

ANALYSIS OF DIGITALIZATION AND INNOVATION READINESS AND ITS IMPACT ON UMKM BUSINESS SUSTAINABILITY (STUDY ON UMKM FOOD AND BEVERAGE SECTOR)

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Abstract

This research is motivated by the MSMEs importance role of in the economy, but they are faced with business sustainability issues. This is indicated by a decrease in the level of profit, product safety and health, employment issues, inefficiency in the use of clean water fuels and pollution issues. This problem can be overcome by digitizing and innovating MSMEs, but to implement this, MSMEs are constrained by high costs, small business scales and readiness to implement digitalization and innovation. So this study aims to analyze the effect of digitalization and innovation readiness on business sustainability. This research was conducted with a quantitative approach with an explanatory survey method which is a causal study. The population in this study were MSME entrepreneurs in West Java which were divided into 5 MSME work areas. With proportional sampling techniques in 4 work areas, a sample of 298 MSMEs was obtained. Data collection was carried out by distributing questionnaires and interviews. The data that has been obtained is processed with descriptive statistics and verification using SEM PLS. The results of this study state that micro and medium MSMEs have lower business sustainability than medium-scale ones. Micro and small MSMEs are not ready to implement digitalization and innovation. On a medium scale, MSMEs are ready to implement digitalization and innovation at the incremental stage. The results of this study state that readiness for digitalization and innovation has an impact on business sustainability.

Keywords: Business sustainability, digitalization readiness, innovation, MSMEs

INTRODUCTION

Micro, small, and medium enterprises (MSMEs) play a pivotal role in Indonesia's economy, both structurally and socially (Sulaeman & Kurniawati, 2021). According to recent data, they account for 99% of all business units and contribute around 61% to the national GDP, which is equivalent to IDR 9.58 quadrillion. MSMEs in the food and beverage sector have a very important strategic role in the Indonesian economy. Based on various literature and recent studies, here are some of its main roles, namely driving local economic growth MSMEs are often community-based and using local raw materials, thereby strengthening the regional economy and creating a sustainable supply chain. The role of MSMEs is to create jobs, product innovation and culinary diversification, food security and business independence and export and culinary tourism opportunities. However, MSMEs often face problems in business sustainability, namely the problem of fluctuations in raw material prices, fierce competition, lack of financial literacy, limited access to capital, lack of technological adaptation, environmental impact and production waste, changes in production preferences, regulation and standardization, and resilience to crises. (Elghamry, 2023). Efforts that can be made to improve business sustainability are the Adoption of Circular Economy Principles, digital transformation and

innovation, strengthening dynamic capabilities, Financial Literacy and Access to Capital, (Wibowo). Digitalization can increase the profits of food and beverage MSMEs.

Digital transformation contributes significantly to the resilience of MSMEs, especially in the face of crises such as the COVID-19 pandemic. Factors such as collaboration, innovation capabilities, government policies, and paradoxical leadership are key elements in supporting the resilience of MSMEs (Lestari & Choirunnisa, 2025). This study shows that the use of digital technology, such as e-commerce, helps MSMEs in maintaining the sustainability of their business by increasing market access and operational efficiency (Jauhari et al., 2022). The benefits of digitalization are 1) Expanding the Market and Consumer Reach With digital platforms such as e-commerce and social media, MSMEs can reach more customers, even outside the city or country. This opens up opportunities to increase sales and profits. 2) Operational Efficiency and Cost Reduction Digital technologies such as stock management applications, automated ordering, and digital payment systems can reduce operational costs and increase efficiency in business processes. 3) Increasing Customer Loyalty Through digitalization, MSMEs can use data-driven marketing strategies, such as loyalty programs, promotions based on customer preferences, and more personalized interactions with consumers through chatbots or email marketing. 4) Transparency and Consumer Trust Customers are increasingly concerned about the origin of ingredients and the safety of food products. With digitalization, MSMEs can provide more transparent information about their products, increase trust, and encourage more purchases. 5) Product Innovation and Market Trend Adaptation, technology allows MSMEs to follow market trends and preferences faster. Customer data analysis can help understand consumption patterns, so that MSMEs can innovate according to market demand. 6) Price and Profit Optimization Through the analysis of sales data, MSMEs can determine the optimal price strategy based on market demand and competition. This helps to increase profit margins without sacrificing competitiveness.

