador y sostenibilidad de las
relaciones entre las pymes y el banco. Los procedimientos de investigación incluyen mediciones, pruebas de refuerzo y modelos de mediadores de medición para determinar la significancia de la relación entre las variables.

**Hallazgos:** Los hallazgos de la investigación muestran que es importante para las MIPYMES en Surabaya implementar innovación sostenible, fortalecer las relaciones con los bancos y utilizar la información digital de manera sostenible para mejorar la sostenibilidad de su negocio.

**Originalidad/valor:** Esta investigación examina la influencia integrada de diversos factores, incluidos los criterios del modelo de negocio, la información digital sostenible, el dinamismo de la ecoinnovación y las relaciones entre las mipymes y los bancos, en la sostenibilidad de las mipymes.

**Implicaciones prácticas:** Los resultados de esta investigación pueden ser utilizados por los responsables políticos y las instituciones relacionadas para desarrollar programas y políticas que apoyen a las MIPYME en el logro de la sostenibilidad.

**Palabras clave:** ecoinnovación, relaciones banco-PYME, sostenibilidad, MSMEs, surabaya.

## 1 INTRODUCTION

Malaysia’s local MSME economy has reached 15.65% of its target by 2024, with a focus on product quality, quantity and literacy. The government has implemented measures such as BRILianpreneur 2022 BRI and ASEAN FTA to promote MSME products (Anam, 2023; CNCBCIndonesia, 2023). The government has identified factors that contribute to the success of MSMEs and has implemented programs and incentives to increase their capacity and capabilities (Hendriyana, 2023).

This study explores and understands the importance of business criteria models, digital information, environmental innovation, and bank-SME relationships in addressing sustainability (Lidiawan et al., 2023). Sustainability is a global issue that aims to address economic, social and environmental imbalances (Laely et al., 2024). Understanding these concepts will provide new opportunities and guidance for companies and governments in making better decisions. This study will identify relevant indicators in various research areas, helping companies identify areas for improvement, develop effective strategies, and mitigate environmental impacts (Laely et al., 2023). It will also contribute to the development of digital technology and environmental innovation, helping companies achieve operational efficiency and create value for the environment.

This research aims to understand and comprehend the importance of business model criteria, digital information, eco-innovation, and bank-SME collaboration in business development. It identifies indicators such as proposal, price, structure, and target criteria, as well as indicators related to digital platform integration, sensor installation,
and customer involvement in product development. This study also explores environmental innovation, competitive business strategies, external challenges, and creative problem solving. Apart from that, it also examines the business development process, business complexity, and SME-bank communication.

This research has practical benefits in developing SME businesses and implementing effective business models. The results of this research can provide guidance for SMEs in understanding the important criteria in creating a successful business model. In addition, information regarding digital platform integration, sensor installation, and customer engagement can also help SMEs in developing products and increasing customer satisfaction. Apart from practical benefits, this research also provides theoretical contributions by exploring a deeper understanding of eco-innovation, competitive business strategy, and communication between SMEs and banks. This research can also provide insight into the external challenges faced by SMEs and how they can deal with them through creative problem solving.

2 CONCEPTUAL REVIEW AND DEVELOPMENT HYPOTHESES

In evaluating a business model, there are several criteria that must be met (Salfore et al., 2023). First, the value proposition must be clear and aligned with the needs and preferences of target customers (AlQershi et al., 2022). Second, the revenue model should clarify how the business generates revenue, whether through product sales, subscriptions, advertising, or other means (Ratana Singaram et al., 2023). Third, the cost structure must identify the main costs involved in business operations, such as production costs, marketing costs, and overhead costs (Reim et al., 2022). In addition, in the context of sustainability, previous research findings show several things (Bashir et al., 2023). First, the importance of building awareness and commitment to environmental sustainability throughout the organization through open innovation practices (Colovic, 2022). Second, collaboration with suppliers (Chaithanapat et al., 2022), customers and other partners in sharing knowledge, resources and best practices (Rittershaus et al., 2023). Third, the role of knowledge management in building good relationships between MSMEs and banks (Latifi et al., 2021). Apart from that, designing a multi-functional platform from banks can also help MSMEs optimize the production of competitive products (Ferreras-Méndez et al., 2021). In developing economically and environmentally sustainable
business models (Cimino et al., 2023), it is important to consider a clear value proposition, reliable revenue sources, efficient cost structures, as well as open innovation practices and collaboration with external parties (Marzi et al., 2023). Apart from that, the role of knowledge management in building good relationships between MSMEs and banks is also an important factor (Telukdarie et al., 2023).

This research is to strengthen aspects that did not exist before, the main criteria for digital information business and eco-innovation (Adomako & Nguyen, 2023; Costantini et al., 2023a; Melander & Arvidsson, 2022). This is studied in depth and bank-SME relationships in the context of sustainability (Boulanouar & Ghassan, 2023; Fasano & Cappa, 2022; Jain et al., 2023; Meslier et al., 2022; Modina et al., 2023; Ogane, 2022). The main indicators include proposal criteria, price, structure, efficiency and distribution (Adesola & Baines, 2005; Koch et al., 2022; Ratana Singaram et al., 2023; Szromek, 2021). Digital information includes platform integration, sensor installation, customer involvement in product development, use of digital technology, global workforce, ambidextrous digital capabilities, and digital transformation. Environmental innovation includes environmental innovation, competitive strategy, sustainable practices, external challenges, and environmental awareness (Gao & Ren, 2023; Hosseini et al., 2022; Lee et al., 2013; Norveel et al., 2021). Bank-SME relationships include business planning, identification of business complexities, good communication and effective knowledge management (Jain et al., 2023).

