

DIGITAL BUSINESS TRANSFORMATION: A SYSTEMATIC LITERATURE REVIEW ON MODELS, STRATEGIES, AND CHALLENGES IN THE DIGITAL ECONOMY ERA

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ABSTRACT

Purpose: This study examines Indonesia's transition toward sustainable development in achieving the 2045 Golden Indonesia Vision by analyzing the performance and challenges reflected in four major sustainability indices: the Green Economy Index (GEI), Indonesian Blue Economy Index (IBEI), Environmental Quality Index (EQI), and Regional Competitiveness Index (RCI). It aims to provide a comprehensive understanding of how these indices collectively portray sustainability progress and reveal structural gaps.

Design/methodology/approach: This study employs a systematic literature review approach by synthesizing data from government reports, official publications, and academic journals. Each index is analyzed based on its conceptual framework, measurement methodology, and key findings to identify patterns, inconsistencies, and policy implications.

Findings: The findings reveal a complex and sometimes contradictory picture of sustainable development in Indonesia. The GEI indicates progress mainly driven by improvements in the socio-economic dimension, while the environmental dimension remains relatively weak. The EQI demonstrates fluctuations, particularly in Marine Water Quality (MWQ), highlighting a gap between blue economy ambitions and environmental realities. The IBEI records a relatively low national score (43.98), suggesting that Indonesia's blue economy development is still at an early stage. Furthermore, the RCI reveals significant regional disparities in competitiveness, which may hinder inclusive and balanced sustainable development.

Research limitations/ implications: This study is limited to secondary data and literature-based analysis. Future research is recommended to incorporate empirical and quantitative approaches to validate the findings and explore interrelationships among indices as well as regional dynamics.

Practical implications: The results highlight the need for more integrated and balanced policy strategies, particularly in strengthening environmental performance, aligning blue economy initiatives with ecological sustainability, and reducing regional disparities. Policymakers should enhance cross-sectoral coordination to achieve inclusive and sustainable national development.

Originality/value: This study provides a comprehensive synthesis of Indonesia's key sustainability indices, offering a holistic perspective that highlights inconsistencies and structural challenges often overlooked in single-index analyses.

Paper type: Literature review

Keywords: Green Economy Index, Blue Economy Index, Environmental Quality Index, Regional Competitiveness Index, Sustainable Development, Indonesia

A. INTRODUCTION

The global transition toward sustainable development has become a central agenda for many countries, including Indonesia, particularly in achieving the long-term vision of the Golden Indonesia 2045. Sustainable development emphasizes the integration of economic growth, social inclusion, and environmental protection as interconnected pillars that must be balanced to ensure long-term

prosperity (United Nations, 2015). In this context, measuring sustainability performance through composite indices has become increasingly important as a tool for evaluating progress and identifying structural challenges. Indonesia has developed several key sustainability indices to monitor its development trajectory. Among the most prominent are the Green Economy Index (GEI), Indonesian Blue Economy Index (IBEI), Environmental Quality Index (EQI), and Regional Competitiveness Index (RCI). These indices reflect different dimensions of sustainability, ranging from economic transformation and environmental quality to regional development disparities. However, despite the availability of these indices, a comprehensive understanding of how they collectively portray Indonesia's sustainability performance remains limited.

The GEI highlights Indonesia's progress in transitioning toward a greener economy, particularly in terms of socio-economic improvements such as employment and economic resilience. However, previous studies indicate that environmental indicators within the green economy framework often lag behind economic achievements, suggesting an imbalance in development priorities (Bappenas, 2023). Similarly, the EQI, which measures environmental conditions such as air quality, water quality, and land cover, has shown fluctuating trends over time, particularly in marine water quality, reflecting ongoing environmental pressures (Ministry of Environment and Forestry, 2022).

In parallel, the development of the blue economy, as reflected in the IBEI, represents Indonesia's strategic effort to optimize marine resources sustainably. Nevertheless, the relatively low initial score of the IBEI suggests that the implementation of blue economy principles is still at an early stage and faces significant institutional and ecological challenges (Bappenas, 2023). This condition indicates a potential gap between policy ambition and implementation outcomes.

Furthermore, regional disparities remain a critical issue in Indonesia's development landscape. The RCI reveals significant differences in competitiveness across regions, driven by variations in infrastructure, human capital, and institutional capacity. These disparities may hinder inclusive development and create structural barriers to achieving balanced sustainability across regions (World Bank, 2020). Despite the availability of multiple indices, existing studies tend to examine each index in isolation. This fragmented approach limits the ability to capture the interconnections and potential inconsistencies between economic, environmental, and regional dimensions of sustainability. As a result, there is a need for a more integrative analysis that synthesizes insights from multiple indices to provide a holistic understanding of Indonesia's sustainability transition.

