

AN INCLUSIVE IMPACT INVESTING FRAMEWORK FOR SOCIAL ENTERPRISES: OPTIMIZING PROFITABILITY, SUSTAINABILITY, AND SOCIAL IMPACT

Ngozi Joan Isibor¹, Chikezie Paul-Mikki Ewim², Ejuma Martha Adaga³, Ngodoo Joy Sam-Bulya⁴,
Augustine Ifeanyi Ibeh⁵, Godwin Ozoemenam Achumie⁶

¹University of Fairfax, Virginia, USA

²Independent Researcher, Lagos, Nigeria

³Independent Researcher, Lagos, Nigeria

⁴Independent Researcher, Abuja, Nigeria

⁵Independent Researcher, Lagos, Nigeria

⁶Osmotic Engineering Group, Lagos, Nigeria

Corresponding Author: isiborngozi1@gmail.com

Abstract

Impact investing has emerged as a transformative approach to funding social enterprises, balancing financial returns with measurable social and environmental benefits. However, existing investment frameworks often prioritize either profitability or social responsibility, leaving a gap in comprehensive models that integrate both seamlessly. This study proposes an inclusive impact investing framework that aligns financial sustainability with social and environmental objectives, ensuring long-term value creation for investors and communities alike. Employing a qualitative, literature-based research methodology, the study synthesizes scholarly literature, best practices, and case studies to explore key factors influencing impact investment decisions, including risk assessment, governance structures, scalability, and regulatory considerations. The framework emphasizes innovative financing mechanisms, stakeholder collaboration, and data-driven decision-making to optimize resource allocation and enhance impact measurement. Drawing on globally recognized tools such as the Global Impact Investing Rating System (GIIRS) and Impact Reporting and Investment Standards (IRIS), the framework underscores transparency, accountability, and ethical investment principles to build investor confidence. By bridging the gap between financial markets and social entrepreneurship, the research contributes to a more inclusive and resilient economic ecosystem where profitability and social responsibility coexist in a mutually reinforcing manner, fostering sustainable development and long-term social progress.

Keywords: Impact investing, social enterprises, sustainability, financial returns, stakeholder collaboration.

1 Introduction

Impact investing has emerged as a transformative approach that integrates financial returns with measurable social and environmental benefits [1]. As global challenges such as poverty, inequality, and climate change intensify, there is a growing demand for innovative financing mechanisms that align profitability with sustainability and social responsibility. Social enterprises, which operate at the intersection of business and social good, play a crucial role in addressing these pressing issues [2]. However, for social enterprises to thrive and achieve their full potential, a well-structured impact investing framework that is both inclusive and effective is essential. The need for an inclusive impact investing framework arises from the evolving investment landscape, where traditional financial models often fail to consider the broader societal and environmental implications of business activities [3]. Conventional investment strategies prioritize financial returns, frequently overlooking the long-term sustainability of enterprises and the well-being of communities. In contrast, impact investing seeks to generate positive social and environmental outcomes alongside financial gains [4]. This dual-purpose investment approach requires a structured framework that ensures accessibility to capital, long-term viability, and alignment with ethical business practices.

An inclusive impact investing framework should be designed to maximize profitability without compromising the social mission of enterprises [5]. This involves creating investment structures that provide equitable access to funding for enterprises of varying sizes, sectors, and geographical locations. Historically, impact investment has been concentrated in certain high-profile industries or regions, leaving many promising social enterprises underserved. A comprehensive framework should address these disparities by fostering diverse investment portfolios that include enterprises tackling issues such as affordable housing, renewable energy, sustainable agriculture, and financial inclusion [6]. Furthermore, impact measurement and accountability are key components of a robust impact investing framework. Unlike traditional investments, where success is often measured solely by financial metrics, impact investing requires a more nuanced evaluation approach. Investors and enterprises must collaborate to establish clear, standardized impact measurement methodologies that assess social and environmental performance alongside financial indicators [7]. These measurement tools should be transparent, adaptable, and aligned with international standards such as the United Nations Sustainable Development Goals

(SDGs). By integrating rigorous impact assessment mechanisms, investors can ensure that their capital contributes to meaningful and measurable outcomes [8].