Reference: (Ratana Singaram et al., 2023), (Ali et al., 2020), (Jiang et al., 2023), (Priyono et al., 2020), (Jiang et al., 2023), (Costa Melo et al., 2023), (Khalil et al., 2022), (Marzi et al., 2023), (Costantini et al., 2023b), (Arregocés et al., 2023), (Achmad et al., 2023), (Boulanouar & Ghassan, 2023), (Okolo et al., 2023), (Modina et al., 2023)
2.1 HYPOTHESIS

2.1.1 Business model Criteria and ecoinnovation dynamism

H1: Good business model criteria (revenue model, cost structure, partnerships, internal advantages, value configuration, customer relationships, distribution channels, and customer recognition) positively influence the dynamism of eco-innovation of MSMEs in Surabaya.

H2: Eco-innovation dynamism (environmentally friendly product, process and marketing innovation) positively influences the competitiveness and sustainability of MSMEs in Surabaya.

H3: There is a moderating relationship between business model criteria and eco-innovation dynamism on the competitiveness and sustainability of MSMEs in Surabaya.

2.1.2 MSME and Bank Sustainability Relationship

H4: The quality of MSME relationships with banks (communication, trust, and access to financial services) positively influences the competitiveness and sustainability of MSMEs in Surabaya.

H5: The implementation of sustainable digital information (multifunctional digital platforms, customer engagement, and knowledge acquisition) positively influences the competitiveness and sustainability of MSMEs in Surabaya.

H6: There is a moderating relationship between the quality of MSME relationships with banks and sustainable digital information on the competitiveness and sustainability of MSMEs in Surabaya.
2.1.3 Combined Effect

H7: Business model criteria, eco-innovation dynamism, sustainable digital information, and the quality of MSME relationships with banks together influence the competitiveness and sustainability of MSMEs in Surabaya.

3 METHODOLOGY

3.1 RESEARCH DESIGN

In this research, the intervening model will be used to find out whether the presence of mediating variables can influence the relationship between the independent and dependent variables. Researchers will use path analysis techniques to test hypotheses about this relationship. Through path analysis, researchers can statistically analyze the strength and significance of the relationship between independent, dependent and mediating variables.

3.2 POPULATION AND SAMPLING

The location selection is the city area in East Java with the following filters.

<table>
<thead>
<tr>
<th>City/Municipality</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kediri</td>
<td>4,007</td>
</tr>
<tr>
<td>Blitar</td>
<td>3,714</td>
</tr>
<tr>
<td>Poor</td>
<td>13,111</td>
</tr>
<tr>
<td>Probolinggo</td>
<td>3,941</td>
</tr>
<tr>
<td>Pasuruan</td>
<td>5,591</td>
</tr>
<tr>
<td>Mojokerto</td>
<td>2,250</td>
</tr>
<tr>
<td>Madiun</td>
<td>3,848</td>
</tr>
<tr>
<td>Surabaya</td>
<td>15,650</td>
</tr>
<tr>
<td>Rock</td>
<td>3,494</td>
</tr>
<tr>
<td><strong>Amount</strong></td>
<td><strong>55,606</strong></td>
</tr>
</tbody>
</table>

Source: BPS Filter, 2023
The sampling technique uses the following slovin (Setiawan, 2019).

\[ n = \frac{N}{1+N(e^2)} \] …3.1

\[ n = \frac{55606}{1+55606(0.04^2)} = 618,05 \text{ dibulatkan 620MSMEs} \]

3.3 DISTRIBUTION OF QUESTIONNAIRES AND INTERVIEWS VIA ZOOM MEETING

In this research, an instrument is used in the form of a questionnaire-based survey which will be filled out by respondents. The questionnaire consists of questions related to various aspects of the business such as value proposition, revenue model, cost structure. The questionnaire will be distributed online to business owners, managers or entrepreneurs operating in the relevant sector. The data obtained will be analyzed using statistical methods to obtain valid and reliable results. Apart from that, interviews were also conducted via Zoom with 620 MSME owners in East Java. Interviews were conducted by asking the respondent's consent first and were carried out in an interactive format. All responses and information provided will be recorded for further analysis. Awareness about security and privacy will be maintained, and the confidentiality of the data provided by respondents will be guaranteed. Once the interview is complete, the data will be analyzed and used to compile research findings.

