A STRATEGIC FRAMEWORK FOR SUSTAINABLE BUSINESS MODEL OF RENEWABLE ENERGY SERVICES

Prahara Lukito Effendi 1
Budisantoso Wirjodirdjo 2
Sitta Izza Rosdaniah 3

ABSTRACT

Purpose: The main objective of this research is to investigate the ongoing scientific investigations into sustainable business models framework in the energy sector, with a particular focus on the shift towards renewable energy sources. This entails comprehending how firms may adjust to and propel the transition towards sustainability in accordance with the Sustainable Development Goals (SDGs).

Theoretical Framework: The theoretical foundation of this study is anchored in the concept of the triple bottom line, which emphasizes the need for businesses to focus on three key areas: economic, social, and environmental dimensions. This approach is essential for achieving sustainable development, as it ensures that business models are designed to contribute positively to society and the environment, in addition to being economically viable.

Methodology: A comparative literature review serves as the methodology for this research. This method involves systematically analyzing existing literature on sustainable business models in the energy sector to identify trends, gaps, and theoretical underpinnings. The comparative aspect allows for the evaluation of different approaches and the identification of best practices and areas for future research.

Findings: The research identifies that while there is a growing trend towards the adoption of renewable energy sources, significant challenges remain. These include technological limitations, regulatory barriers, and financial constraints. However, by refining the business model canvas to incorporate elements of sustainability, businesses can create adaptable frameworks that address these challenges. This revised canvas includes components that emphasize economic viability, socio-cultural values, and ecological integrity.

Research & Practical Implications: The conceptualization of a sustainable business model canvas is a key practical implication of this research. It offers businesses a clear and systematic way to integrate sustainable practices into their operations. This tool is designed to promote holistic sustainable development and informed decision-making by incorporating economic, socio-cultural, and ecological values into the business planning process. By doing so, it has the potential to facilitate the transition towards more sustainable business practices in the energy sector and beyond, thereby contributing to the achievement of the SDGs.

Originality: The originality of this study is grounded in its comprehensive approach to integrating sustainability into business models, its adaptation of existing frameworks to better suit sustainable development goals, and its forward-looking perspective that seeks to guide future research and practical applications in the energy sector and beyond.

Keywords: Sustainable Business Model, Renewable Energy, Triple Bottom Line, Sustainable Development.

1 Sepuluh Nopember Institute of Technology, Surabaya, Indonesia. E-mail: praharaeffendi@gmail.com
Orcid: https://orcid.org/0009-0007-5121-7129

2 Sepuluh Nopember Institute of Technology, Surabaya, Indonesia. E-mail: budisantoso.wirjodirdjo@gmail.com
Orcid: https://orcid.org/0000-0002-9463-1393

3 Sepuluh Nopember Institute of Technology, Surabaya, Indonesia. E-mail: srosdaniah@gmail.com
Orcid: https://orcid.org/0009-0004-6232-6548
A Strategic Framework for Sustainable Business Model of Renewable Energy Services

UM QUADRO ESTRATÉGICO PARA O MODELO EMPRESARIAL SUSTENTÁVEL DE SERVIÇOS DE ENERGIAS RENOVÁVEIS

RESUMO

Objetivo: O principal objetivo desta investigação é investigar as investigações científicas em curso sobre o quadro de modelos empresariais sustentáveis no setor da energia, com particular incidência na transição para fontes de energia renováveis. Tal implica compreender como as empresas podem adaptar-se e impulsionar a transição para a sustentabilidade, em conformidade com os Objetivos de Desenvolvimento Sustentável (ODS).

Estrutura teórica: A base teórica deste estudo está ancorada no conceito da linha de fundo tripla, que enfatiza a necessidade de as empresas se concentrarem em três áreas-chave: econômica, social e ambiental. Esta abordagem é essencial para alcançar o desenvolvimento sustentável, uma vez que garante que os modelos empresariais são concebidos para contribuir de forma positiva para a sociedade e o ambiente, além de serem economicamente viáveis.

