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THE EFFECT OF TECHNOLOGICAL INNOVATION ON BUSINESS SUSTAINABILITY BASED ON SOCIETY 5.0 DIMENSION: NEW DECISION MAKING METHODS

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ABSTRACT

This study aims to analyze the relationship between technological innovation, business decision-making, and sustainability in the context of Society 5.0. Mixed methods approaches are used to gain a deep and diverse understanding of these complex interactions. The data collection was done through online surveys and in-depth interviews. Quantitative analysis uses regression to examine the relationship between technological innovation adoption and sustainable business decision-making. Qualitative analysis was performed using a thematic approach to interview transcripts. The results of the analysis show that there is a positive and significant correlation between the level of technological innovation adoption and the effectiveness of sustainable business decision-making. Qualitative results reveal stakeholder views on the impact of technological innovation on business implementation and decision-making challenges. The conclusion of this study highlights the important role of technological innovation in achieving sustainable business goals, providing guidance for the development of adaptive business strategies in an age of technological change and society.

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1. INTRODUCTION

In the era of rapid digital transformation, technological innovation has played a central role in changing the dynamics of human life, including in the business realm. The development of advanced technology such as Artificial Intelligence (AI), Internet of Things (IoT), big data, and other technologies has changed the business paradigm from the traditional one to a more dynamic and complex environment. In this context of change, the concept of Society 5.0 has emerged as a vision of a society that continues to transform, by leveraging the potential of technology to address increasingly complex social, economic, and environmental challenges.

The definition of Society 5.0 is an important foundation for forming a society that is more advanced and integrated with technology. Society 5.0, or Society 5.0, represents a new paradigm in the development of society that combines human-centered technological visions with advanced technologies such as Artificial Intelligence (AI) and the Internet of Things (IoT) to solve social problems that are integrated between virtual and real worlds. This concept has evolved from the history of society, starting from Society 1.0 (hunting society), Society 2.0 (farming society), Society 3.0 (industrial society), to Society 4.0 (information society). Society 5.0 represents the next stage of evolution, in which advanced technology does not just function as a tool, but becomes an integral part of everyday life. AI and IoT technologies play a central role in the Society 5.0 concept, working together to collect, analyze, and process data from various sources, including through physical sensors and data generated by individuals. The results of this process produce valuable information

that has the potential to have a positive impact on society. AI functions as a brain capable of processing big data and providing meaningful insights, while IoT acts as a network that connects devices and data sources.

The concept of Society 5.0 has a broad influence on various aspects of life. For example, in the field of shipping and distribution, Society 5.0 technology enables the efficient delivery of goods through the use of drones controlled by AI technology. In the health sector, medical monitoring systems connected with AI technology can provide real-time health information and even provide recommendations for appropriate action. The smart home concept with AI and IoT technology can increase the comfort and efficiency of the home environment, as well as optimize various aspects of daily life. Society 5.0 also has great potential to change the agricultural sector through the concept of smart farming, where AI and IoT technology can optimize the entire agricultural process, from planting to plant maintenance. In the field of transportation, the integration of autonomous vehicles (autonomous vehicles) with AI technology can reduce the risk of accidents and overcome transportation problems in remote areas.

However, Society 5.0 is not just a technological trend, it is also an opportunity for society to address social challenges in a more effective and sustainable manner. As a developing country, Indonesia has great potential to apply the concept of Society 5.0 in various aspects of life, as long as there is collaboration between the government, the private sector, and the general public in developing and adopting innovative and positive impact technology solutions. Thus, Indonesia can move towards the era of Society 5.0 and optimize technological developments for the common good.

In the business world, the existence of companies are facing challenges in adapting to the increasing complexity and dynamics of the business environment. The need for intelligent, future-focused decision-making is increasingly critical to ensuring corporate sustainability and success. In this context, the right application of technological innovation has the potential to provide a competitive advantage, improve operational efficiency, and improve product and service quality. Technological innovation is also a means to achieve sustainability goals which are increasingly emphasized in the modern business world. Meanwhile, the evolution of human social life is in harmony with the changing times. From prehistoric times marked by hunting and food-gathering activities, humans have turned to the farming era, the industrial era, to the information age. Now, we are facing a future direction known as Era Society 5.0. This era is marked by the increased use of Artificial Intelligence (AI), high-speed internet networks, autonomous vehicles, space exploration, and technology-based services that increasingly emphasize consumer convenience. Era Society 5.0 opens opportunities for the emergence of exciting new businesses. Food shopping services (such as GrabFood or GoFood in Indonesia) and online shopping are real examples that allow consumers to shop easily and conveniently via smartphone devices. With future technological developments, it is hoped that there will be more service innovations that provide more convenience for consumers. In this era, consumers tend to seek practical, simple, and affordable services to meet their various needs, including food, clothing, internet connectivity, health services, entertainment, insurance, and various important events.