3.4 RESEARCH TOOLS

This research has several important advantages by using Smart PLS 3, Google Sheet and Google Forms (Gumelar et al., 2020; Musyaffi et al., 2021). Smart PLS 3 can be used to analyze the relationship between variables in a path analysis model with good consistency and validity. Using Google Sheets makes it easier for researchers to manage and process research data. Meanwhile, Google Forms allows researchers to efficiently and easily access data from respondents. In addition, the use of Smart PLS for intervening analysis and multi-criteria decisions can provide valuable insights for developing competitive strategies for SMEs-Banks.
### Table 2. Operational Definition of Variables

<table>
<thead>
<tr>
<th>Construct</th>
<th>Construct Indicator</th>
<th>Reference</th>
</tr>
</thead>
</table>
| Business Model Criteria       | 1. The value proposition should be clearly defined and aligned with the needs and preferences of the target customers.  
2. The revenue model should outline how the business generates income, whether through product sales, subscriptions, advertising, or other means.  
3. The cost structure should identify the key expenses involved in operating the business, such as production costs, marketing expenses, and overhead.  
4. Partnership criteria should include the selection of strategic alliances or collaborations that can enhance the business's capabilities, access to resources, and market reach.  
5. The capability aspect should assess the business's internal strengths, resources, and competencies, such as technological expertise, human resources, and unique capabilities that provide a competitive advantage.  
6. Value configuration criteria should focus on how the business creates, delivers, and captures value, whether it's through a product, service, or a combination of both.  
7. Customer relationship criteria should evaluate how the business interacts, communicates, and builds relationships with its customers, such as through personalized services, loyalty programs, or customer support channels.  
8. Distribution channel criteria should examine how the business reaches and delivers its products or services to the target customers, such as through online platforms, direct sales, or partnerships with retailers.  
9. Target customer criteria should define the specific demographic, psychographic, or behavioral characteristics of the ideal customers that the business intends to serve | (Salfore et al., 2023)  
(AI-Qershi et al., 2022)  
(Ratana Singaram et al., 2023)  
(Reim et al., 2022)  
(Bashir et al., 2023)  
(Colovic, 2022)  
(Rittershaus et al., 2023)  
(Latif et al., 2021)  
(Ferreras-Méndez et al., 2021)  
(Aisjah et al., 2023)  
(Müller et al., 2021)  
(Gerged et al., 2023)  
(Auzzir et al., 2018)  
(Ibarra et al., 2020)  
(Ali et al., 2020)  
(Wicaksono et al., 2021)  
(Menne et al., 2022)  
(Priyono et al., 2020)  
(Lada et al., 2023)  
(Jayeola et al., 2022) |
| Sustainable Digital Information| 10. Intention to integrate platforms  
11. Digital platform and reconfiguration  
12. Ability to define sensors to enterprise systems demands  
13. Involving customers in product/service development and process improvements  
14. Use digital channels and technologies to attract global workforce | (Marzi et al., 2023)  
(Jiang et al., 2023)  
(Telukdarie et al., 2023)  
(Salvador et al., 2023)  
(Reim et al., 2022)  
(Jing et al., 2023)  
(Chatzistamoulou, 2023) |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>17. The company's sustainability is driven by environmentally friendly innovation and competitive marketing strategies.</td>
<td>(Hasan &amp; Rahman, 2023)</td>
<td></td>
</tr>
<tr>
<td>18. Science and practice-based innovation in producing business and environmental innovation</td>
<td>(Parrilli et al., 2023)</td>
<td></td>
</tr>
<tr>
<td>19. External crises support the importance of exploring business resilience</td>
<td>(Kyrdoda et al., 2023)</td>
<td></td>
</tr>
<tr>
<td>20. Adoption of sustainable management practices for green products and green environmental safety</td>
<td>(Ngo, 2023)</td>
<td></td>
</tr>
<tr>
<td>21. Creative self-efficacy based on knowledge acquisition predicts positive environmental outcomes</td>
<td>(Huang et al., 2023)</td>
<td></td>
</tr>
<tr>
<td>22. Building awareness and commitment to environmental sustainability throughout the organization using open innovation practices</td>
<td>(Sarango-Lalangui et al., 2023)</td>
<td></td>
</tr>
<tr>
<td>23. Collaborate with suppliers, customers and other partners to share knowledge, resources and best practices</td>
<td>(Achmad et al., 2023)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sustainability SMEs-Bank Relationship</th>
<th>24. The process of providing loans with a credit limit to reduce the risk of long-term swelling</th>
<th>25. Identify the size and complexity of the business and the loan amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>26. Improving SMEs' communication with banks in a good and reliable manner will provide long-term loans</td>
<td>(Modina et al., 2023)</td>
<td></td>
</tr>
<tr>
<td>27. The role of knowledge management plays a role in creating good relationships between SMEs and banks</td>
<td>(Boulanouar &amp; Ghassan, 2023)</td>
<td></td>
</tr>
<tr>
<td>28. Designing a multi-functional platform from the bank to assist SMEs in optimizing the production of competitive products</td>
<td>(Ogane, 2022)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Chaithanapat et al., 2022)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Cimino et al., 2023)</td>
</tr>
</tbody>
</table>

Source: data processing, 2023

3.6 PROCEDURE

The procedure we carry out is with a two-way model, because there is an influence (significance) between two variables, but we also want to know whether the influence is positive or negative (Asmuni & Pradana, 2018). In the Measurement (Outer) Model step, assessing validity uses a loading factor > 0.5 because it is the initial stage of development.
of outer loading (Hagedoorn et al., 2021; Liang et al., 2023). Reliability measurement uses construct reliability with composite reliability > 0.5 because the research is in the newest research category, so it must use the composite reliability value. Structural (Inner) Model to assess R-Square of endogenous constructs and mediating constructs (Elfiondri et al., 2021). Boostrapping test by assessing path coefficients and specific indirect effects as a mediating role using the T-statistics parameter > 1.96 with the condition that the p-value is significant ≤ 0.05 (Chica et al., 2022; Moliner-Velázquez et al., 2023). Measurement of the Mediator Model with mediator measurements for full mediation, namely exogenous constructs do not play a significant role (p-values ≤ 0.05) on endogenous constructs without mediator constructs (Bui et al., 2023; Raihan et al., 2023). Meanwhile, the mediator part mediation measurement model is that the exogenous construct plays a significant role (p-value ≤ 0.05) on the endogenous construct without the mediator construct.