Metodologia: Uma revisão de literatura comparada serve como a metodologia para esta pesquisa. Este método envolve analisar sistematicamente a literatura existente sobre modelos de negócios sustentáveis no setor de energia para identificar tendências, lacunas e fundamentos teóricos. O aspecto comparativo permite a avaliação de diferentes abordagens e a identificação de melhores práticas e áreas para futura pesquisa.

Conclusões: A pesquisa identifica que, embora haja uma tendência crescente para a adoção de fontes de energia renovável, permanecem desafios significativos. Isso inclui limitações tecnológicas, barreiras normativas e restrições financeiras. No entanto, ao refinar a tela do modelo de negócios para incorporar elementos de sustentabilidade, as empresas podem criar estruturas adaptáveis que abordem esses desafios. Esta tela revisada inclui componentes que enfatizam a viabilidade econômica, valores socioculturais e integridade ecológica.

Pesquisa & Implicações Práticas: A conceitualização de uma tela de modelo de negócios sustentável é uma implacação prática fundamental desta pesquisa. Ela oferece às empresas uma maneira clara e sistemática de integrar práticas sustentáveis em suas operações. Esta ferramenta é projetada para promover o desenvolvimento sustentável holístico e tomada de decisão informada, incorporando valores econômicos, socioculturais e ecológicos no processo de planejamento de negócios. Ao fazê-lo, tem potencial para facilitar a transição para práticas empresariais mais sustentáveis no setor da energia e não só, contribuindo assim para a consecução dos ODS.

Originalidade: A originalidade deste estudo é baseada em sua abordagem abrangente para integrar a sustentabilidade em modelos de negócios, sua adaptação dos quadros existentes para melhor se adequar aos objetivos de desenvolvimento sustentável e sua perspectiva de futuro que busca orientar futuras pesquisas e aplicações práticas no setor de energia e além.

Palavras-chave: Modelo de Negócio Sustentável, Energia Renovável, Triplo Lucro, Desenvolvimento Sustentável.
energético para identificar tendencias, brechas y fundamentos teóricos. El aspecto comparativo permite la evaluación de diferentes enfoques y la identificación de las mejores prácticas y áreas para futuras investigaciones. Hallazgos: La investigación identifica que si bien existe una tendencia creciente hacia la adopción de fuentes de energía renovables, persisten desafíos significativos. Estos incluyen limitaciones tecnológicas, barreras regulatorias y restricciones financieras. Sin embargo, al perfeccionar el lienzo del modelo de negocio para incorporar elementos de sostenibilidad, las empresas pueden crear marcos adaptables que aborden estos desafíos. Este lienzo revisado incluye componentes que enfatizan la viabilidad económica, los valores socioculturales y la integridad ecológica.

Investigación e implicaciones prácticas: La conceptualización de un modelo de negocio sostenible en el lienzo es una implicación práctica clave de esta investigación. Ofrece a las empresas una forma clara y sistemática de integrar prácticas sostenibles en sus operaciones. Esta herramienta está diseñada para promover el desarrollo sostenible holístico y la toma de decisiones informadas mediante la incorporación de valores económicos, socioculturales y ecológicos en el proceso de planificación empresarial. Al hacerlo, tiene el potencial de facilitar la transición hacia prácticas comerciales más sostenibles en el sector de la energía y más allá, contribuyendo así al logro de los ODS.

Originalidad: La originalidad de este estudio se basa en su enfoque integral para integrar la sostenibilidad en los modelos de negocio, su adaptación de los marcos existentes para adaptarse mejor a los objetivos de desarrollo sostenible, y su perspectiva prospectiva que busca guiar la investigación futura y las aplicaciones prácticas en el sector de la energía y más allá.

Palabras clave: Modelo de Negocio Sostenible, Energía Renovable, Triple Balance, Desarrollo Sostenible.