Therefore, this study aims to conduct a systematic literature review of four major sustainability indices in Indonesia—GEI, IBEI, EQI, and RCI—to identify key patterns, contradictions, and structural challenges. By integrating findings across these indices, this research seeks to contribute to the development of more coherent and evidence-based policy strategies for achieving sustainable and inclusive growth in Indonesia.

B. LITERATURE REVIEW

Sustainable Development and Composite Indices

Sustainable development has been widely recognized as a multidimensional concept that integrates economic growth, social equity, and environmental sustainability (United Nations, 2015). To measure progress toward sustainability, many countries adopt composite indices that combine multiple indicators into a single framework, enabling policymakers to monitor development performance and identify policy gaps (OECD, 2019). Composite indices are particularly useful in capturing complex phenomena such as sustainability because they provide a holistic perspective and allow for cross-sectoral comparisons. However, they also face methodological challenges, including weighting schemes, data availability, and potential bias in indicator selection (Nardo et al., 2008). These limitations may result in inconsistencies when different indices are used to assess similar dimensions of development.

Green Economy Index (GEI)

The concept of a green economy emphasizes economic growth that is environmentally sustainable and socially inclusive. According to UNEP (2011), a green economy is defined as an economic system that improves human well-being and social equity while significantly reducing environmental risks and ecological scarcities. In Indonesia, the Green Economy Index (GEI) has been developed to measure progress in transitioning toward sustainable economic practices. The GEI typically incorporates three main pillars: economic, social, and environmental dimensions (Bappenas, 2023). Studies show that Indonesia's GEI performance is often driven by improvements in socio-economic indicators such as employment and income growth. However, the environmental dimension tends to lag behind, indicating an imbalance in sustainability performance (Bappenas, 2023; World Bank, 2021). This imbalance reflects a broader challenge in developing countries, where economic growth often takes precedence over environmental protection, leading to trade-offs between development and sustainability (Barbier, 2016).

Blue Economy Index (IBEI)

The blue economy concept focuses on the sustainable use of marine and ocean resources for economic growth, improved livelihoods, and ecosystem health (World Bank, 2017). As a maritime country, Indonesia has significant potential to develop its blue economy sector. The Indonesian Blue Economy Index (IBEI) was introduced to assess the progress of marine-based economic development. The index includes indicators related to marine resource utilization, environmental sustainability, and governance (Bappenas, 2023). However, empirical findings suggest that Indonesia's blue economy development is still in its early stages, as reflected in relatively low index scores.

Several studies highlight key challenges in implementing blue economy strategies, including weak institutional coordination, limited technological capacity, and environmental degradation such as marine pollution and overfishing (Bennett et al., 2019). These challenges indicate that achieving a balance between economic exploitation and environmental sustainability remains a critical issue.

Environmental Quality Index (EQI)

Environmental quality is a fundamental component of sustainable development, as it directly affects human health and ecosystem stability. The Environmental Quality Index (EQI) is commonly used to measure environmental conditions based on indicators such as air quality, water quality, and land cover (Ministry of Environment and Forestry, 2022). In Indonesia, the EQI has shown fluctuating trends over time, reflecting ongoing environmental pressures from industrialization, urbanization, and natural resource exploitation. In particular, marine water quality has been identified as a critical concern due to pollution, coastal degradation, and climate change impacts (KLHK, 2022).

Previous studies suggest that environmental degradation in developing countries is often associated with rapid economic growth and weak environmental governance (Stern, 2004). This phenomenon highlights the importance of integrating environmental considerations into economic planning.

Regional Competitiveness Index (RCI)

Regional competitiveness plays a crucial role in achieving inclusive and balanced development. The Regional Competitiveness Index (RCI) measures the ability of regions to create a productive and sustainable economic environment, typically based on factors such as infrastructure, human capital, innovation, and institutional quality (World Economic Forum, 2019). In the Indonesian context, regional disparities remain a persistent challenge. The RCI reveals significant differences in competitiveness across regions, particularly between western and eastern Indonesia (World Bank, 2020). These disparities are driven by unequal access to infrastructure, education, and economic opportunities. Regional inequality can hinder national development by creating structural imbalances and limiting the effectiveness of policy interventions (Todaro & Smith, 2020). Therefore, improving regional competitiveness is essential for achieving sustainable and inclusive growth.

C. METHODOLOGY

Research Design

This study adopts a systematic literature review (SLR) approach to analyze Indonesia's sustainability transition through four major indices: the Green Economy Index (GEI), Indonesian Blue Economy Index (IBEI), Environmental Quality Index (EQI), and Regional Competitiveness Index (RCI). The SLR method enables a structured, transparent, and replicable process for identifying, evaluating, and synthesizing relevant literature (Tranfield et al., 2003). This approach is particularly suitable for this study as it allows for the integration of findings from diverse sources, including government reports, institutional publications, and academic studies, to generate a comprehensive understanding of sustainability performance and challenges.