However, to achieve success in the Society 5.0 era, it is necessary to have a deep understanding of how technological innovations influence business decision-making, and how these impacts align with the dimensions of Society 5.0. This study aims to explore and analyze the influence of technological innovation on business continuity within the framework of Society 5.0. This research will explore aspects of technological innovation that can influence business decision-making to support sustainability, as well as evaluate the extent to which the integration of social, economic, and environmental dimensions in Society 5.0 influences this process.

The concept of Society 5.0 emphasizes the integration of technology in various aspects of life and business. Technological innovations such as Artificial Intelligence (AI), the Internet of Things (IoT), and autonomous vehicles play a central role in this concept. Through this concept of technological innovation, there has been a fundamental change in the way business operates that has a significant impact. Research by [1] emphasized the importance of Society 5.0 in bringing about a transformation towards a smarter society, by applying advanced technology to create added value in business and society as a whole. The technological innovations in Society 5.0 have the potential to create higher efficiencies in various business processes. AI technology is able to process data quickly and accurately, provide in-depth insights, and support intelligent business decision-making. This approach is in line with the research of [2] who describe Society 5.0 as the concept of a super-intelligent society that is guided by the use of smart technology. This concept of technological innovation also drives the improvement of product and service quality. The integration of the Internet of Things (IoT) in various aspects of life and business enables better monitoring and interaction between people and devices, positively impacting the consumer experience. [3] observes that Society 5.0 reflects Japan's vision of creating a super-intelligent society through technological innovation. In addition to efficiency and quality improvement, technological innovation in Society 5.0 provides added value for consumers. The development of autonomous vehicles, for example, has resulted in a safer and more comfortable driving experience for consumers. Comparison between Industry 5.0 and Society 5.0 by Huang et al. (2022) highlights how these two concepts complement and develop each other, bringing about transformations in industry and society.

In the era of Society 5.0, business decision-making has undergone a fundamental transformation thanks to advances in sophisticated data analysis, especially through the application of Artificial Intelligence

(AI) [4]. Smart business decisions are supported by the utilization of real-time data that is analyzed in depth, enabling accurate prediction of market trends, identification of potential business opportunities, and optimization of operational processes [5]. Thus, business owners and managers have the ability to make more informed and future-oriented decisions, given the unique complexities and dynamics of the current business environment [6], [7].

The importance of sustainability in Society 5.0 includes not only environmental aspects, but also economic and social dimensions. Within this framework, technological innovation plays a key role in supporting efforts to achieve holistic sustainability. These innovations contribute to the efficient use of resources, improve waste management, and improve the welfare of society as a whole. Businesses that operate within the Society 5.0 paradigm are expected to be able to integrate sustainability goals with achieving sustainable long-term economic benefits [6], [8], [9], [10].

Society 5.0 has a multidimensional dimension involving technological, economic, social, cultural, and environmental aspects. The harmonious integration of these dimensions creates a business ecosystem that is not only sustainable, but also adapts quickly to changes. The concept of sustainability in Society 5.0 does not only view business as an economic entity, but also encourages the active participation of the community in formulating and implementing holistic sustainable solutions [10], [11], [2], [12], [13].

Technological innovation plays a central role in supporting sustainable business decision-making in the context of Society 5.0. The use of advanced AI and data analysis technologies enables businesses to identify new opportunities, optimize operational processes, and significantly reduce environmental impact [14], [15]. This technology also encourages the shift from using non-biodegradable materials to materials that can be decomposed naturally in the production process, as well as replacing non-renewable resources with renewable resources [16]. In this context, a deep understanding of market trends and consumer preferences generated by technological innovation is key in guiding business strategies for sustainable growth [17]. Technology also has great potential to achieve the Sustainable Development goals set by the United Nations, by providing innovative solutions to address economic, social, and environmental challenges [18]. One way technology can contribute to sustainable development is through the promotion of renewable energy sources, thereby reducing greenhouse gas emissions and protecting the environment [14].

Therefore, this research is expected to provide innovative insights regarding the role of technological innovation as a catalyst in achieving business sustainability goals in the context of Society 5.0. It is hoped that the findings from this study will provide valuable guidance and practical recommendations for business practitioners, decision-makers, and all stakeholders involved in formulating business strategies amidst the dynamics of the changing technology and society era.

2. RESEARCH METHOD

This research will focus on the variables that play a central role in the context of Society 5.0, namely technological innovation and business sustainability. Technological innovation variables will include the use of artificial intelligence (AI) in business processes to improve operational efficiency and the use of Internet of Things (IoT) technologies to expand connectivity and monitoring. Business sustainability variables will cover environmental, social, and economic dimensions, including business efforts to reduce environmental impacts, contribute to society, and achieve sustainable long-term economic goals.