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1 INTRODUCTION

Sustainable business models, or models for doing business in a way that is good for the environment and society as a whole, have caught the attention of many people (Bocken et al, 2014). Attention to issue continuity has been summarized by the United Nations (UN) in the Sustainable Development Goals (SDGs) and made as a call to the international community to end poverty, safeguard the planet, and ensure that everyone can enjoy peace and prosperity (UNDP, 2020). The necessity for sustainable development has become increasingly apparent as this development model lays a significant emphasis on excessive consumption, requiring a transition towards a more environmentally aware and sustainable path (Flores & Cruz, 2021). The SDGs serve as a platform for businesses to develop innovative solutions. Although poverty, access to power, and the urgency of climate change mitigation are always the most pressing issues, they can also serve as a foundation for developing innovative businesses and earning various shapes for new work done in collaboration with actor Public. Through collaboration The responsibility of implementing effective governance policies and evaluating their effects on sustainable development belongs with government institutions and state agencies (Nwafor, 2023).
Because it makes about two-thirds of carbon dioxide, the energy industry is a key part of the solution to climate change. System energy, including electricity, is the primary supporter of human life. Electricity is undergoing a significant transformation in the energy system because of the demand for varied instruments and the high requirement for renewable energy sources to support flexibility in the utilization of various renewable energy sources, such as wind, water, and solar panels (Defeuilley, 2009). The company lacks sufficient answers in this context to develop solutions and convert the innovation challenge environment into market opportunities (Schaltegger et al., 2015). Considering the triple bottom line, an organization could produce the score for many stakeholders' interest at a time and become a progress pusher (Perillo et al, 2022).

The goal of this research is to do a literature review of the most recent research on sustainable business models in this area. This study aims to contribute future trends as an agenda for future research on the topic of sustainable business models to support the renewable energy services in the electricity company, as well as obtain perspectives on state-of-the-art research on this topic.

RQ1: How is the trend of business model innovation that satisfies the triple bottom line in sustainable development?

RQ2: What is the sustainable business model framework that is suitable for the energy sector to support sustainable development?

2 THEORETICAL FRAMEWORK

A business model can be interpreted as the value logic of an organization in terms of how the organization can create and capture customer value and can be sheltered in a concept that aims to meet customer expectations, provide value to the organization, and provide economic benefits. This perspective emphasizes the role of a business model in providing firms with the opportunity to consider customer loyalty (Guidat et al., 2014). Another opinion says that a business model refers to the well-organized framework of an organization that aims to generate profitable prospects (Geissdoerfer et al., 2020). Another thing to note is how an organization can create its own value to elevate consumer perceptions about the uniqueness of the goods or services being marketed. Business models are designed to generate economic value, thus they must take into account all the advantages and expenses that will be gained and incurred once they are implemented (Fielt, 2018).
The Business Model is recognized as a tool for scrutinizing and delineating the manner in which a business functions and offers guidance. The business model is seen as a comprehensive framework that guides all organizational actions, encompassing both external and internal stakeholders (Zott et al, 2011). The business model must also be able to meet the financial aspects that will be incurred during the business process, starting from the initial establishment of the business, operational activities, and the fulfillment of unwanted events or incidents involving financial handling. The business model has many frameworks that have been developed in several studies; each framework has its own focus and purpose in delivering the resulting model. The following is a developing business model framework, including:

Table 1

<table>
<thead>
<tr>
<th>Business Model Framework</th>
<th>Segment</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Model Canvas (Osterwalder and Pigneur, 2010)</td>
<td>All Segment Industry</td>
<td>Clear and structured visualization, Focuses on the customer and value proposition, Flexible in customizing model elements, Encourages collaboration and integrated models</td>
<td>Less focus is placed on execution, not dynamic, aspects of financial elements, and they are not detailed.</td>
</tr>
<tr>
<td>Lean Canvas (Maurya, 2012)</td>
<td>Startup</td>
<td>Focus on customers, validation of business ideas, focus on solutions, simple concept</td>
<td>Not detailed on operational and partnership aspects</td>
</tr>
<tr>
<td>Blue Ocean Strategy (Kim and Mauborgne, 2005)</td>
<td>All Segment Industry</td>
<td>Focus on innovation, differentiation, and increasing value for customers by changing paradigms, creating growth potential for new markets, and accommodating model dynamics.</td>
<td>Having uncontrollable risks, not focusing on implementation, not focusing on resources</td>
</tr>
<tr>
<td>Disruption Theory (Christensen, 1997)</td>
<td>Existing Business</td>
<td>Focus on disruption issues, understand market changes, and focus on innovation and new markets.</td>
<td>Has the potential for risk identification errors and is not detailed on operational and financial aspects.</td>
</tr>
</tbody>
</table>

If we consider the characteristics of research within the electricity industry sector, which exhibits non-stockable traits, the business model canvas is not a suitable framework. This assertion is reinforced by the presence of indicators that encompass aspects of both supply and demand, as well as financial elements, all of which converge on the central theme of the value proposition to be extended to sustainable development. This research undertakes a more comprehensive examination of the employed framework, delving into the necessity for adjustments in both innovation and sustainable business aspects. Innovative business models offer a viable means of ad-dressing the challenges posed by sustainable development and...
grappling with global issues, particularly those pertaining to the energy sector. In this context, a model can be defined as a systematic representation of a system or process designed to facilitate an understanding or the design of key facets of the system with the ultimate goal of generating value, benefits, and profits (O'Sullivan et al, 2010). Subsequently, the business model in question pertains to the substance, structure, and governance of transactions formulated to engender value through the exploitation of available business opportunities. Sustainable business models are predominantly focused on addressing economic, social, and environmental challenges. Sustainable business model is often used in an inconsistent way, confusing “sustainable” as financially viable and “sustainable” as a form of triple bottom line contribution to a sustainable development of the natural environment and society (Schaltegger et al, 2015). By adopting sustainable risk-based business models, organizations can derive advantages such as heightened risk mitigation, enhanced resilience, and the ability to do behavioral analysis (Wit and Pylak, 2020). Additionally, the imperative of sustainable business is underscored in terms of financial arrangements. In navigating through challenging conditions, businesses must possess a robust and well-crafted financial strategy to ensure their survival within the industry (Marrone, 2015).

3 METHODOLOGY

The primary goal of this research is to obtain a description of the most recent state of the art in terms of internal framework development, a sustainable business model for transition energy system electricity, specifically system supply electricity, and to anticipate future research directions and trends. As seen in the figure below, which was created using the Vosviewer program, research into the development of sustainable business models is still rather limited.
This study used the comparative analysis method and grounded theory in the reviewed literature. This involved a comparison of literature from different sources or time periods to identify differences, similarities, or trends in research developments. In addition, this method will develop a new business model framework based on data collected from previous studies and help build a deeper understanding of the research topic. Another study that uses a literature review can investigate startup business models that specialize in energy-saving services through the utilization of Industry 4.0 smart technologies (Wit et al, 2021). The primary objective of this study is to develop a viable and enduring business model that adeptly addresses the economic, social, and environmental requirements. The steps taken are to identify, categorize, and review peer-reviewed leading studies (Li et al, 2009) on business model design and sustainability implementation in the context of the clean energy transition. The stages in carrying out the comparative literature method in this research were as follows:
During the review process, the search was executed across selected databases, resulting in the retrieval of articles aligned with the set criteria, which was carried out from 2010–2023. The steps taken are to identify, categorize, and review peer-reviewed leading studies (Easterby-Smith, 2009) on business model design and sustainability implementation in the context of the clean energy transition. The screening phase involved assessing the titles and abstracts of the articles obtained to eliminate irrelevant ones, guided based on the criteria of a trusted publisher and the availability of paper that can be tracked on the site. For the full-text review, the complete articles that successfully passed the initial screening were obtained and comprehensively examined to ascertain their alignment with the research objectives. Data extraction encompasses the retrieval of pertinent information from the selected articles, including key findings, methodologies, sample sizes, and other relevant details. We reviewed the detailed articles in the database to identify new categories. Afterward, we grouped the business model frameworks used in the energy industry, or non-stockable industry. Following this, we conducted a trend analysis of a sustainability-oriented or triple bottom line-inclusive business model canvas. We elaborated on and synthesized these articles to develop a suitable framework for sustainable business models in the energy sector.
4 RESULTS AND DISCUSSIONS

