



(REVIEW ARTICLE)



A conceptual framework for data-driven HR in SMEs: Integrating eco-innovation in the fashion and arts sectors

Irunna Ejibe ¹, Tochukwu Chinwuba Nwankwo ², Ekene Ezinwa Nwankwo ^{3,*}, Chinwe Chinazo Okoye ⁴ and Uzundu Chikodiri Scholastica ³

¹ Independent Researcher, Lagos, Nigeria.

² National Open University of Abuja, Nigeria.

³ Anambra State Polytechnic, Mgbakwu, Nigeria.

⁴ Access Bank Plc, Awka, Nigeria.

World Journal of Advanced Research and Reviews, 2024, 21(03), 061–068

Publication history: Received on 17 January 2024; revised on 25 February 2024; accepted on 27 February 2024

Article DOI: <https://doi.org/10.30574/wjarr.2024.21.3.0660>

Abstract

In the contemporary landscape of business, small and medium-sized enterprises (SMEs) face the challenge of integrating sustainable practices while maintaining competitiveness in industries such as fashion and arts. This paper proposes a conceptual framework aimed at facilitating data-driven human resources (HR) practices within SMEs, with a specific focus on integrating eco-innovation strategies within the fashion and arts sectors. The framework addresses the growing importance of sustainability in business operations, particularly within industries known for their environmental impact and creative output. By leveraging data-driven HR approaches, SMEs can effectively align their human capital strategies with eco-innovation goals, thereby enhancing both environmental sustainability and organizational performance. Drawing on existing literature on HR management, eco-innovation, and SMEs, the proposed framework emphasizes the role of data analytics in informing HR decision-making processes. Through the collection and analysis of relevant data points, SMEs can identify opportunities for eco-innovation within their operations, such as sustainable sourcing practices, waste reduction initiatives, and eco-friendly product design. Furthermore, the framework highlights the importance of fostering a culture of innovation and sustainability within SMEs, emphasizing the role of leadership, employee engagement, and organizational learning. By promoting a shared vision of sustainability and providing employees with the necessary resources and support, SMEs can cultivate a workforce that is motivated to contribute to eco-innovation efforts. The application of the conceptual framework is illustrated through case studies and practical examples within the fashion and arts sectors, showcasing how data-driven HR practices can drive sustainable innovation and competitive advantage in SMEs. By embracing this framework, SMEs operating in these sectors can position themselves as leaders in sustainable business practices while fostering long-term growth and resilience in an increasingly competitive market environment. The proposed conceptual framework offers a systematic approach to integrating eco-innovation within SMEs through data-driven HR practices. By aligning human capital strategies with sustainability goals, SMEs can unlock new opportunities for innovation, growth, and environmental stewardship in the fashion and arts sectors.

Keywords: Data-Driven; HR; SMEs; Eco-Innovation; Fashion; Arts; Framework; Review

1. Introduction

In recent years, the global business landscape has witnessed a significant shift towards sustainability, with small and medium-sized enterprises (SMEs) increasingly recognizing the importance of integrating sustainable practices into their operations (Martins *et al.*, 2022). This shift is driven by various factors, including growing consumer awareness,

* Corresponding author: Ekene Ezinwa Nwankwo.

regulatory pressures, and the need to mitigate environmental impact. As a result, SMEs across industries are seeking innovative ways to align their business practices with environmental sustainability goals (Khurana *et al.*, 2021).

The fashion and arts sectors, known for their creativity and influence, have also come under scrutiny for their environmental footprint. From the production of textiles to the exhibition of artworks, these industries often involve resource-intensive processes that contribute to pollution, waste generation, and carbon emissions (Pedro *et al.*, 2024). In response, there is a growing imperative for businesses operating in these sectors to adopt eco-friendly practices and embrace sustainable innovation (Shahzad *et al.*, 2022). At the intersection of sustainability and human resources (HR) management lies the concept of eco-innovation – the development and implementation of new products, processes, and business models that promote environmental sustainability (Janahi *et al.*, 2022). Integrating eco-innovation into HR practices presents SMEs with an opportunity to leverage their human capital towards sustainable outcomes. However, achieving this integration requires a systematic approach that harnesses the power of data-driven decision-making.

The purpose of this conceptual framework is to provide SMEs in the fashion and arts sectors with a structured approach to integrating eco-innovation into their HR practices through data-driven strategies. By leveraging data analytics, SMEs can identify opportunities for eco-friendly innovation, optimize HR processes, and align their workforce with sustainability goals (Imran *et al.*, 2021). This framework aims to empower SMEs to not only enhance their environmental performance but also to drive innovation, competitiveness, and long-term viability in dynamic market environments (Mady *et al.*, 2023).