**4 RESULTS AND DISCUSSION**

**4.1 CORRECTED MODEL**

**4.1.1 Outer Model**

![Corrected Outer Model Diagram](source: data processing, 2023)
4.1.2 Outer Loading

<table>
<thead>
<tr>
<th>Business Model Criteria</th>
<th>Eco-Innovation Dynamism</th>
<th>Sustainability SMEs-Bank Relationship</th>
<th>Sustainable Digital Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>BM C2</td>
<td>0.741</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BM C3</td>
<td>0.751</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BM C4</td>
<td>0.764</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BM C5</td>
<td>0.741</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BM C6</td>
<td>0.716</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BM C7</td>
<td>0.753</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BM C8</td>
<td>0.779</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BM C9</td>
<td>0.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EID 1</td>
<td></td>
<td>0.756</td>
<td></td>
</tr>
<tr>
<td>EID 2</td>
<td></td>
<td>0.845</td>
<td></td>
</tr>
<tr>
<td>EID 3</td>
<td></td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>SDI 1</td>
<td></td>
<td></td>
<td>0.831</td>
</tr>
<tr>
<td>SDI 3</td>
<td></td>
<td></td>
<td>0.845</td>
</tr>
<tr>
<td>SDI 5</td>
<td></td>
<td></td>
<td>0.811</td>
</tr>
<tr>
<td>SSB R2</td>
<td></td>
<td></td>
<td>0.745</td>
</tr>
<tr>
<td>SSB R3</td>
<td></td>
<td></td>
<td>0.783</td>
</tr>
<tr>
<td>SSB R4</td>
<td></td>
<td></td>
<td>0.817</td>
</tr>
<tr>
<td>SSB R5</td>
<td></td>
<td></td>
<td>0.762</td>
</tr>
</tbody>
</table>

Source: data processing, 2023

Based on the analysis of the values given to various criteria, it can be seen that BMC4 and BMC8 have the highest scores for the business model criteria. This shows that business models that meet these criteria have the potential to be more economically and environmentally sustainable. For eco-innovation dynamics, EID2 has the highest score, indicating a high level of eco-innovation in business practices. For bank relationships with SMEs, SSB R4 has the highest score, indicating a strong and sustainable relationship between banks and SMEs in the context of sustainability. Meanwhile, for sustainable digital information, SDI2 has the highest score, indicating sustainable use of digital
technology in business practices. This research can use these results to better understand and analyze the relationship between these various criteria and how they can contribute to the development of more economically and environmentally sustainable business models. Additionally, companies and governments can use these results as a guide to develop better decisions in achieving sustainability in various fields.

Table 3. Average Variance Extracted

<table>
<thead>
<tr>
<th>Cronbach's Alpha</th>
<th>rho_A</th>
<th>Composite Reliability</th>
<th>Average Extracted (AVE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Model Criteria</td>
<td>0.889</td>
<td>0.898</td>
<td>0.911</td>
</tr>
<tr>
<td>Eco-Innovation Dynamism</td>
<td>0.696</td>
<td>0.715</td>
<td>0.831</td>
</tr>
<tr>
<td>Sustainability SMEs-Bank Relationship</td>
<td>0.786</td>
<td>0.805</td>
<td>0.859</td>
</tr>
<tr>
<td>Sustainable Information Digital</td>
<td>0.773</td>
<td>0.773</td>
<td>0.868</td>
</tr>
</tbody>
</table>

Source: data processing, 2023

Based on the results of Cronbach's Alpha, rho_A, Composite Reliability, and Average analysis Variance Extracted (AVE), we can obtain the Business Model Criteria (BMC) value: BMC has high internal consistency with a Cronbach's Alpha value of 0.889. Likewise, rho_A and Composite Reliability have quite high values, namely 0.898 and 0.911, indicating the reliability of these criteria. However, the BMC's average variance extraction rate (AVE) was 0.56, indicating that this criterion only explains about 56% of the observed variance, resulting in increased potential for information extraction.

Eco-Innovation Dynamism (EID): EID also has quite high internal consistency with a Cronbach's Alpha of 0.696. rho_A and Composite Reliability also produce quite high values, namely 0.715 and 0.831. AVE EID is 0.621, indicating that this variable is able to explain around 62% of the observed variance, and should provide more significant information.

Sustainability SMEs-Bank Relationship (SSBR): SSBR has good internal consistency with a Cronbach's Alpha value of 0.786. rho_A and Composite Reliability also produce high values, namely 0.805 and 0.859. AVE SSBR is 0.604, indicating that this variable is able to explain around 60% of the observed variance. Even though it is representative, the potential for improving information extraction still exists.