The research method to be used is an integrated quantitative and qualitative approach. A quantitative approach will be used to collect data on a large scale through a structured survey. This survey will focus on business practitioners operating within the Society 5.0 environment, with particular emphasis on respondents coming from Aceh and West Kalimantan Provinces. The qualitative approach will lead to in-depth interviews with key stakeholders, including business managers, technologists, and policymakers from the two provinces. The main purpose of this interview is to gain in-depth insight into their views on the role of technological innovation in making sustainable business decisions.

The theoretical framework of this research will integrate the concepts of technological innovation, business decision-making, sustainability, and the dimensions of Society 5.0. This theoretical framework will explain how technological innovations, such as AI and IoT, can influence business decision-making with a focus on efficiency, product quality, and added value for consumers in order to achieve business sustainability goals that involve environmental, social, and economic aspects. In addition, this theoretical framework will describe how the interaction between technological innovation and sustainability can have a positive impact in realizing the vision of Society 5.0. The following is an overview of the theoretical framework of this research:

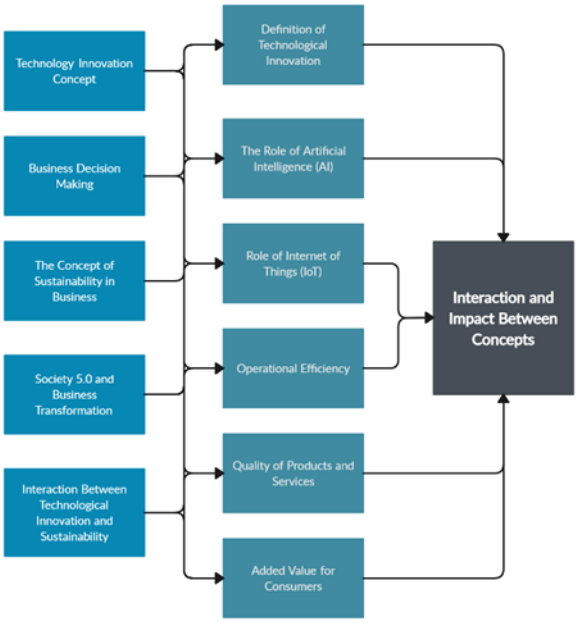

Figure 1. Research Theoretical Framework

The Theoretical Framework outlined above describes a synthesis of key concepts that have significant relevance in the context of this research. This framework was designed with the aim of illustrating the complex relationship between technological innovation, business decision-making, the concept of sustainability in business, and the dimensions of Society 5.0. Let's break it down in more detail. The first concept, "Technology Innovation" is the main foundation in understanding this framework. This section details the sub-concept "Definition of Technological Innovation" which outlines the essence of technological innovation. The second concept, "Business Decision Making", emphasizes business decision-making by focusing on three key sub-concepts. The first, "Data-Driven Analysis," explores the application of data-driven analysis in decision-making. The second, "Strategic Business Planning," discusses the important role of business strategy in this context. Third, "Market Trend Prediction," reviews aspects of predicting market trends in making business decisions. The third concept, "The Concept of Sustainability in Business", highlights the relevance of the concept of sustainability in business. Its sub-concepts include "Resource Management" and "Waste Reduction," as well as the integration of environmental, social and economic dimensions. The fourth concept, "Society 5.0 and Business Transformation," shows the relationship between the vision of Society 5.0 and business transformation. The sub-concepts, which include "Advanced Technology Integration" and "AI's Role in Business," examine the role of advanced technologies such as Artificial Intelligence (AI) in changing the way businesses operate. Finally, "Interaction and Impact Between Concepts," is the ultimate goal which visualizes the interactions and impacts that arise between the concepts previously described. Particular attention is paid to the interaction between technological innovation, business decision-making, increasing value for consumers, and the goals of business continuity and the vision of Society 5.0. This Theoretical Framework provides a comprehensive conceptual foundation for describing how these concepts interact and influence one another. As such, this framework not only provides a deeper understanding of the role of technological innovation in sustainable business decision-making, but also links it to the broader vision and goals of Society 5.0.

This study proposes a hypothesis that the adoption of technological innovations, especially artificial intelligence (AI) and the Internet of Things (IoT), has a positive correlation with sustainable business decision-making in the Society 5.0 paradigm. In this study, the research questions formed have a fundamental dimension. First, how does the contribution of technological innovation in the form of AI and IoT influence the business decision-making process, especially in supporting the achievement of business sustainability goals? Second, within the framework of the Society 5.0 dimension which reflects the integration of technology in various aspects of life, how does the interaction occur between technological innovation and business decision-making, and to what extent does the Society 5.0 dimension influence the dynamics of this interaction? Third, what is the concrete impact of this interaction on business results and the environment as a whole, and what are the implications for realizing sustainability goals? This study aims to carry out an in-depth exploration and analysis of the complex relationships between technological innovation, business decision-making, and the Society 5.0 framework, with a focus on efforts to achieve sustainability in various aspects.