In the energy sector, where actors and their decisions are embedded within a triple-bottom-line context, increasingly complex and sustainable business models are used to solve problems. This modeling strategy for complex systems provides numerous benefits and insights. First, it enables the representation of inter-disciplinary systems consisting of physical infrastructure, actor behavior and interactions, and the policy environment associated with them. Second, it goes beyond the standard economic assumptions of homogeneous rational choices and demand-driven markets to include complex behaviors and interactions between heterogeneous demand-side and supply-side agents, such as the aforementioned motivations and values. Lastly, the triple bottom line business model permits us to investigate the emergence of various systemic behavior patterns and coevolutionary trends in response to various policy regimes.

Based on previous research developments regarding the business model canvas that occurred from 2010–2023 using publish or perish software, it can be seen in the image below:

Figure 3
Research Trend of Business Model Canvas

Based on the picture above, it can be seen that research on BMC has increased significantly, especially in 2022, when as many as 177 research topics have been published. BMC has been widely used in various business and industrial sectors. However, research is continuing to examine the effectiveness and application of BMC in new sectors. For example, research that focuses on the creative sector, the public service sector, and the non-profit sector
In the digital age, BMC research is increasingly linked to technology integration. Researchers study how technologies such as artificial intelligence (AI), blockchain, and the Internet of Things (IoT) can influence and be applied to business models generated using BMC. However, despite this trend, research conducted using the concept of a sustainable business model has resulted in insignificant developments. The SBMC concept has been used since 2016 and will be widely used in 2022, namely for five research topics. This is less than 3% of the total research conducted using the business model canvas in 2022. So the sustainable business model framework is a potential tool to be used in this research, especially in the context of developing renewable energy.

Osterwalder and Pigneur have enhanced the business model canvas to take into account four fundamental aspects: value capture, value delivery, value creation, and value proposition (Osterwalder and Pigneur, 2010). They discovered that the business model has the greatest impact on the resources and value proposition, while channels have the least impact (Müller, 2019). The business model and the partnership structure that will sustain the business are inseparable (Tutuba et al, 2019). However, the business model canvas framework cannot achieve a sustainable business because it does not take profit considerations into account and provides value to customers. Business model canvas adaptations fall short of capturing the complexities of energy enterprises and their alignment with public interests. Their solution involves introducing business, energy accountability, and stakeholder impact (Dobrowolski and Sułkowski, 2021). This concept must be modified to incorporate social and environmental indicators. Due to the need to consider supply systems and production processes, the results may not be pertinent to the manufacturing industry. The energy industry must adopt a customer-centric business model that prioritizes sustainability (Wicaksono et al, 2017). The literature and industry are developing sustainable business models, encouraging businesses to pursue opportunities to increase their impact on the three pillars of sustainability (economic, social, and environmental) (Cardeal et al, 2020). Joyce and Paquin (2016) have previously conducted research and produced a business model canvas for businesses in the consumer goods industry that focus on sustainability. Add an environmental layer to get a value proposition on cycles, the environment, and life, and a social layer to represent the interests of potential stakeholders. This study is strengthened by the results that describe a sustainable value proposition in new markets or products by considering the three pillars of sustainability (Correa-Giraldo et al, 2021). The framework is as follows:
This model is well suited for the energy industry. The value capture aspect involves evaluating impacts, particularly financial effects and cash flow. Various indicators are used to gauge the integration of the triple bottom line into the new business model. Incorporating sustainable practices into capital flows is economically crucial. Monitoring each process's progress meticulously in terms of cost and revenue management due to integration is highly significant. The capture process aims to monetize activity outcomes. On the value delivery and creation fronts, assessing the impact of products or services on customer needs is pivotal. Hence, understanding customer context becomes essential for enduring customer satisfaction. This need is expanded through resource strength indicators, reflecting activity implementers and partner-ships on the supply or support side. Resources, including aspects like workers, the environment, flexibility, and utilizing environmental resources such as renewable energy, are vital for achieving sustainability goals. Support for sustainable development goals extends beyond corporations. The framework also emphasizes partnerships with stakeholders like government, suppliers, academia, the media, external agencies, and the public, expediting innovation implementation for overarching goals. Aligning corporate objectives and governance with sustainability principles constitutes a value proposition. Core values that support existing business model development are key actions. This business model canvas combines value proposition and triple bottom line aspects social, ecological, and economic to bolster long-term and sustainable business goals. Sustainable business models play a vital role...
in facilitating transitions by prioritizing the creation, delivery, proposition, and capture of value for customers, all while ensuring a secure and equitable operating environment (Hernández-Cheá et al., 2020). It is imperative to examine the positive effects of commercial, environmental, and societal implications, which encompass intellectual property. Given these considerations, this model is a strong fit for the energy industry.