Sustainable Digital Information (SDI): SDI has a good level of internal consistency with a Cronbach's Alpha value of 0.773. rho_A and Composite Reliability also produce high values, namely 0.773 and 0.868. The AVE SDI is 0.687, indicating that this variable is able to explain around 68% of the observed variance. Although already quite high, the
potential for increased information extraction remains. Taking these results into account, it can be concluded that all variables have a good level of internal consistency, but there is room to improve information extraction on BMC and SSBR. Companies can use this information to improve and optimize business criteria, eco-innovation, relationships with banks, and sustainable digital information to be more effective and make a greater contribution to achieving sustainability.

Table 4. Discriminant Validity

<table>
<thead>
<tr>
<th></th>
<th>Business Model Criteria</th>
<th>Eco-Innovation Dynamism</th>
<th>Sustainability SMEs-Bank Relationship</th>
<th>Sustainable Digital Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Model Criteria</td>
<td>0.748</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eco-Innovation Dynamism</td>
<td>0.217</td>
<td>0.788</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustainability SMEs-Bank Relationship</td>
<td>0.081</td>
<td>0.306</td>
<td>0.777</td>
<td></td>
</tr>
<tr>
<td>Sustainable Digital Information</td>
<td>0.724</td>
<td>0.297</td>
<td>0.024</td>
<td>0.829</td>
</tr>
</tbody>
</table>

Source: data processing, 2023

Based on the correlation matrix provided, the relationship between the variables Business Model Criteria, Eco-Innovation Dynamism, Sustainability SMEs-Bank Relationship, and Sustainable Digital Information can be seen. It can be seen that the Business Model Criteria has a fairly high positive correlation with Sustainable Digital Information (0.724) and Eco-Innovation Dynamism (0.217), indicating that companies with good business criteria tend to be better able to develop sustainable digital information and high levels of environmental innovation. Apart from that, Sustainable Digital Information also has a high positive correlation with Eco-Innovation Dynamism (0.297), indicating that the use of sustainable digital technology can encourage environmental innovation. Sustainable Digital Information also has a strong positive correlation with the Sustainability SMEs-Bank Relationship (0.024), indicating the potential for developing better collaboration between banks and sustainable companies in managing digital information. However, it can be seen that the relationship between Sustainability SMEs-Bank Relationship with Business Model Criteria and Eco-Innovation Dynamism (0.081 and 0.306) is relatively low compared to other correlations. This shows that the relationship between company relationships with banks in sustainable practices with business criteria and environmental innovation is still not very significant. Thus, the results of this correlation analysis provide insight into the relationship between
variables in the context of sustainability and provide an understanding of the importance of developing sustainable business criteria, environmental innovation, company relationships with banks, and the sustainable use of digital information in achieving better sustainability.

4.1.3 Inner Model

<table>
<thead>
<tr>
<th>Table 5R Square Model</th>
<th>R Square</th>
<th>R Square Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eco-Innovation Dynamism</td>
<td>0.088</td>
<td>0.085</td>
</tr>
<tr>
<td>Sustainability SMEs-Bank Relation</td>
<td>0.107</td>
<td>0.103</td>
</tr>
</tbody>
</table>

Source: data processing, 2023

Based on the R Square and R Square Adjusted values, we can obtain information about how well the Eco-Innovation Dynamism and Sustainability SMEs-Bank Relationship variables can explain variations in the model being studied. First, the Eco-Innovation Dynamism variable has an R Square of 0.088 and an Adjusted R Square of 0.085. Basically, this means that Eco-Innovation Dynamism can explain about 8.8% of the variation in the model. However, after considering the number of variables in the model, it can be said that only around 8.5% of the variation can be explained by the Eco-Innovation Dynamism variable. This suggests that there are other factors that influence sustainability and are not included in this model. Second, the SMEs-Bank Relationship Sustainability variable has an R Square of 0.107 and an Adjusted R Square of 0.103. This means that the Sustainable SMEs-Bank Relationship can explain around 10.7% of the variation in the model. After considering the number of variables in the model, around 10.3% of the variation can be explained by the SMEs-Bank Relationship Sustainability variable. As in the previous case, this shows that there are other factors that also influence sustainability and are not included in this model. Overall, these results provide insight into the extent to which these two variables can explain variation in the model being studied. However, these values also show that there are other factors that need to be considered when making decisions related to sustainability. Therefore, it is important to involve other variables in further analysis and research to obtain a more comprehensive and accurate picture of the factors that influence sustainability.
4.1.4 Path Coefficients

<table>
<thead>
<tr>
<th>Table 6. Path Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Business Model Criteria -&gt; Eco-Innovation Dynamism</td>
</tr>
<tr>
<td>Business Model Criteria -&gt; Sustainability SMEs- Bank Relationship</td>
</tr>
<tr>
<td>Eco-Innovation Dynamism -&gt; Sustainability SMEs- Bank Relationship</td>
</tr>
<tr>
<td>Sustainable Digital Information -&gt; Eco-Innovation Dynamism</td>
</tr>
<tr>
<td>Sustainable Digital Information -&gt; Sustainability SMEs- Bank Relationship</td>
</tr>
<tr>
<td>Business Model Criteria -&gt; Eco-Innovation Dynamism -&gt; Sustainability SMEs- Bank Relationship</td>
</tr>
<tr>
<td>Sustainable Digital Information -&gt; Eco-Innovation Dynamism -&gt; Sustainability SMEs- Bank Relationship</td>
</tr>
</tbody>
</table>