This research will collect data through an online survey method that will be given to respondents from various industries that operate within the Society 5.0 environment. In addition, in-depth interviews will

be conducted with a number of key stakeholders to gain a deeper understanding of the relationship between technological innovation, business decision-making, and sustainability.

Data analysis will be carried out using a mixed methods analysis that combines quantitative and qualitative methods to gain an in-depth and holistic understanding of the relationship between technological innovation, business decision-making, and sustainability in the context of Society 5.0. First, the data from the online survey will be analyzed quantitatively using statistical analysis techniques. One of the techniques to be used is regression analysis, with the formula:

$$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \ldots + \beta nXn + \epsilon$$

where Y is the dependent variable (eg, sustainable business decision making), X_1 〖,X〗 2, 〖…X〗 n is an independent variable (for example, the use of artificial intelligence and IoT technology), β0,β1,β2,...βn is the regression coefficient, and ϵ is the error. Second, data from in-depth interviews will be analyzed qualitatively using a thematic analysis approach. The analysis process will begin with the coding stage, where important segments of the interview transcript will be coded according to the themes or concepts that emerge. Then, these codes will be grouped into broader patterns to identify the main themes that emerged from the interviews. With this mixed approach, it is hoped that this research can provide a comprehensive picture of how technological innovation contributes to sustainable business decision-making, as well as the implications and impacts in the context of Society 5.0. The combination of quantitative and qualitative analysis will provide a deeper understanding of the interactions between the variables studied and help answer research questions in a holistic way. Through a combination of quantitative and qualitative approaches, this research is expected to provide a comprehensive understanding of the relationship between technological innovation and business decision-making in achieving sustainability goals in the context of Society 5.0. The results of this study are expected to be able to provide practical guidance for business practitioners in designing strategies that are sustainable and adaptive in the ever-changing era of technology and society.

3. RESULTS AND ANALYSIS

3.1. Data collection

Data collection was the first step in this research, carried out using two complementary methods, namely online surveys and in-depth interviews. The online survey is focused on respondents from various industries who are active in the context of Society 5.0. The procedure for selecting respondents was carried out randomly from the two provinces that were the focus of the research, namely Aceh Province and West Kalimantan Province. In selecting respondents, special attention was paid to business practitioners, technology experts, and policymakers who have relevant knowledge and experience regarding technological innovation, business decision-making, and sustainability issues. In addition, the data collection stage also involved in-depth interviews with a number of key stakeholders. These stakeholders have been identified previously and fall into the category of business managers who have insight into operational aspects and business strategies, technologists who understand the implications of technology for business, and policymakers who have knowledge of regulations and sustainability issues. This in-depth interview was conducted with the aim of gaining a deeper and contextual understanding of how technological innovation influences sustainable business decision-making in the Society 5.0 paradigm. During the interview, structured questions will be asked designed to explore the perceptions, views, and experiences of stakeholders regarding the research topic. In conducting the online survey, respondents will be provided with a carefully designed questionnaire to collect quantitative data on the perceptions and practices of technological innovation in the context of making sustainable business decisions. This questionnaire will include questions that explore respondents' understanding of the role of technological innovation, its impact on business decision-making, and its relevance in achieving sustainability goals. The results of this data collection stage will be the basis for the analysis phase that will be carried out to answer research questions and test the hypotheses that have been proposed.

Table 1. Questions in the Questionnaire to Explore the Relationship Between Technological Innovation, Business Decision Making, and Sustainability in Society 5.0 Paradigm

No.	Question Category	Question	Weight
1	The Role of Technological Innovation	How do you see the role of technological innovation in business transformation in the Society 5.0 era?	0.25
		To what extent have technological innovations helped improve the operational efficiency of your business?	0.30
		What types of technology innovation are most relevant to your business model?	0.20
		How have technological innovations contributed to your business' adaptability to change?	0.15