Data Sources and Search Strategy

The data used in this study are derived from secondary sources, including government reports published by Bappenas and the Ministry of Environment and Forestry, as well as reports from international organizations such as the World Bank, OECD, and UNEP. In addition, peer-reviewed academic journal articles are included to strengthen the rigor of the study. The literature search was conducted using major academic databases, including Scopus, Google Scholar, and ScienceDirect. The search process utilized keywords such as "Green Economy Index Indonesia," "Blue Economy Indonesia," "Environmental Quality Index," "Regional Competitiveness Indonesia," and "Sustainable Development Indonesia." To ensure relevance, the search was limited to publications published between 2015 and 2024, aligning with the implementation period of the Sustainable Development Goals (SDGs).

Inclusion and Exclusion Criteria

To ensure the quality and relevance of the selected studies, specific inclusion and exclusion criteria were applied. The inclusion criteria include studies related to GEI, IBEI, EQI, and RCI, as well as publications addressing sustainability issues in Indonesia. Only peer-reviewed journal articles, official reports, and policy documents published in English or Bahasa Indonesia within the specified period were considered. Meanwhile, studies that are not directly related to sustainability indices, non-academic or non-credible sources, duplicated publications, and articles lacking methodological clarity were excluded from the analysis.

Data Selection Process

The data selection process follows a structured procedure inspired by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework (Page et al., 2021). The process begins with the identification stage, where relevant studies are collected from selected databases based on predefined keywords. This is followed by the screening stage, in which duplicate records are removed and titles and abstracts are reviewed to assess their relevance. In the eligibility stage, full-text articles are evaluated according to the established inclusion and exclusion criteria. Finally, in the inclusion stage, the selected studies are systematically analyzed and synthesized for further interpretation.

Data Analysis Technique

This study employs a qualitative content analysis approach to synthesize findings from the selected literature. The analysis focuses on the conceptual frameworks of each index, their measurement methodologies, key findings, and policy implications. A thematic synthesis approach is used to identify recurring patterns, themes, and inconsistencies across studies (Braun & Clarke, 2006). Additionally, a comparative analysis is conducted to examine differences, overlaps, and contradictions among the indices in representing sustainability outcomes.

Validity and Reliability

To ensure the validity and reliability of the findings, this study applies several strategies, including source triangulation by integrating data from multiple sources such as government reports, academic publications, and institutional documents. Furthermore, the use of transparent selection

criteria and systematic procedures helps to minimize bias and enhance the credibility of the results. These steps ensure that the findings are robust and provide meaningful insights into Indonesia's sustainability transition.

D. RESULTS AND DISCUSSION

Overview of Selected Studies

The systematic literature review resulted in a selection of relevant studies comprising government reports, institutional publications, and peer-reviewed journal articles published between 2015 and 2024. The selected literature reflects diverse perspectives on sustainability measurement in Indonesia, particularly through the Green Economy Index (GEI), Indonesian Blue Economy Index (IBEI), Environmental Quality Index (EQI), and Regional Competitiveness Index (RCI). Overall, the findings indicate that each index captures specific dimensions of sustainability; however, they also reveal inconsistencies and gaps when analyzed collectively.

Green Economy Performance and Imbalance Across Dimensions

The analysis of the Green Economy Index (GEI) indicates that Indonesia has made notable progress in its transition toward a green economy, particularly in the socio-economic dimension. Improvements in employment, income distribution, and economic resilience have contributed positively to the overall GEI score. This suggests that economic transformation policies have been relatively effective in promoting inclusive growth. However, the environmental dimension remains comparatively weak. Several studies highlight that environmental indicators, such as emissions reduction, resource efficiency, and ecological preservation, have not progressed at the same pace as economic indicators. This imbalance suggests that Indonesia's green economy transition is still dominated by economic priorities, with environmental sustainability receiving less emphasis. This finding is consistent with the broader literature on developing economies, where economic growth often takes precedence over environmental protection.

Blue Economy Development and Implementation Challenges

The Indonesian Blue Economy Index (IBEI) provides insights into the development of marine-based economic activities. The findings reveal that Indonesia's blue economy is still in its early stages, as indicated by a relatively low national index score. Although the country has significant marine resource potential, the effective implementation of blue economy principles remains limited. Key challenges identified in the literature include weak institutional coordination, limited technological capacity, and environmental degradation, particularly marine pollution and overexploitation of resources. These challenges highlight a gap between policy ambitions and actual implementation. Furthermore, the inconsistency between blue economy development and environmental quality suggests that economic utilization of marine resources has not been fully aligned with sustainability principles.