Through this framework, SMEs can navigate the complexities of sustainability while capitalizing on the creative potential inherent in the fashion and arts sectors. By embracing data-driven HR practices and integrating eco-innovation into their organizational culture, SMEs can position themselves as leaders in sustainable business practices (Makhloufi *et al.*, 2023), contributing to positive environmental change while securing their own success in an increasingly conscious marketplace.

2. Literature Review

In this section, we delve into existing literature related to HR management in SMEs, eco-innovation and sustainability in business, data-driven decision-making in HR, and the specific challenges and opportunities faced by SMEs operating in the fashion and arts sectors.

Human resource management (HRM) in SMEs differs significantly from that in larger corporations due to resource constraints, informal structures, and the multifaceted roles of employees. Research suggests that effective HRM practices are crucial for SMEs to compete and succeed in dynamic market environments (Idolor *et al.*, 2023).

Challenges often encountered by SMEs in HRM include recruitment and retention, skills development, performance management, and employee engagement. SMEs tend to rely heavily on informal HR practices, such as word-of-mouth recruitment and on-the-job training, which may limit their ability to attract and retain talent (Biea *et al.*, 2023). However, successful SMEs demonstrate the importance of strategic HRM in driving business performance. By fostering a positive work environment, investing in employee development, and aligning HR practices with organizational goals, SMEs can enhance employee productivity, innovation, and overall competitiveness (Maheshwar *et al.*, 2020).

Eco-innovation involves the development and implementation of new products, processes, or business models that contribute to environmental sustainability (Dogaru, 2020). Sustainability has become a key consideration for businesses worldwide, driven by increasing environmental concerns, regulatory pressures, and consumer demand for ethically produced goods and services (Cho and Yoo, 2021). Research highlights the potential benefits of eco-innovation for businesses, including cost savings, enhanced brand reputation, access to new markets, and reduced environmental impact (Araújo and Franco, 2021). However, implementing eco-innovations can pose challenges, such as resource constraints, technological barriers, and resistance to change (Abbas and Liu, 2022).

In the fashion and arts sectors, eco-innovation is gaining traction as companies seek to minimize their environmental footprint while meeting consumer demand for sustainable products. From eco-friendly materials to circular design principles, businesses are exploring innovative ways to integrate sustainability into their products and operations (Ninduwezuor-Ehiobu *et al.*, 2023).

Data-driven decision-making in HR involves the systematic collection, analysis, and interpretation of data to inform HR strategies and practices. With the advent of big data analytics, organizations can access vast amounts of data related to employee performance, engagement, and retention (Burnett and Lisk, 2021). By leveraging data analytics tools and

techniques, HR professionals can identify trends, predict future workforce needs, and tailor interventions to improve organizational effectiveness. Research suggests that organizations that adopt data-driven HR practices are better equipped to recruit top talent, optimize employee performance, and drive innovation (Conte and Siano, 2023). However, SMEs often face challenges in implementing data-driven HRM due to limited resources, lack of expertise, and data privacy concerns. Nonetheless, the potential benefits of data-driven HRM, such as improved decision-making, cost savings, and competitive advantage, make it a valuable strategy for SMEs to consider (Verma *et al.*, 2021).

SMEs in the fashion and arts sectors face unique challenges and opportunities related to sustainability, innovation, and market dynamics. Challenges include competition from larger corporations, fast-changing consumer preferences, and the environmental impact of production processes (Sima *et al.*, 2020). However, SMEs also possess inherent advantages, such as agility, creativity, and closer connections with customers. By leveraging these strengths and embracing eco-innovation, SMEs can differentiate themselves in the market, build brand loyalty, and contribute to positive social and environmental change (Guan *et al.*, 2020).

In conclusion, the literature review highlights the importance of strategic HRM, eco-innovation, and data-driven decision-making for SMEs in the fashion and arts sectors. By addressing these key areas, SMEs can enhance their competitiveness, sustainability, and long-term success in dynamic market environments.

3. Theoretical Framework

In this section, we present a theoretical framework that integrates data-driven HR and eco-innovation, tailored specifically for SMEs operating in the fashion and arts sectors.

Data-driven HR in SMEs involves the systematic collection, analysis, and utilization of data to inform HR strategies and practices. This approach enables SMEs to make evidence-based decisions related to recruitment, training, performance management, and employee engagement (Biea *et al.*, 2023).