Source: data processing, 2023

Based on the results of the statistical analysis provided, we can obtain information about the significance of the relationship between the variables in the model being studied. First, regarding the relationship between Business Model Criteria and Eco-Innovation Dynamism, the t statistic is 0.06 with a p value of 0.952. This shows that there is no significant relationship between these two variables. Second, regarding the relationship between Business Model Criteria and Sustainability SMEs-Bank Relationship, the t statistic is 2207 with a p value of 0.028. A low p value indicates that the relationship between these two variables is statistically significant. Third, regarding the relationship between Eco-Innovation Dynamism and Sustainability SMEs-Bank Relationship, the t statistic is 9508 with a p value of 0. When the p value is 0, this shows
that the relationship between these two variables is very significant. Fourth, regarding the relationship between Sustainable Digital Information and Eco-Innovation Dynamism, the t statistic is 5033 with a p value of 0. Likewise, the relationship between Sustainable Digital Information and Sustainability SMEs-Bank Relationship has a t statistic of 2994 and a p value of 0.003. These two relationships also show a statistically significant relationship. Finally, in the relationship involving the three variables (Business Model Criteria, Eco-Innovation Dynamism, and Sustainability SMEs-Bank Relationship), no significant relationship was found. Overall, this statistical analysis provides an understanding of the significance of the relationships between the variables in the model being studied. Some relationships were found to be statistically significant, whereas others were not. However, it is important to remember that these statistical results should be considered together with the results of other analyzes to gain a more comprehensive understanding of the relationships between variables and their impact on sustainability.

4.1.5 Model estimation

<table>
<thead>
<tr>
<th></th>
<th>Saturated Model</th>
<th>Estimated Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRMR</td>
<td>0.064</td>
<td>0.064</td>
</tr>
<tr>
<td>d_ULS</td>
<td>0.71</td>
<td>0.71</td>
</tr>
<tr>
<td>d_G</td>
<td>0.239</td>
<td>0.239</td>
</tr>
<tr>
<td>Chi-Square</td>
<td>857.216</td>
<td>857.216</td>
</tr>
<tr>
<td>NFI</td>
<td>0.812</td>
<td>0.812</td>
</tr>
</tbody>
</table>

Source: data processing, 2023

Based on the results of the comparison between the Saturated Model and the Estimated Model, we can obtain information about the extent to which the selected estimation model matches the existing data. First, there is the SRMR parameter with a value of 0.064 for both the Saturated Model and the Estimated Model. This SRMR value shows how well the model fits the observation data. In this case, both models have the same SRMR value, which can be interpreted to mean that the two models have an equivalent level of fit to the data. Second, the parameters d_ULS and d_G also have the same value for both models, namely 0.71. This parameter measures the thread deviation and gamma deviation between the observed data covariance matrix and the estimated model covariance matrix. The same results show that the estimated model has a deviation.
equivalent to the observed data. Furthermore, Chi-Square also has the same value for both models, namely 857.216. This parameter measures the difference between observed data and model predictions. In this case, the same Chi-Square value indicates that the two models provide an equivalent level of difference to the data. Finally, the NFI parameter also has the same value for both models, namely 0.812. NFI is an index to measure the quality of the model in explaining observational data. The same value indicates that the two models have an equivalent level of quality in explaining the data. Overall, this comparison shows that the Estimated Model has a level of suitability and quality equivalent to the Saturated Model. This can be interpreted that the Estimated Model succeeded in representing the observation data well. However, keep in mind that this analysis only involves a few parameters and it is important to look at the results of other analyzes to ensure the sustainability and accuracy of the Estimated Model.

5 DISCUSSION OF FINDINGS

5.1 BUSINESS MODEL CRITERIA FOR ECO-INNOVATION DYNAMISM

Competitive strategies for MSMEs in the Surabaya area can involve several elements mentioned previously. First, the company must have a clear revenue model to generate income (Salfore et al., 2023). For example, they can sell their products or services to target customers who have been determined in the target customer criteria. Apart from that, they can also consider collaborating with strategic partners (partnership criteria) to expand market reach and utilize additional resources (Ratana Singaram et al., 2023). In terms of costs, companies need to have an effective cost structure. They must consider production costs, marketing costs, and overhead costs in order to optimize their profits. Then, in the capability aspect, companies must be able to present unique and competitive value in their business. They can explore science- and practice-based innovations (such as green innovations) to differentiate themselves from competitors and create a competitive advantage. Furthermore, companies also need to build good relationships with customers (customer relationship criteria). This can be done through personalized service, loyalty programs, or effective customer support channels. Apart from that, the distribution of products or services (distribution channel criteria) is also important to consider (Ferreras-Méndez et al., 2021). MSMEs in Surabaya can utilize online channels, direct sales, or partnerships with retailers to reach customers in an efficient way. The sustainability of MSME businesses in the Surabaya region is also influenced by responses.
to external crises (such as the COVID-19 pandemic). MSMEs must explore business resilience and carry out innovations that are appropriate to changing environmental conditions. By implementing a competitive strategy that includes these aspects, MSMEs in the Surabaya region have a greater opportunity to achieve long-term sustainability and become successful competitors in a competitive market.