The benefits of digitalization can be in the form of improving product safety and health, reducing labor problems, and improving environmentally friendly behavior Digitalization can improve product safety and health through. 1) Supply Chain Tracking and Transparency, with technologies such as blockchain and digital-based supply chain management systems, MSMEs can track the origin of raw materials, production processes, and product distribution. This helps ensure that the materials used are safe and in accordance with Health standards. 2) The implementation of Food Safety Standards Digitalization allows MSMEs to more easily follow food safety standards through applications and platforms that provide automatic guidance, training, and quality monitoring. 3) Production Management and Hygiene System Digital technologies such as IoT sensors can be used to monitor the conditions of the production environment, including temperature,

humidity, and cleanliness of food processing sites. This helps reduce the risk of contamination and maintain product quality. 4) Ease of Product Testing and Certification The online platform allows MSMEs to access product testing and certification services more easily, ensuring that products meet health and safety standards before they are marketed. 5) Clear Marketing and Product Information Through digitalization, MSMEs can provide more transparent information to consumers about ingredients, production processes, and product health benefits through social media, e-commerce, or special applications.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

Several opinions put forward the concepts of business sustainability. Among them, the concept of business sustainability is emphasized as (1) The purpose and process, (2) The scope, (3) Long-term value creation efforts. The concept of business sustainability which emphasizes goals and processes, was developed by Dyllick and Muff (2016), stating “a process by which firms manage their financial, social and environmental risks, obligations and opportunities” (Sulaeman & Kurniawati, 2021). The concept of business sustainability, which emphasizes its scope, was developed by (Chen et al., 2024; Sulaeman & Kurniawati, 2021). Based on perspective sustainability problems, research on business sustainability is divided into two, namely, a holistic approach and a conventional approach. A holistic approach balances the economic, social and environmental dimensions, such as the triple bottom line theory approach and the hybrid business model (Hassan et al., 2024), while the conventional approach uses a managerial approach and other supporting infrastructure (Sulaeman & Kurniawati, 2021). One type of infrastructure that supports business sustainability is the use of technology and innovation strategies. Therefore, it is necessary to know *the level of digitalization and innovation readiness in MSMEs*. Digitalization readiness is the extent to which an organization is prepared to succeed in a digital transformation initiative, based on its technological resources, business processes, management capability, human capability, and corporate culture. (Michelotto & Joia, 2024). *Innovation is the creation of value by using relevant knowledge and resources for conversion of an idea into a new product, process, or practice, or improvements in an existing product, process, or practice.*” This definition emphasizes value creation and the transformation of ideas into tangible outcomes that improve or revolutionize existing system (Varadarajan, 2018). Digitalization also reduces employment problems through. 1) Automation of Production and Management Processes with technologies such as digital ordering systems and automated stock management, MSMEs can reduce manual workloads, increase productivity, and optimize their existing workforce. Increased Access to HR Training and Development, Digitalization allows MSME workers to access online training, improve their skills in business management, digital marketing, and product

innovation. 3) Flexible and Remote Work Opportunities Digital technologies open up opportunities for workers to work flexibly, such as in online marketing, digital-based customer service, and remote operational management. 4) Improving Efficiency in Recruitment and HR Management MSMEs can use digital platforms to recruit workers faster and more efficiently, as well as implement a technology-based HR management system to increase productivity. Market Expansion and Increased Revenue With digitalization. 5) MSMEs can reach a wider market through e-commerce and digital marketing, thereby increasing revenue and creating more job opportunities.