Sustainability is another critical pillar of an inclusive impact investing framework. Social enterprises must adopt business models that balance profitability with long-term sustainability. This includes implementing environmentally friendly practices, ethical supply chain management, and stakeholder engagement strategies that foster community development [9]. Investors, in turn, should incentivize sustainable business practices by offering favorable financing terms, performance-based incentives, and technical support. By aligning financial goals with sustainability principles, impact investing can drive systemic change and create resilient enterprises that contribute to global development goals [10]. Additionally, fostering collaboration among stakeholders is essential for building an inclusive impact investing ecosystem. Governments, financial institutions, non-governmental organizations, and impact investors must work together to create supportive policies, regulatory frameworks, and investment vehicles that encourage responsible investing [11]. Public-private partnerships can play a crucial role in de-risking investments and mobilizing capital for high-impact enterprises. Education and capacity-building initiatives can also enhance the ability of social entrepreneurs to navigate the complex landscape of impact investing, thereby increasing their chances of securing funding and scaling their operations [12].

Technology and innovation further enhance the effectiveness of impact investing frameworks. Digital financial tools, blockchain technology, and artificial intelligence can streamline investment processes, improve transparency, and enhance impact tracking [13]. For example, blockchain-based smart contracts can ensure fair and transparent transactions, while data analytics can provide real-time insights into the social and environmental impact of investments. By leveraging technology, impact investors and enterprises can optimize decision-making processes and enhance accountability [14]. While impact investing has gained significant traction globally, challenges remain in achieving widespread adoption and scalability. One of the primary barriers is the perceived trade-off between financial returns and social impact. Many investors hesitate to engage in impact investing due to concerns about lower profitability or heightened risk [15]. However, numerous studies and real-world examples demonstrate that impact-driven enterprises can achieve competitive financial returns while delivering substantial social and environmental benefits. Educating investors about the long-term value proposition of impact investing and showcasing successful case studies can help address these misconceptions [16].

Another challenge is the lack of standardized frameworks for impact measurement and reporting. The diversity of impact metrics and reporting methodologies creates inconsistencies that make it difficult for investors to compare and assess investment opportunities effectively [17]. Developing universally accepted impact measurement standards and incorporating them into investment frameworks can enhance credibility and transparency in the impact investing sector.

Despite these challenges, the future of impact investing remains promising. With increasing awareness of social and environmental issues, more investors are recognizing the importance of aligning their financial strategies with ethical and sustainable principles [18]. Governments and international organizations are also playing a pivotal role in promoting impact investing through policy incentives, grants, and funding programs. By adopting an inclusive impact investing framework that maximizes profitability, sustainability, and social responsibility, stakeholders can unlock new opportunities for economic growth, social progress, and environmental stewardship [19]. Hence, an inclusive impact investing framework is essential for fostering the growth and success of social enterprises. By prioritizing equitable access to capital, rigorous impact measurement, sustainability, stakeholder collaboration, and technological innovation, impact investing can drive meaningful change on a global scale [20]. As the world grapples with complex socio-economic and environmental challenges, impact investing presents a viable solution for creating a more just, resilient, and prosperous future. The integration of financial returns with positive societal outcomes not only benefits investors and enterprises but also contributes to building a more sustainable and inclusive global economy [21].

2 Literature review

Impact investing has emerged as a powerful tool in the landscape of social enterprises, offering a blend of financial return and positive social or environmental outcomes [22]. The concept of impact investing reflects a shift from the traditional focus on financial gains to a more holistic approach, where profitability, sustainability, and social responsibility are equally prioritized [23]. As social enterprises often aim to address pressing societal challenges, such as poverty, inequality, and climate change, the development of an inclusive impact investing framework is crucial to maximizing both their impact and profitability [24]. The evolution of impact investing is rooted in the growing recognition that business activities need to contribute to society beyond generating profit. Initially, impact investing was often perceived as a niche market for philanthropic ventures, where investors were willing to accept below-market returns for social benefits. Over time, this perception has shifted [25]. Impact investing is now seen

as an integral part of the mainstream investment ecosystem, where investors expect competitive returns while also driving positive change. This shift reflects a broader understanding that social enterprises can be both profitable and sustainable, without compromising their core mission to tackle social issues [26].