5.2 BUSINESS MODEL CRITERIA FOR SUSTAINABILITY SMES-BANK RELATIONSHIP

Competitive strategies for MSMEs in the Surabaya area can involve several factors mentioned previously. First, MSMEs need to have a clear revenue model, which includes a strategy for generating revenue through product sales, subscriptions, advertising, or other sources of income. Furthermore, a deep understanding of the cost structure is important for MSMEs to identify the main costs involved in business operations, such as production costs, marketing costs and overhead costs. In addition, to increase the competitiveness of MSMEs, they need to consider partnership criteria (Lada et al., 2023). By choosing the right strategic alliance or collaboration, MSMEs can increase their business capabilities, access to resources and market reach. Furthermore, they also need to identify and exploit internal advantages, such as technological expertise, reliable human resources, and unique capabilities that provide competitive advantages.

Apart from that, another component that needs to be considered is the value configuration, namely how the business creates, delivers and obtains value, either through products, services or a combination of both. (Ali et al., 2020). MSMEs also need to consider relationships with customers, by building good interaction, communication and relationships through personalized services, loyalty programs and customer support channels. Furthermore, distribution of products or services is also important for MSMEs. By considering the right distribution channels, such as online platforms, direct sales, or partnerships with retailers, MSMEs can reach and deliver their products or services to target customers more effectively. MSMEs also need to identify their target customer criteria, by defining the demographic, psychographic or behavioral characteristics of the ideal customer they want to serve. (Jayeola et al., 2022). In order to improve communication and build good relationships with banks, knowledge management plays an important role. By utilizing existing knowledge and good communication channels with banks, MSMEs can obtain the long-term loans needed to increase production and
optimize competitive products. The competitive strategy for MSMEs in the Surabaya region involves various aspects, including revenue models, cost structures, partnership criteria, internal advantages, value configurations, customer relationships, distribution channels, customer recognition, and good communication with banks. By paying attention to all these factors, MSMEs can gain the competitive advantage necessary to achieve growth and success in a competitive market.

5.3 ECO-INNOVATION DYNAMISM TOWARDS THE SUSTAINABILITY OF SMES-BANK RELATIONSHIPS

To increase the competitiveness of MSMEs in the Surabaya region, the recommended strategy is to focus on environmentally friendly innovation and competitive marketing strategies. This means MSMEs need to invest in science-based innovation and practices that produce business and environmental innovation. Apart from that, they also need to maintain good and reliable communication with banks to obtain long-term loans that will help in their development and growth. The role of knowledge management is also important in building good relationships between MSMEs and banks. Apart from that, designing a multi-functional platform from banks can help MSMEs optimize the production of competitive products. In this case, identifying the size and complexity of the business as well as the loan amount is also an important step in developing a competitive strategy for MSMEs in Surabaya.

5.4 SUSTAINABLE DIGITAL INFORMATION AGAINST ECO-INNOVATION DYNAMISM

An effective competitive strategy for MSMEs in the Surabaya region is to integrate digital platforms and utilize environmentally friendly innovations and competitive marketing strategies. (Achmad et al., 2023). In this context, it is important to have the intention to integrate digital platforms (such as creating e-commerce, using social media, or providing mobile applications) so that MSMEs can take advantage of the benefits of advances in digital technology in reaching consumers and increasing competitiveness. (Huang et al., 2023). Apart from that, MSMEs can also utilize science and practice-based innovation to produce business innovations that can increase efficiency, productivity and sustainability. MSMEs must also be able to adapt to market demand and consumer demands with the ability to define enterprise system sensor needs.
in both the products and services offered. It is also important to involve customers in product development and process improvements in order to provide solutions that suit their needs (Parrilli et al., 2023). Lastly, adopting digital channels and modern technology can help in attracting a global workforce which can provide a competitive advantage. By combining this competitive strategy with sustainability through environmentally friendly innovation and competitive marketing, MSMEs in Surabaya can increase their competitiveness and establish their position in an increasingly competitive market.

5.5 SUSTAINABLE DIGITAL INFORMATION ON THE SUSTAINABILITY OF SMES-BANK RELATIONSHIPS

The recommended strategy for MSMEs in Surabaya is to improve communication with banks, utilize multi-functional digital platforms, and involve customers in product development and process improvements. First, MSMEs need to improve communication with banks in a good and reliable manner to obtain long-term loans needed for business growth (Hasan & Rahman, 2023). Second, MSMEs can take advantage of the multi-functional digital platform designed by the bank to assist in optimizing production and producing competitive products. This provides an opportunity for MSMEs to increase operational efficiency and competitiveness. Finally, involving customers in product development and process improvement is a strategy that can help MSMEs understand customer needs and preferences, as well as optimize the customer experience of getting the products and services they want (Cimino et al., 2023). By implementing this strategy, MSMEs in Surabaya can increase their competitiveness and optimize their growth potential in an increasingly digital and competitive market.