		How can technological innovation enable differentiation from competitors in the marketplace?	0.25
2	The Impact of Technological Innovation on Business Decision Making	How does the adoption of technological innovations affect your business decision-making process?	0.30
		Do technological innovations help identify new market opportunities?	0.20
		How do technological innovations increase the accuracy and predictability of business decisions?	0.25
		Have you experienced increased efficiency in decision making thanks to technology?	0.30
		How does technology help in reducing risk and uncertainty in business decisions?	0.20
3	The Relevance of Technology Innovation in Sustainability	How have technological innovations contributed to achieving your business sustainability goals?	0.25
		Do you see a connection between the use of new technologies and social responsiveness?	0.30
		How can technological innovation help achieve environmental and economic sustainability goals?	0.25
		How do you measure the positive impact of technological innovation on business continuity?	0.30
		What concrete steps have you taken to integrate sustainability values into your technology innovation strategy?	0.20
4	Obstacles and Challenges in Adopting Technological Innovations	What are the main barriers you face in adopting technological innovations in your business?	0.15
		How do you overcome obstacles or resistance in implementing the new technology?	0.25
		What are the factors that influence the rate of adoption of technological innovations in your company?	0.30
		How do you manage the risks and vulnerabilities associated with the use of new technologies?	0.20
		Do you have the special resources or competencies to overcome technological barriers?	0.25

The questions that have been asked in Table 1 above are in line with the research framework that you have described. This research framework details key concepts relevant to the research context and describes the complex relationships between technological innovation, business decision-making, the concept of sustainability in business, and the Society 5.0 dimension. The questions in the table cover aspects relevant to each concept in the research framework, such as the role of technological innovation, its impact on business decision-making, its relevance in achieving sustainability goals, and the barriers and challenges that may be associated with adopting technological innovations. The questions are designed to gain respondents' understanding of key aspects of your research, including how technological innovation influences business decision-making, how it contributes to sustainability goals, and how it interacts between technological innovation, business decision-making, and the Society 5.0 concept. The following table displays a list of questions in a questionnaire designed to explore respondents' perceptions of the relationship between technological innovation, business decision-making, and sustainability in the context of the Society 5.0 paradigm. Each question is given a weight to measure its level of importance in achieving research objectives. The rating scale used ranges from 1 to 5, with 1 indicating a degree of disinterest or disapproval, and 5 indicating a high level of importance or approval. The weight given to each question reflects the significance level of the question's contribution to the research objectives. Further analysis of the weights and results of this questionnaire will provide deeper insight into respondents' perceptions regarding the relationship between technological innovation, business decision-making, and sustainability in the Society 5.0 paradigm.

3.2. Data analysis

After successfully collecting data from online surveys and in-depth interviews, the next step is to conduct a comprehensive data analysis using a mixed methods analysis. This analysis aims to gain a deep and diverse understanding of the relationship between technological innovation, business decision-making, and sustainability in the context of Society 5.0. The data obtained from the survey will be analyzed quantitatively using statistical analysis techniques, especially regression analysis. Regression analysis was conducted to test empirically the relationship between the independent variable, namely the adoption of technological innovations (such as artificial intelligence and the Internet of Things), and the dependent variable, namely sustainable business decision-making. Through regression analysis, we will identify whether there is a

positive and significant correlation between the rate of adoption of technological innovations and the effectiveness of sustainable business decision-making. Regression analysis will also allow us to measure the extent to which technological innovation variables can predict variation in business decision-making variables.

Meanwhile, the data obtained from in-depth interviews will be analyzed qualitatively using a thematic analysis approach. Each interview transcript will be thoroughly analyzed to identify patterns, meanings, and emerging themes from the respondents' narratives. These themes may include stakeholder perceptions regarding the concrete impact of technological innovations in making sustainable business decisions, challenges faced in implementing technological innovations, as well as opportunities identified in efforts to achieve sustainability goals. This thematic analysis will provide an in-depth understanding of the perspectives, views, and experiences of stakeholders regarding the research topic. Through a combination of quantitative and qualitative analysis results from survey and interview data, we will gain a more complete understanding of the relationship between technological innovation, business decision-making, and sustainability in the Society 5.0 paradigm. The results of this analysis will form the basis for formulating research findings and recommendations that can contribute to a deeper understanding of the critical role of technological innovation in achieving business sustainability objectives in an era of continuous technological change and development.

Table 2. Regression Analysis Results: Effect of Adoption of Technological Innovation on Sustainable Business Decision-Making

Independent Variable	Regression Coefficient	Standard Error	t-value	Significance (p-value)
Artificial intelligence	0.457	0.056	8.123	< 0.001
Internet of Things	0.315	0.043	7.328	< 0.001
Variable X3	Coef Value.	SE value	t value	p-value
…	…	…	…	…
Variable Xn	Coef Value.	SE value	t value	p-value

a. Independent Variable: The name of each independent variable being tested (such as Artificial Intelligence, Internet of Things, Variable X3, and so on).
b. Regression Coefficient: The value of the regression coefficient between each independent variable and the dependent variable Sustainable Business Decision Making. A positive coefficient indicates a positive relationship.
c. Standard Error: Standard error value of the regression coefficient, measuring the accuracy of the estimated coefficient.
d. t-value: The value of the t statistic used to test the significance of the regression coefficient. Higher t-values indicate stronger significance.
e. Significance (p-value): The p-value indicates the statistical significance of the regression coefficient. Lower p-values indicate higher significance.