The sustainable business model framework above is a development that has been analyzed based on the literature conducted in previous studies. So in this study, there is an opportunity to use a framework that is adapted to the characteristics of business-es in the energy sector, especially in terms of the supply of renewable energy electricity. This literature was reviewed based on 117 papers that had been selected and focused on 12 papers related to sustainable business models, as shown below:

**Figure 5**

*Business model canvas framework evolution*

The development of the framework above shows that the business model canvas has evolved over time to reflect changing business needs. In the early 2000s, business model canvas focused on traditional elements of its business model, such as customer segments, value propositions, and revenue streams. However, as businesses have become more complex, business model canvas has evolved to include additional elements, such as channels, customer relationships, key resources, key activities, and key partnerships, such as those produced by Alexander Osterwalder and Yves Pigneur in 2010. The figure also shows that business model canvas can be used to visualize business model transformation. In this case, business model
canvas is used to show how a business has transformed from a traditional business model to a more collaborative business model. Collaborative business models are characterized by a focus on partnerships, shared resources, and shared value creation. Created flexibility in business models for energy companies that meet modern realities and ensure sustainable business development (Gitelman and Kozhevnikov, 2023).

The next step involves adopting a sustainable business model, which emphasizes social and environmental aspects. This model serves as a valuable tool to understand the long-term evolution of business strategies. It aids businesses in preparing for the future and crafting adaptable models in response to changes. Moreover, the sustainable business model is applicable in the energy sector, particularly for advancing renewable energy development. In 2016, Joyce and Paquin introduced the triple layer business model canvas, offering fresh insights into business model creation. This intricate framework includes economic, social, and environmental aspects, resulting in 27 critical considerations (Kwak et al, 2019; Pardalis et al, 2020; Abbasnia et al, 2023). The new business model focused on integration, customization, accessibility, and sustainability (Santini et al, 2023). In 2020, the triple layer business model canvas was streamlined into a single layer, while still upholding economic, social, and environmental aspects. Although less widely adopted due to its similarity with the triple business model canvas, this modified model is valuable for businesses with tangible characteristic.