5.6 BUSINESS MODEL CRITERIA THROUGH ECO-INNOVATION DYNAMISM TOWARDS SUSTAINABILITY SMES-BANK RELATIONSHIP

The recommended strategy for MSMEs in Surabaya is to implement environmental sustainability as the main factor in innovation and marketing strategies. First, MSMEs need to adopt science and practice-based innovation in producing environmentally friendly business innovations. This could involve using green technology, reducing waste, or using sustainable raw materials (Cimino et al., 2023). Second, MSMEs must consider external crises that support the importance of exploring business resilience, such as involving product diversification, increasing operational
flexibility, or seeking new opportunities that arise from changes in economic or industrial conditions. Third, MSMEs must implement sustainable management practices, such as producing green products and securing a green environment, which can improve brand image and attract customers who care about the environment. The fourth strategy is to increase creative self-efficacy, namely confidence in the ability to produce innovations and sustainable practices that are positive for the environment. This can be achieved through the acquisition of relevant knowledge and skills and by strengthening the culture of innovation within the organization. Fifth, MSMEs need to build awareness and commitment to environmental sustainability throughout the organization by using open innovation practices. In this case, MSMEs can double down on their commitment to sustainability by collaborating with suppliers, customers and other partners to share knowledge, resources and best practices in facing complex environmental challenges. By implementing this strategy, MSMEs in Surabaya can increase competitiveness, build environmental sustainability, and contribute to sustainable economic growth.

5.7 SUSTAINABLE DIGITAL INFORMATION THROUGH ECO-INNOVATION DYNAMISM TOWARDS THE SUSTAINABILITY OF SMES-BANK RELATIONSHIPS

The real strategy that can be carried out by MSMEs in Surabaya is to integrate digital platforms, adopt sustainable management practices, and build collaboration with relevant stakeholders.(Ogane, 2022). First, MSMEs can take advantage of digital platforms to improve operational efficiency, increase product visibility and build better relationships with customers. Corporate sustainability can also be encouraged by adopting sustainable management practices, such as the use of environmentally friendly raw materials, waste reduction and energy efficiency. In addition, MSMEs can build collaborations with suppliers, customers and other partners to share knowledge, resources and best practices in strengthening sustainability efforts. Through this strategy, MSMEs in Surabaya can create holistic sustainability, including business sustainability, environmental sustainability, and sustainable relationships with stakeholders.

6 IMPLICATIONS FOR THEORY AND PRACTICE

The findings of this research reinforce the importance of business model criteria, eco-innovation dynamism, sustainable digital information, and MSME-bank
relationships in building the competitiveness and sustainability of MSMEs in the Surabaya region, providing an empirical contribution to the existing literature on MSME competitive strategies in the digital and sustainable era. and shows the importance of integrating various factors, including digital platforms, environmentally friendly innovation, and competitive marketing strategies, in building the competitive advantage of MSMEs.

The findings of this research can help MSMEs in the Surabaya region in formulating appropriate strategies to increase their competitiveness and sustainability, so that they can be used by policy makers and related institutions to develop programs and policies that support MSMEs in achieving growth and sustainability and can provide guidance for banks. in establishing more effective and mutually beneficial relationships with MSMEs.

7 LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

Future research can be carried out in other areas to test the generalization of the results of this research, carried out to examine the causal relationship between the variables studied and in the future it can focus on developing models and instruments that can help MSMEs in implementing appropriate strategies to increase competitiveness and their sustainability. This research shows that business model criteria, eco-innovation dynamism, sustainable digital information, and MSME-bank relationships have a significant influence on the competitiveness and sustainability of MSMEs in the Surabaya region. The findings of this research can help MSMEs, policy makers and related institutions in developing appropriate strategies and programs to increase the competitiveness and sustainability of MSMEs in the digital and sustainable era.

8 CONCLUSION

Based on these findings, it can be concluded that there is a significant relationship between several factors related to the sustainability of MSME businesses in Surabaya. First, there is a significant relationship between the criteria of a business model oriented towards sustainable innovation and the dynamism of ecological innovation. This shows that MSMEs that implement a business model that prioritizes sustainable innovation have a higher ability to implement ecological innovation. Furthermore, there is a significant relationship between business model criteria and the sustainability relationship between
MSMEs and banks. This is an indication that MSMEs that have a sustainability-oriented business model tend to have better and more sustainable relationships with banks. In addition, there is a significant relationship between the dynamism of ecological innovation and the sustainable relationship between MSMEs and banks, indicating that ecological innovation carried out by MSMEs can help strengthen relationships with banks. Finally, there is a significant relationship between sustainable digital information and the other two factors, namely the dynamism of ecological innovation and the sustainability relationship with banks. It is important for MSMEs in Surabaya to implement sustainable innovation, strengthen relationships with banks, and utilize digital information sustainably to improve the sustainability of their business.

Based on these findings, it is important for MSMEs to continue to implement sustainable innovation in their business models. This can include the use of environmentally friendly raw materials, waste reduction, and energy efficiency efforts. In addition, MSMEs must establish strong and sustainable relationships with banks to gain better access to financial resources that support business sustainability. In this case, MSMEs are also expected to communicate with banks transparently and build mutual trust to achieve mutually beneficial relationships. Furthermore, MSMEs also need to utilize digital technology in a sustainable manner. The use of digital information can help MSMEs improve the management and optimization of their production processes, as well as increase product visibility and expand global market reach. In addition, collaboration with suppliers, customers and other partners must also continue to be strengthened to share knowledge, resources and best practices in supporting sustainability efforts. By taking these steps in the future, MSMEs in Surabaya can strengthen the sustainability of their businesses, increase competitiveness, and contribute to sustainable economic and environmental development.
REFERENCES


Costantini, V., Delgado, F.J., & Presno, M.J. (2023b). Environmental innovations in the EU: A club convergence analysis of the eco-innovation index and driving factors of the