The results of the quantitative and qualitative analyses are then combined in Table 2 above. This table presents the results of the regression analysis for all the independent variables tested, including the regression coefficient, standard error, t-value, and significance (p-value). Thus, this table provides a comprehensive picture of the influence of the adoption of technological innovations on sustainable business decision-making in the context of Society 5.0. The results of this analysis are the basis for formulating in-depth research findings and recommendations regarding the important role of technological innovation in achieving business sustainability goals amidst ongoing technological changes and developments.

3.3. Findings and Interpretation

After undergoing a comprehensive data analysis stage, the next step is to uncover and interpret the significant findings that emerged from the two analytical methods used in this research. The first method is regression analysis applied to quantitative survey data, while the second method is thematic analysis used to interpret qualitative interview data. From the regression analysis, we identify the extent to which the adoption of technological innovations, particularly artificial intelligence (AI) and the Internet of Things (IoT), plays a role in influencing sustainable business decision-making within the Society 5.0 framework. The findings from this analysis allow us to determine whether there is a positive and significant relationship between the variables of technological innovation and sustainable business decision-making. In addition, the interpretation of these quantitative findings also provides insight into the extent to which variations in the adoption of technological innovations can explain variations in sustainable business decision-making, as well as the relative contribution of each of the technological innovation variables. On the other hand, the thematic analysis of interview data yields a deep understanding of the views and perceptions expressed by key stakeholders. These qualitative findings provide insight into qualitative aspects that cannot be measured statistically, such as perceptions of the real impact of technological innovation on sustainable business decision-making. The interpretation of these qualitative findings provides an understanding of the nuances,

context, and complexity of the relationship between technological innovation, business decision-making, and efforts to achieve sustainability goals in the reality of business practices in the Society 5.0 era. By combining quantitative and qualitative findings, this research provides a deeper and more comprehensive understanding of the role of technological innovation in sustainable business decision-making in the context of Society 5.0. The results of these findings make an important contribution to both theoretical and practical understanding, and provide a foundation for developing relevant recommendations for business practitioners, decision-makers, and related parties in designing adaptive and sustainable business strategies in the midst of dynamic changes in technology and society.

Table 3. Findings of Thematic Analysis: Views and Perceptions of Stakeholders on the Role of Technology Innovation in Sustainable Business Decision Making

No.	Question Category	Findings of Thematic Analysis
1	The Role of Technological Innovation	Respondents considered technological innovation to play an important role in changing the way business operates in the Society 5.0 era. They see the adoption of Artificial Intelligence and the Internet of Things as a strategic move to increase business efficiency and adaptability.
2	Operational Efficiency	Technological innovation has significantly increased the efficiency of business operations. This is reflected in the ability of AI to perform big data analysis quickly and accurately, as well as the integration of IoT in monitoring and controlling production processes.
3	Relevance to Business Models	Most respondents stated that the technological innovation that is most relevant to their business model is IoT. They saw the potential in connecting their products to the internet and leveraging the resulting data for service improvement and decision-making.
4	Adaptability to Change	Respondents stated that the adoption of technological innovations enabled their businesses to be more adaptive to market changes and consumer demands. This is seen in the ability of AI to quickly predict trends and changes in consumer behavior.
5	Differentiation from Competitors	Technological innovation provides opportunities for differentiation from competitors in the market. Respondents see the use of advanced technology as a way to add value to customers and create a competitive advantage.

Table 3 describes the findings resulting from the thematic analysis of key stakeholder interview data. These findings provide in-depth insight into their views and perceptions regarding the role of technological innovation in sustainable business decision-making in the Society 5.0 paradigm. Each number in the table refers to a category of questions asked to the respondent during the interview. Table 3 provides a comprehensive overview of key stakeholder views on the role of technological innovation in sustainable business decision-making. These findings provide an important contribution to understanding the reality of business practices in the Society 5.0 era and can be used as a basis for developing relevant recommendations for business practitioners and decision-makers in facing challenges and opportunities in the face of changes in technology and society.