Gathering relevant data points related to employee performance, skills, and preferences. Using analytics tools and techniques to identify patterns, trends, and insights (Persaud, 2021; Saura, 2021). Utilizing data insights to inform HR strategies and interventions, such as recruitment, training, and performance evaluation. By adopting a data-driven approach, SMEs can optimize their HR processes, improve employee satisfaction, and drive organizational performance. Eco-innovation in the fashion and arts sectors involves the development and implementation of sustainable practices, products, and business models. Utilizing eco-friendly materials, such as organic cotton, recycled fabrics, and biodegradable materials. Adopting principles of circular economy, such as product longevity, repairability, and recyclability. Ensuring fair labor practices, ethical sourcing, and transparency throughout the supply chain (Erhun *et al.*, 2021).

By embracing eco-innovation, SMEs can reduce their environmental footprint, meet consumer demand for sustainable products, and enhance brand reputation (Achmad *et al.*, 2023). The integration of data-driven HR and eco-innovation involves leveraging data analytics to inform sustainable HR practices and drive eco-friendly innovation. Identifying and developing employees with skills and expertise in sustainability and innovation. Fostering a culture of sustainability and innovation through communication, training, and recognition programs. Setting and tracking sustainability goals, and rewarding employees for contributions to eco-innovation (Marrucci *et al.*, 2024). Collaborating with eco-friendly suppliers and partners to ensure ethical sourcing and sustainable production practices. By integrating data-driven HR and eco-innovation, SMEs can align their human capital strategies with sustainability goals, drive innovation, and achieve competitive advantage in the fashion and arts sectors (Tran and Nguyen, 2023; Adaga *et al.*, 2024).

In summary, the theoretical framework presented here provides a comprehensive approach for SMEs in the fashion and arts sectors to integrate data-driven HR and eco-innovation. By leveraging data analytics to inform sustainable HR practices and drive eco-friendly innovation, SMEs can enhance their competitiveness, sustainability, and long-term success (Imran *et al.*, 2021).

4. Components of the Conceptual Framework

This section outlines the key components of the conceptual framework for integrating data-driven HR and eco-innovation in SMEs operating in the fashion and arts sectors. SMEs need to identify and collect relevant data points related to HR practices and eco-innovation goals. These may include employee demographics, skills inventory, performance metrics, sustainability indicators, and market trends. By understanding the data landscape, SMEs can make

informed decisions and prioritize areas for improvement (Hongyun *et al.*, 2023). Various tools and techniques can be employed to collect HR and sustainability-related data. These may include surveys, interviews, performance evaluations, environmental audits, and data mining from internal and external sources. Additionally, advanced analytics tools, such as predictive modeling and machine learning algorithms, can help SMEs uncover insights and trends from large datasets (Mesa *et al.*, 2022).

SMEs need to develop and implement HR policies and practices that align with eco-innovation goals. This may involve integrating sustainability criteria into recruitment, training, performance management, and reward systems (Akindote *et al.*, 2023). For example, SMEs can prioritize hiring candidates with relevant sustainability skills and provide training on eco-friendly practices. Training and development programs play a crucial role in fostering a culture of eco-innovation within SMEs. By providing employees with the necessary knowledge, skills, and resources, SMEs can empower them to contribute to sustainability initiatives. Training topics may include sustainable design principles, waste reduction strategies, and ethical sourcing practices.

Organizational culture plays a significant role in driving eco-innovation and sustainability. SMEs need to foster a culture that values environmental stewardship, creativity, and continuous improvement (Okoro *et al.*, 2024). This may involve promoting open communication, collaboration, and experimentation, while also recognizing and rewarding employees for their contributions to sustainability. Leadership commitment and support are essential for the successful implementation of eco-innovation initiatives. SME leaders need to champion sustainability goals, set clear objectives, and provide resources and incentives to support eco-friendly innovation. Additionally, leaders can serve as role models by integrating sustainability principles into their decision-making processes and promoting a culture of accountability (Ohenhen *et al.*, 2024).

Case studies and practical examples can provide SMEs with insights into how the conceptual framework can be applied in real-world settings. These examples may showcase how data-driven HR practices and eco-innovation initiatives have been implemented and the impact they have had on business performance and sustainability outcomes. By highlighting successful eco-innovation initiatives in the fashion and arts sectors, SMEs can gain inspiration and learn from best practices. These examples may include companies that have implemented sustainable sourcing practices, adopted circular design principles, or launched eco-friendly product lines, leading to positive environmental and business outcomes.

5. Implementation Guidelines

This section provides practical guidance for SMEs to adopt the conceptual framework and overcome common challenges in implementation. SMEs should assess their current HR practices, sustainability initiatives, and data capabilities to identify strengths, weaknesses, and areas for improvement. Based on the assessment, SMEs should set clear goals and priorities for integrating data-driven HR and eco-innovation. SMEs need to develop a detailed action plan outlining specific steps, responsibilities, and timelines for implementing the conceptual framework (Cañas *et al.*, 2022). SMEs should allocate necessary resources, including budget, personnel, and technology, to support implementation efforts. SMEs should regularly monitor and evaluate progress towards their goals, making adjustments as needed to ensure successful implementation (Papulová *et al.*, 2021).