Environmental Quality Trends and Ecological Pressures

The Environmental Quality Index (EQI) analysis reveals fluctuating trends in environmental conditions in Indonesia. While certain indicators, such as air quality and land cover, show gradual improvement, others—particularly water quality—remain unstable. Marine Water Quality (MWQ) is identified as a critical concern due to pollution, coastal degradation, and climate-related impacts. These findings indicate that environmental management efforts have not yet achieved consistent and sustainable outcomes. The volatility of environmental indicators suggests that environmental policies may lack effectiveness or continuity. Moreover, the pressure from industrialization, urbanization, and natural resource exploitation continues to challenge environmental sustainability.

Regional Competitiveness and Development Disparities

The Regional Competitiveness Index (RCI) highlights significant disparities in development across regions in Indonesia. Regions with better infrastructure, higher human capital, and stronger

institutional capacity tend to demonstrate higher competitiveness. In contrast, less-developed regions, particularly in eastern Indonesia, continue to lag behind. These disparities represent structural challenges that may hinder inclusive and balanced development. Unequal regional competitiveness limits the effectiveness of national policies and creates barriers to achieving sustainability goals. This finding underscores the importance of addressing regional inequality as part of a broader sustainable development strategy.

Cross-Index Analysis and Structural Inconsistencies

A key contribution of this study is the integration of findings across the four indices. The cross-index analysis reveals several structural inconsistencies in Indonesia's sustainability trajectory. First, while the GEI indicates progress in socio-economic development, the EQI highlights persistent environmental challenges, suggesting a disconnect between economic growth and environmental sustainability. Second, the development of the blue economy, as reflected in the IBEI, does not fully align with environmental conditions measured by the EQI. This indicates that marine resource utilization has not been effectively balanced with ecological preservation. Third, regional disparities identified in the RCI further complicate sustainability efforts, as uneven development may lead to unequal distribution of sustainability outcomes.

These inconsistencies demonstrate that sustainability in Indonesia cannot be effectively understood through a single index. Instead, a multidimensional and integrated approach is necessary to capture the complexity of development dynamics.

Policy Implications

The findings of this study have several important policy implications. First, there is a need for more balanced development strategies that integrate economic, social, and environmental objectives. Policymakers should strengthen environmental governance to ensure that economic growth does not come at the expense of ecological sustainability.

Second, the implementation of blue economy policies should be aligned more closely with environmental protection efforts. This requires improved coordination among institutions, as well as the adoption of sustainable technologies and practices. Third, addressing regional disparities should become a priority to ensure more inclusive development. Investments in infrastructure, education, and institutional capacity are essential to enhance regional competitiveness. Finally, the integration of multiple sustainability indices into policy evaluation frameworks can provide a more comprehensive understanding of development progress and challenges. This approach can help policymakers design more coherent and effective strategies for achieving sustainable development in Indonesia.

E. CONCLUSION

This study provides a comprehensive analysis of Indonesia's sustainability transition by synthesizing insights from four major indices: the Green Economy Index (GEI), Indonesian Blue Economy Index (IBEI), Environmental Quality Index (EQI), and Regional Competitiveness Index (RCI). The findings reveal that Indonesia has made measurable progress in advancing its sustainable development agenda, particularly in the socio-economic dimension. However, this progress is not evenly distributed across all dimensions of sustainability.

A key conclusion of this study is the existence of structural imbalances between economic growth and environmental sustainability. While the GEI indicates positive trends driven by socio-economic improvements, the EQI highlights persistent environmental challenges, particularly in water and marine ecosystems. This suggests that economic development has not been fully aligned with ecological preservation. Furthermore, the relatively low performance of the IBEI indicates that the implementation of blue economy principles is still at an early stage and faces significant institutional and environmental constraints. In addition, regional disparities identified through the RCI demonstrate that sustainability outcomes are uneven across different regions in Indonesia. These

disparities represent structural barriers to achieving inclusive and balanced development, as regions with lower competitiveness may struggle to benefit from national sustainability initiatives.

The integration of these four indices highlights important inconsistencies and gaps that cannot be captured through single-index analysis. Therefore, this study emphasizes the importance of adopting a multidimensional and integrated approach in evaluating sustainability performance. Such an approach enables a more holistic understanding of the interactions between economic, environmental, and regional factors. From a policy perspective, this study underscores the need for more balanced and coordinated development strategies. Policymakers should prioritize strengthening environmental governance, aligning blue economy initiatives with ecological sustainability, and reducing regional disparities through targeted investments in infrastructure, human capital, and institutional capacity. Moreover, the use of integrated sustainability indices should be encouraged to support more evidence-based and coherent policymaking. Despite its contributions, this study is limited by its reliance on secondary data and literature-based analysis. Future research is recommended to incorporate empirical and quantitative approaches to further examine the relationships between sustainability indices and to explore regional dynamics in greater depth. Such efforts would enhance the robustness of findings and contribute to a more comprehensive understanding of Indonesia's pathway toward sustainable development.

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