Eco-friendly behavior can improve environmentally friendly behavior, through Resource Use Efficiency so as to reduce waste and resource consumption, Better Waste Management, with more effective monitoring, the application of green technology, Increased Consumer Awareness, and supply chain optimization. Eco-design in products – Designing products from the beginning with environmental aspects in mind, such as the use of recyclable or biodegradable materials. Implementation of Circular Economy – Using a circular economy system, where products can be recycled or reused, thereby reducing production waste. Digitalization of MSMEs can also increase MSME profits by developing new products, improving quality and differentiation – Innovations in the production process and raw materials can improve product quality, making it more attractive to consumers. New Product Development, MSMEs can create unique product variants and in accordance with market trends, such as healthy food or based on local ingredients. Quality Improvement and Differentiation – Innovation in production processes and raw materials can improve product quality, making it more attractive to consumers.

For MSMEs, innovation can improve product safety through the development of environmentally friendly packaging. The readiness of digitalization and innovation of MSMEs is based on the theory of natural resource based value. This theory posits that firms can achieve sustainable competitive advantage by leveraging natural resources through innovative practices. SMEs that adopt sustainability innovations can better meet market demands for eco-friendly product. In addition, the theory used is resource based review, this perspective emphasizes the importance of internal resources, such as R&D and patents, in driving innovation. SMEs that invest in these areas tend to experience improved economic and social performance, contributing to overall sustainability.

Theory imply in this research was Natural Resource-Based View (NRBV) and Knowledge-Based View (KBV) theories, highlighting that sustainability innovation enhances entrepreneurial success in SMEs by addressing environmental concerns, thus promoting business sustainability through eco-conscious product and service development (Krara et al., 2025). Bases on thossem the research hypothesis was

H1: Digitalization readiness and Innovativeness effected on Business Sustainability

Sustainability innovation practices in SMEs, highlighting product innovation through eco-friendly materials and process innovation via local sourcing and community empowerment. Innovation capabilities significantly enhance MSMEs performance and sustainability. It emphasizes the resource-based view (RBV) to understand internal and external factors influencing innovation in small firms (innovation capabilities and sustainability in MSMEs. An analysis of empirical studies (Sunil). Resource-based view (RBV) and Schumpeter’s innovation theories, revealing that R&D and patents positively impact sustainable performance in SMEs, enhancing social and environmental outcomes while improving economic performance through innovation practices aligned with sustainable development goals. Based on this, the research hypothesis is that digitalization readiness and innovation have an effect on business sustainability. Based on this, the research questions of this research are 1) How is business sustainability, MSMEs' readiness to digitalize, and the level of innovation 2) Analyze the influence of digitalization readiness on MSMEs and innovation on business sustainability. Based on this, this study was conducted by conducting a survey of food and beverage MSME actors in West Java.

RESEARCH METHODS

The design of this study uses a quantitative approach with a survey method. The subject of this research is food and beverage MSME actors in Java Batar. The object of this research is business sustainability, digitalization readiness, and innovation in MSMEs. The population in this study is food and beverage MSMEs in West Java Province which was carried out for 3 months. The sample obtained was 278 food and beverage MSMEs in West Java. Data collection and instrument development techniques, carried out by distributing questionnaires. In this study, there are 3 variables used, namely business sustainability, as an independent variable, digitalization readiness, and innovation in MSMEs. Business sustainability is seen from 3 dimensions, namely economic sustainability, social sustainability and environmental sustainability. The readiness of MSME digitalization is shown by the readiness of technological infrastructure, digital literacy, data security, adoption of digital management systems, online presence, and human resource readiness, while MSME innovation is shown by the distribution of innovative Technology Use in Production and MSMEs, New Product Development and Differentiation, Product Certification and Standardization, Creative Marketing Strategies and Digitalization, Sustainability and Environmentally Friendly. The instruments used were questions graded 1-7. The criteria for dependent and independent variables use the following criteria:

Table 1. Variables Score and Categori					
No	Variabel	Categori			
		Very High	High	Middle	Low