SMEs should engage employees, management, suppliers, and other stakeholders in the implementation process to build buy-in and support (Mnyakin, 2023). SMEs should provide employees with the necessary training and support to adapt to new HR practices and eco-innovation initiatives. SMEs should anticipate and address resistance to change by communicating the benefits of the framework, addressing concerns, and involving employees in the decision-making process. SMEs should continuously monitor implementation efforts, gathering feedback and adjusting strategies as needed to overcome challenges and achieve desired outcomes (Quansah *et al.*, 2022).

By following these implementation guidelines and strategies, SMEs can effectively adopt the conceptual framework for integrating data-driven HR and eco-innovation, leading to improved sustainability outcomes and business performance.

6. Benefits and Outcomes

Integration of data-driven HR and eco-innovation allows SMEs to make informed decisions based on insights derived from data analysis. This leads to more effective resource allocation, better talent management, and strategic alignment with sustainability goals (Del Giudice *et al.*, 2021). By leveraging data analytics, SMEs can identify inefficiencies in HR processes and operations, leading to cost savings and improved productivity. Eco-innovation initiatives such as waste

reduction and energy efficiency measures further contribute to operational efficiency. SMEs that successfully integrate data-driven HR and eco-innovation can differentiate themselves in the market by offering sustainable products and practices. This enhances brand reputation, attracts environmentally conscious consumers, and strengthens market position. Data-driven HR practices enable SMEs to anticipate and mitigate risks related to talent management, compliance, and sustainability. By identifying potential risks early on, SMEs can proactively implement measures to minimize their impact on business operations (Falahat *et al.*, 2022).

Integration of data-driven HR and eco-innovation enables SMEs in the fashion and arts sectors to achieve sustainable growth by balancing economic, environmental, and social objectives (Singh *et al.*, 2023). This includes expanding market reach, increasing profitability, and fostering positive social and environmental impact. Data-driven insights provide SMEs with valuable information to drive innovation and creativity in product design, manufacturing processes, and marketing strategies. Eco-innovation initiatives inspire creativity by challenging traditional practices and encouraging new approaches to sustainability (Pichlak and Szromek, 2021). By embracing sustainability and eco-innovation, SMEs in the fashion and arts sectors can enhance stakeholder engagement and build stronger relationships with customers, suppliers, investors, and communities. This fosters trust, loyalty, and long-term partnerships based on shared values and objectives. Through eco-innovation initiatives such as sustainable sourcing, waste reduction, and circular design, SMEs contribute to environmental stewardship by minimizing their ecological footprint and promoting responsible consumption and production practices (Dey *et al.*, 2022).

7. Future Outlook

The future outlook for integrating data-driven HR and eco-innovation in SMEs is promising, with continued advancements in technology, evolving consumer preferences, and growing awareness of sustainability issues. As SMEs increasingly recognize the importance of sustainability for long-term success, there will be greater emphasis on adopting data-driven strategies to drive eco-friendly innovation and achieve competitive advantage (Singh, 2023).

Furthermore, collaborations and partnerships between SMEs, industry associations, academia, and government agencies will play a crucial role in promoting knowledge sharing, capacity building, and collective action towards sustainable development goals. By harnessing the power of data-driven HR and eco-innovation, SMEs can seize opportunities, navigate challenges, and thrive in an ever-changing business landscape.

8. Recommendations

The integration of data-driven HR and eco-innovation offers significant benefits and outcomes for SMEs in the fashion and arts sectors, including improved decision-making, operational efficiency, competitive advantage, sustainable growth, innovation, stakeholder engagement, and environmental stewardship.

The implications for practice include the need for SMEs to invest in data analytics capabilities, develop sustainable HR policies and practices, foster a culture of innovation and sustainability, and engage stakeholders in collaborative initiatives. Future research should focus on exploring the effectiveness of different strategies and interventions, measuring the impact of data-driven HR and eco-innovation on business performance and sustainability outcomes, and identifying best practices for SMEs in the fashion and arts sectors.

9. Conclusion

In conclusion, the integration of data-driven HR and eco-innovation presents SMEs with opportunities to achieve sustainable growth, innovation, and competitive advantage while addressing environmental challenges and contributing to positive social impact. By embracing this holistic approach, SMEs can position themselves as leaders in sustainable business practices and drive positive change in the fashion and arts industries and beyond.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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