In this study, the sustainable business model is simplified to support the energy sector's growth, with a focus on encouraging renewable energy initiatives. This model comprises 11 elements encompassing social, economic, and ecological factors. It effectively represents a sustainable business approach that meets customer demands. The development of sustainable business models in the energy sector offers a new opportunity for businesses to align with economic, social, and environmental imperatives while enhancing operational resilience and responsiveness to market dynamics. Adapting sustainable business models in line with desirability and decarbonization trends in the global energy system accelerates the adoption of sustainable practices in the Italian energy industry (Capobianco et al, 2022). And sustainable business model have undergone significant change due to changing support schemes, with wind energy companies opting for selling electricity as a revenue source in Romania (Nichifor, 2015). Sustainability encourages a paradigm shift, focusing on optimizing resource usage, minimizing waste, and lever-aging renewable energy sources. This flexibility allows companies to adjust their capacity based on demand fluctuations, improving agility in meeting customer needs and responding swiftly to changes in the energy landscape. Sustainable practices drive
innovation, enabling businesses to explore diverse revenue streams and remain ahead of the curve in the rapidly transforming energy market. Sustainability fosters collaboration among stakeholders, enhancing access to shared resources and expertise.

5 CONCLUSION

In summary, the business model pertaining to renewable energy plays a crucial role in attaining objectives related to sustainable development. The importance of this matter requires the active involvement and cooperation of various actors, such as policymakers, businesses, and the wider society, in order to facilitate meaningful discussions and prompt successful measures. This study highlights the predominant inclination observed in current frameworks and methodologies to favor economic factors, frequently at the expense of social and environmental advantages. Furthermore, the intrinsic dynamism and systemic uncertainties associated with renewable energy highlight the constraints of these frameworks, especially when assessing nascent possibilities within sustainable business models. One notable finding from the investigation is that the existing body of literature mostly focuses on economic factors when discussing the formulation of business models, while neglecting important elements such as profitability, social consequences, and environmental effects. In order to rectify this disparity, novel methodologies such as yield studies suggest tactics that are more fully aligned with the triple bottom line, particularly in circumstances marked by innovation and significant unpredictability. In order to achieve successful implementation, it is imperative that approaches and techniques effectively recognize the dynamic, systemic, and partially public nature of infrastructure characteristics. The proposed innovation in a sustainable business model involves the incorporation of social, ecological, economic, and consumption values, effectively integrating them into energy targets and governance changes inside the power supply system. The adoption of this comprehensive strategy expands the range of energy goals and requires a reassessment of governance systems.

The examination of the extensive body of literature pertaining to sustainable business models yields a range of research suggestions. The comparative evaluation of research trends sheds light on the integration of sustainable business models, providing significant insights into potential avenues for further investigation. Future re-search endeavors could be conducted to rigorously test this concept in real-world business practices, specifically focusing on the renewable energy industry, due to its crucial role in speeding the energy transition towards sustainable development goals. In addition, future study endeavors may focus on the intricate
development of innovative renewable energy ventures, utilizing comprehensive and measurable approaches to enhance our comprehension and facilitate the establishment of a sustainable energy framework. This study focuses on a review and synthesis of existing literature up to a specific cutoff date, limiting its comprehensiveness and applicability to current trends and research in the field. It acknowledges that there may be relevant research or viewpoints not covered due to constraints such as language barriers, restricted access to certain publications, or unintentional oversight. The study's focus is on synthesizing existing literature and proposing potential directions for future research and business models, without empirical data collection, case studies, or direct implementation. Practical validation and refinement of these models would require further research and testing in real-world business contexts. The analysis is based on the selected literature and interpretation, potentially introducing subjectivity and bias. The primary focus of this study is on the renewable energy sector. It is important to note that the specific context and dynamics of other sectors or businesses may differ, thereby requiring customized strategies and approaches. The aforementioned limitations give essential contextual information for future research endeavors in the fields of sustainable business models and renewable energy, shedding light on the scope and boundaries of this particular study.

REFERENCES


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Li, S., Easterby-Smith, M., & Bartunek, J. (2009). Research Methods for Organizational
A Strategic Framework for Sustainable Business Model of Renewable Energy Services


A Strategic Framework for Sustainable Business Model of Renewable Energy Services