Business sustainability	1.635 – 2.079	1189 – 1.634	744-1188	298-743	0-297
Digitalization					
Readiness					
Inovativeness					

The instruments distributed have been tested for validity and reliability using a second order confirmatory. The data that has been collected is then analyzed using descriptive and inferential statistics. Descriptive statistics are used to determine the centralized tendencies of the data, while inferential statistics are used to test the hypothesis of research conducted using Smart PLS. with Steps 1) Formulation of a theoretical model, which determines the construct variables and their indicators, determines the type of reflective or formative relationship and describes the structural/inner model and the measurement model/outer model. 2) Compiling instruments and data collection, by compiling data in exce csv format. 3) Initial data processing, by checking validity & reliability, re-checking codes and ensuring the readiness of data to be processed with Smart PLS. 4) Compile a model in SMART PLS software. 5) Evaluation of Measurement Model (Outer Model) by including convergent validity, discriminant validity and reliability tests. 6) Evaluation of Structural Model (Inner Model) consisting of R-Square (R^2), Q Square (Q^2) path coefficient value and path significance with bootstrapping.

RESULTS AND DISCUSSION

Descriptive Results of Business sustainability

Business sustainability refers to the ability of a company to run its operations in a sustainable manner by considering economic, social, and environmental aspects in a balanced manner. This concept is often associated with the *Triple Bottom Line* (TBL) approach which includes people, planet, and profit (Sulaeman & Kurniawati, 2021). Business sustainability is measured from 3 dimensions, namely economic sustainability (ES), social sustainability (SS) and environmental sustainability (VS). The results of the research on business sustainability are as follows:

Table 2. Descriptive Statistics Business Sustainability

Dimension	N	Minimum	Maximum	Mean	Category
ES	298	2.00	6.67	4.106	Middle
SS	298	2.75	6.75	4.263	Middle
VS	298	3.33	7.00	4.188	Middle
Valid N (listwise)	298				

Based on the results of the study, the dimensions of social sustainability are shown by wage justice, attention to occupational health and safety, participation in the community and producing safe goods. The second dimension of business sustainability is. Economic sustainability is relatively low

compared to other dimensions. This dimension is shown by the indicator of the ability to reduce costs, earn profits and meet market needs.

Descriptive Digitalisation Readiness

Digitalization readiness refers to the extent to which individuals, organizations, or institutions are ready to adopt and integrate digital technology in their business processes or services MSME digitalization readiness in this study is shown from 6 dimensions, namely 1) Information Technology 2) Digital literacy 3) data safety 4) Online existence 5) human resource management. The results of the research on digitalization readiness are as follows:

Table 3. Descriptive Statistics Digitalization Readiness

Dimension	N	Minimum	Maximum	Mean	Std. Deviation
Inf. Tekn	298	2.00	7.00	3.8473	Middle
Lit. dig	298	2.50	7.00	3.1023	Middle
Am. Data	298	2.50	7.00	2.4446	Low
Ad. Sist	298	2.50	7.00	2.6174	Low
K. Online	298	2.67	6.67	2.4272	Low
SDM	298	3.00	7.00	2.0688	Low
Valid N (listwise)	298				

Based on the results of the study, among the 6 dimensions used in this study, the dimension of information and technology readiness is the highest dimension of readiness, while the lowest is the readiness of human resources, and the readiness of online presence. The dimension of information and is shown by the relatively high use of the internet and computers. Meanwhile, the low readiness of human resources is shown by the lack of ability in digital marketing and analyzing data, and the readiness of online presence as seen from the leadership of websites, social media and market places.