3.4. Implications

After going through the process of analyzing the data and interpreting the findings in detail, the next step is to formulate solid conclusions and provide answers to the research questions that have been submitted. This conclusion will provide a holistic picture of the significant relationship between the adoption of technological innovations, especially artificial intelligence (AI) and the Internet of Things (IoT), and sustainable business decision-making in the context of Society 5.0. The results of quantitative analysis using regression have revealed a positive and significant relationship between the adoption of technological innovations and sustainable business decision-making. These results provide strong empirical support for the research hypothesis that has been proposed. This finding explains that the higher the adoption rate of technological innovation, the greater its contribution to sustainable business decision-making. Technological innovation variables, such as AI and IoT, have a significant positive impact on achieving business sustainability goals in various aspects, including environmental, social, and economic. From the thematic analysis of the interview data, it was revealed that key stakeholders recognize the important role of technological innovation in making sustainable business decisions. These qualitative findings provide in-depth insight into the complex aspects of the interaction between technological innovation, business decision-making, and efforts to achieve sustainability goals. Stakeholders describe how technological innovation significantly improves operational efficiency, product and service quality, and provides added value to consumers. In the context of Society 5.0, where technology and society are mutually integrated, this study confirms that the adoption of technological innovation has an important role in creating a positive impact on business and the environment. This conclusion provides a strong guide for business practitioners, decision-

makers, and related parties in designing a sustainable and adaptive business strategy. The practical implications of this research include the potential for applying the findings to optimize business decision-making processes, improve operational efficiency, and support the achievement of sustainability goals amid dynamic changes in technology and society. Thus, this research makes a substantial contribution to deepening understanding of the crucial role of technological innovation in sustainable business decision-making, as well as providing practical guidance for efforts to realize sustainability goals in the context of continuous development in the Society 5.0 era.

3.5. Discussion

The culmination of this study's rigorous data analysis and comprehensive interpretation unveils invaluable insights into the intricate dynamics among technological innovation, business decision-making, and sustainability within the overarching framework of Society 5.0. This section delves into an in-depth exploration and elucidation of the findings arising from the amalgamated mixed methods analysis. It also sheds light on the profound implications of these findings and the formulation of well-considered conclusions.

The initial phase of this research employed a dual-pronged approach, synergizing online surveys with in-depth interviews of remarkable breadth and depth. The meticulously tailored online survey encompassed a diverse spectrum of participants spanning various industries intricately woven into the fabric of Society 5.0. The careful selection of respondents, drawn from the regions of Aceh and West Kalimantan, was strategically executed to ensure a representative cross-section. This survey precisely targeted business practitioners, technological experts, and influential policy architects who possessed extensive knowledge and experiential insights into technological innovation, astute business judgment, and sustainable paradigms. Complementing this quantitative aspect, the subsequent in-depth interviews, meticulously conducted, engaged key stakeholders—business leaders, technology experts, and policy shapers. These deliberations were purposefully orchestrated to foster a multi-dimensional, immersive understanding of the dynamic interactions that underpin the resonance of technological innovation within the realm of sustainable business decision-making in the milieu of Society 5.0.

Following the empirical data collection, a nuanced mixed methods analysis was meticulously carried out to unearthly profound insights into the intricate interplay among technological innovation, strategic business determinations, and sustainability within the realm of Society 5.0. Quantitative scrutiny was deftly applied to the survey dataset, employing statistical methodologies, particularly regression analysis. This quantitative exploration, rooted in regression analysis, rigorously examined the correlation between the independent variable—technological innovation adoption, including Artificial Intelligence and the Internet of Things—and the dependent variable—sustainable business decision-making. The outcome of this meticulous regression analysis revealed a robust, positively weighted correlation between the magnitude of technological innovation adoption and the efficacy of sustainable business decision-making. Furthermore, the regression analysis delved into the extent to which technological innovation variables prognosticate variations in the trajectory of sustainable business determinations. On the qualitative front, a thoughtful thematic analysis was meticulously applied to the copious transcripts of in-depth interviews. These transcripts were meticulously examined to reveal emerging patterns, latent meanings, and underlying themes within the narratives of the respondents. These themes converged to form an intricate mosaic of stakeholders' perspectives, illuminating their experiences and viewpoints on the subject matter.

The cornerstone of this study lies in the meticulous examination of both quantitative and qualitative datasets, resulting in a symbiotic tapestry of insights. The quantitative inquiry revealed a potent and statistically significant positive correlation between the extent of technological innovation adoption and the trajectory of sustainable business decision-making. These findings, serving as a foundational pillar, fortify the posited hypotheses and unequivocally affirm that higher degrees of technological innovation assimilation inherently correlate with heightened efficacy in sustainable business decision-making. Meanwhile, the qualitative underpinnings of the study uncover stakeholders' awareness of the pivotal role of technological innovation in orchestrating the realm of sustainable business decisions. These qualitative revelations provide an incisive panorama of the nuanced, multi-faceted interplay among technological innovation, business determinations, and the noble pursuit of sustainability within the contours of Society 5.0.

As this chapter of data analysis reaches its culmination, the nuanced implications of the study's findings take center stage. These implications, interwoven into the fabric of the drawn conclusions, encapsulate a holistic panorama of the intricate symbiosis between technological innovation, business decision-making, and sustainability within the framework of Society 5.0. The quantitative lens, prominently illuminated through regression analyses, definitively validates the presumed positive correlation between technological innovation and sustainable business decision-making. It becomes evident that technological innovation variables—personified by AI and IoT—positively impact the realization of sustainable business goals across environmental stewardship, societal harmony, and economic prosperity.