Results of innovation

Innovation is the process of creating or introducing something new and useful, either in the form of an idea, product, method, or system, which aims to improve efficiency, effectiveness, or quality in various aspects of life innovation in MSMEs is shown by 5 indicators consisting of 1) technology distribution 2) new products 3) ownership of certification and standardization 4) marketing strategy and business sustainability. The results of the research on innovation in MSMEs are as follows:

Table 4. Descriptive Statistics Innovativeness

Dimension	N	Minimum	Maximum	Mean	Std. Deviation
Tech,\. Dist	298	1.50	7.00	3.3272	Middle
New Prod	298	3.50	7.00	5.2332	High
Sertf & Std	298	2.67	7.00	4.9075	High

Markg Strg	298	2.33	7.00	3.8926	Middle
Sustainability	298	2.67	8.00	3.6094	Middle
Valid N (listwise)	298				

Based on the results of the research, of the five indicators used, the dimension of innovation in producing new products and the ownership of certificates and standards is relatively higher compared to other dimensions. The high level of innovation in products makes it possible to increase competitive advantage through a strong market position (Detta et al., 2024; Purwanitasari et al., 2025).

Hypotetical Testing

In this study, the first static hypothesis in the study is:

H0: U1 = U1 means that digitalization and innovation readiness have no effect on business sustainability

H1: U1 ≠ U1 means that digitalization readiness and innovation have an effect on business sustainability

This hypothesis will be tested with the t test and the F test calculated with smart PLS. For the statistik hypothesis 2, the formulation of the statistik hypothesis is as follows:

Table 5. Path Coefficient

Path Coefisien	Original sampel	P value
Digital Readiness → Business Sustainability	0.098	0.000
Innovation → Business Sustainability	0.506	0.000

Based on this, both the null hypothesis is rejected, thus, digitalization readiness and innovations have an effect on business sustainability. The path diagram of the influence between variables can be seen in the following figure:

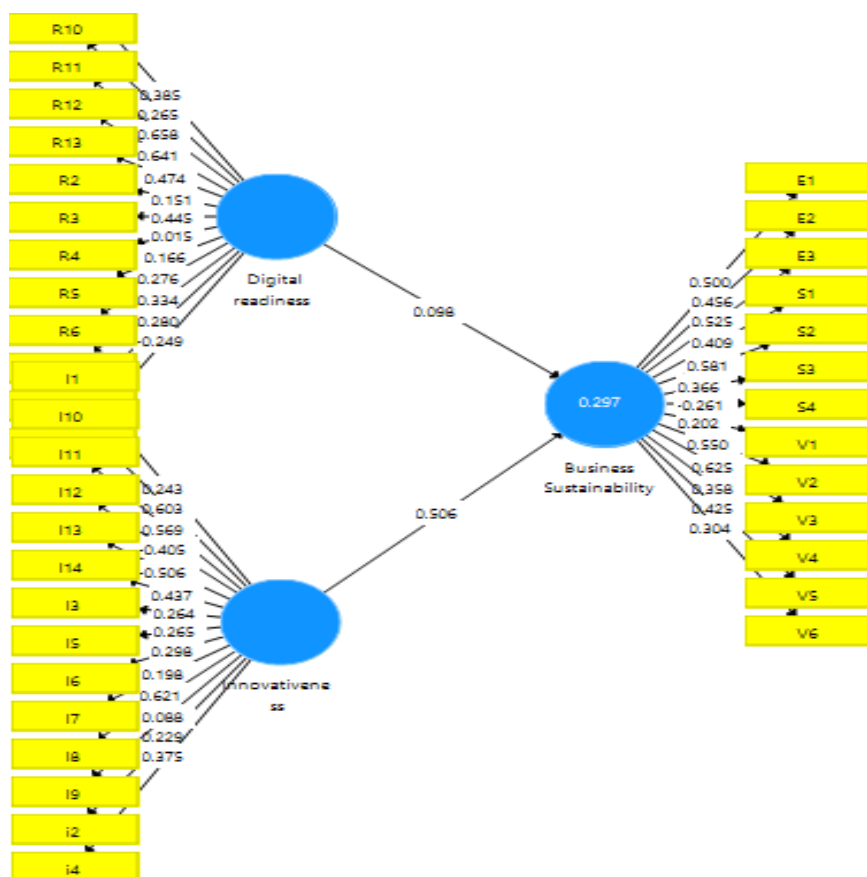


Figure 1. Path Analysis

Based on the results of the image above, the R2 obtained is 0.297, this shows that the simultaneous influence of digital readiness and innovativeness is 0.298. This means that 29.7% of business sustainability is influenced by digital readiness and innovation. Partially, digital readiness has a weak effect on business sustainability, and innovation has a moderate intensity effect on business sustainability. In this case, the influence of innovation on business sustainability is greater than the influence of digital readiness on business sustainability.

Discussion

Innovation significantly influences business sustainability by integrating environmental and social considerations into corporate strategies. This relationship fosters competitive advantages, enabling firms to create value while addressing stakeholder interests and environmental impacts. The following sections elaborate on key aspects of this influence. Innovation as driver of sustainable development essential for achieving sustainable development goals, combining economic growth with environmental stewardship (Sarajoti et al., 2016). The types of innovations that can affect business sustainability are innovating

products, services, and technology (Faisal et al., 2022). The innovations carried out focus on new processes and business models that improve social and environmental performance and provide long-term value (Sagar, 2024).

Innovation influences business sustainability by integrating technology and social philosophy, enabling firms to create value, tap into new markets, and address stakeholder interests while minimizing environmental impact, thus fostering competitive advantages and aligning with sustainable development goals. Innovation influences business sustainability by enhancing performance and reputation, contributing to economic, social, and environmental aspects. It fosters continuous improvement and adaptability, essential for long-term viability, as highlighted in the study's examination of service and technology innovations' significant impacts. (Kamiri et al., 2022; Tomar & Singh, 2024) Innovation influences business sustainability by enabling companies to adapt to environmental changes and stakeholder demands, fostering value co-creation. This dynamic approach, rooted in the Resource Base View, enhances competitive advantage and addresses resource limitations for product innovation. (Kneipp et al., 2019; Kamiri et al., 2022; Tomar & Singh, 2024). Innovation influences business sustainability by enabling organizations to develop new products, services, and processes that enhance environmental and social performance. This adaptability fosters competitiveness, reduces costs, and engages employees, ultimately promoting responsible business practices and a sustainable future. Alqam et al. (2024) Innovation influences business sustainability by fostering practices that align with the triple bottom line (TBL) and sustainability development theory (SDT), promoting environmental stewardship, social responsibility, and economic viability, ultimately driving progress while safeguarding the planet and its inhabitants. (Saxena et al., 2024; Tomar & Singh, 2024). Digitalization readiness significantly influences business sustainability by enhancing operational efficiency, fostering innovation, and aligning with environmental goals. The integration of digital technologies allows businesses to streamline processes, reduce waste, and respond to consumer demands for sustainable practices. This readiness is crucial for organizations aiming to adapt to the evolving market landscape while maintaining a commitment to sustainability. Companies adopting digital tools can minimize resource consumption and waste, contributing to environmental sustainability (Petković et al., 2024).

CONCLUSION

The results of this study state that the highest business sustainability of MSMEs is characterized by social sustainability performance in the form of fairness in wages, attention to occupational health and safety, participation in the community and producing safe goods. The highest digitalization readiness is seen from the information dimension and is shown by the relatively high use of the internet and computers. Meanwhile, the low readiness of human resources is shown by the inability to market digital and analyze data, and the readiness of online presence is seen from the ownership of websites, social media and market places. The dimension of innovation in producing new products and the ownership of certificates and standards is relatively higher compared to other dimensions. The research also states that digitalization readiness and innovation have an effect on business sustainability in a medium category. This research has implications for policies to improve the sustainability of MSME businesses, especially related to e-commerce digitalization and organizational innovation efforts in MSMEs. The limitation of this research is that it has not considered the degree of readiness and innovation that can focus on policy. For the next researcher, the results of the survey that have been carried out are compared with the standard standards of readiness and the degree of innovation.

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