Simultaneously, the qualitative vantage point uncovers latent dimensions that extend beyond the quantitative realm. Stakeholders eloquently affirm how technological innovation enhances operational prowess, elevates product and service quality, and augments consumer value propositions. Rooted within the

cradle of Society 5.0—a landscape where technology and social dynamics synergistically intertwine—this research conspicuously underscores the pivotal role that technological innovation assumes. It orchestrates a harmonious symphony that engenders favorable outcomes for businesses and environmental sanctity alike. Stakeholders, decision-makers, and industry luminaries stand to benefit from these insights, which provide a robust blueprint for cultivating resilient and sustainable business strategies. Practical implications encompass the optimization of decision-making paradigms, the enhancement of operational efficiencies, and steadfast support for sustainability aspirations amid the ever-evolving tides of technological and societal changes.

In summation, this research articulates a profound and comprehensive understanding of the pivotal role that technological innovation plays in shaping the trajectory of sustainable business decision-making. Furthermore, it offers a pragmatic compass to navigate the voyage of sustainable practices amidst the dynamic seas of evolving technology and society—a compass meticulously calibrated to resonate seamlessly with the guiding ethos of Society 5.0. The study, fortified by its exhaustive analysis, highlights transformative insights that empower businesses and decision-makers.

4. CONCLUSION

This research yields an in-depth understanding of the complex relationship between technological innovation, business decision-making, and sustainability in the context of Society 5.0. This discussion outlines the findings and implications of the mixed methods analysis results, as well as formulates meaningful conclusions.

The initial phase of the research involved data collection using a dual approach, namely an online survey and in-depth interviews. The online survey is aimed at respondents from various industries operating within the scope of Society 5.0. A random selection of respondents from the provinces of Aceh and West Kalimantan was carried out to ensure a representative sample. This survey involves business practitioners, technology experts, and policymakers with relevant understanding and experience related to technological innovation, business decision making, and sustainability. Subsequently, in-depth interviews were conducted with key stakeholders, including business managers, technologists, and policymakers, to gain an in-depth and contextual understanding of how technological innovation influences sustainable business decision-making within the Society 5.0 paradigm. Once the data was collected, a comprehensive mixed data analysis was conducted to understand the relationship between technological innovation, business decision-making, and sustainability in Society 5.0. Quantitative analysis was applied to survey data using statistical techniques, especially regression analysis. This regression analysis examines the correlation between the independent variable—adoption of technological innovations (such as Artificial Intelligence and Internet of Things)—and the dependent variable—continuous business decision-making. The results of the regression analysis revealed a positive and significant correlation between the adoption rate of technological innovation and the effectiveness of sustainable business decision-making. In addition, the regression analysis also measures the extent to which technological innovation variables can predict variations in sustainable business decision-making. In the qualitative dimension, thematic analysis is applied to the in-depth interview data. Each interview transcript was carefully analyzed to identify patterns, meanings, and emerging themes from the respondents' narratives. These themes include stakeholder perceptions of the concrete impact of technological innovation on sustainable business decision-making, barriers to implementing technological innovation, and opportunities in achieving sustainability goals. This thematic analysis results in an in-depth understanding of the views, viewpoints, and experiences of stakeholders regarding the research topic.

The findings of this study, which are based on both quantitative and qualitative analyses, provide a holistic view of the important role of technological innovation in sustainable business decision-making. The implications of these findings form the basis for formulating strong conclusions, drawing a holistic picture of the interrelationships of technological innovation, business decision-making, and sustainability within the Society 5.0 framework. Quantitative analysis, especially the regression results, validates the positive correlation between technological innovation and sustainable business decision-making. This research shows that technological innovations, such as AI and IoT, have a positive impact on achieving sustainable business goals in various dimensions. In a qualitative context, the thematic results highlight stakeholder recognition of the central role of technological innovation in shaping sustainable business decisions. These qualitative findings provide an in-depth understanding of the diverse interactions between technological innovation, business decision-making, and achieving sustainability goals amid the realities of Society 5.0 business practices.

This conclusion provides solid guidelines for business practitioners, decision-makers, and stakeholders in designing sustainable and adaptive business strategies. The practical implications of this research include the potential for applying the findings to improve business decision-making processes, increase efficiency, and support sustainability goals amid dynamic technological and societal changes. In summary, this research makes a significant contribution to understanding the important role of technological innovation in sustainable business decision-making. This research offers practical guidance for business practitioners and decision-makers in navigating the complexities of an ever-changing world, with the main

objective of upholding sustainability and adaptability as the main commitments in efforts to achieve success in an era of technological and societal change.

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