Central to the development of an inclusive impact investing framework is the concept of balancing financial returns with measurable social outcomes [27]. The challenge lies in ensuring that investments made in social enterprises generate not only financial profit but also significant positive impacts on society and the environment. To achieve this, impact investors must go beyond financial performance metrics and incorporate social and environmental metrics into their assessment models [28]. Tools like the Global Impact Investing Rating System (GIIRS) and the Impact Reporting and Investment Standards (IRIS) have become essential in providing a standardized approach to measuring and reporting impact, allowing investors to evaluate the true value of their investments in both financial and social terms [29]. Furthermore, an inclusive impact investing framework necessitates a deep understanding of the diverse needs of social enterprises. Social enterprises, which operate across various sectors such as healthcare, education, renewable energy, and financial inclusion, have unique challenges in terms of accessing capital [30]. Often, these enterprises struggle to attract traditional venture capital or private equity due to their perceived high risk or limited financial returns. An inclusive framework addresses these challenges by promoting a more diverse set of investment vehicles that cater to the varying stages of growth and risk profiles of social enterprises [31]. This might include blended finance, which combines concessional funding from governments or philanthropic organizations with private capital, as well as innovative financing models like social impact bonds and development impact bonds [32].

Additionally, the framework should consider the long-term sustainability of both the social enterprise and its business model [33]. Sustainability in this context refers to more than just financial viability; it also encompasses environmental stewardship, social equity, and governance practices [34]. A well-structured impact investing framework encourages social enterprises to embed sustainability into their business models from the outset, ensuring that they not only meet the needs of the present but also contribute to the long-term well-being of future generations [35]. Investors, in turn, must be willing to adopt patient capital strategies, recognizing that the true impact of their investments may take time to materialize. Social responsibility is another key pillar in an inclusive impact investing framework [36]. This involves ensuring that the enterprises being supported adhere to ethical practices in their operations, supply chains, and relationships with local communities [37]. Social enterprises often operate in underserved or marginalized areas, and therefore, their social responsibility extends to ensuring that their business practices uplift these communities rather than exploit them [38]. Investors must evaluate how well a social enterprise aligns with these principles, considering not only the financial and social outcomes but also the ethical implications of their investments.

Moreover, collaboration among stakeholders is essential for the success of an inclusive impact investing framework. Investors, social enterprises, governments, and civil society organizations must work together to create an ecosystem that supports the growth of social enterprises and the scaling of impact [39]. Policymakers can play a crucial role by providing the necessary regulatory support, such as tax incentives, to encourage private sector investment in social enterprises. Governments can also help by de-risking investments through guarantees or co-investment schemes, while civil society organizations can ensure that the voices of affected communities are heard and that the social impact is genuinely transformative [40]. The growing interest in impact investing has also led to a broader exploration of how to align financial returns with social impact across diverse sectors [41]. Social enterprises in sectors like renewable energy, education, and healthcare are increasingly seen as viable investment opportunities, offering both financial returns and the potential to solve pressing global challenges. For instance, impact investments in renewable energy can not only generate returns but also contribute to the fight against climate change by providing clean, affordable energy to underserved populations [42]. Similarly, investments in healthcare and education can drive positive social outcomes by improving access to critical services for marginalized communities. The future of impact investing lies in deepening the integration of impact metrics into the investment process [43]. As investors become more sophisticated in their understanding of impact, they will increasingly demand rigorous, transparent data on social and environmental outcomes. This will drive innovation in measurement and reporting systems, leading to more accurate and reliable assessments of the effectiveness of impact investments [44]. Moreover, as more social enterprises scale and demonstrate their ability to generate both financial returns and positive social outcomes, the impact investing ecosystem will likely attract even greater interest from mainstream investors, further cementing its place as a viable and essential tool for driving positive social change [45]. An inclusive impact investing framework holds the potential to maximize the profitability, sustainability, and social responsibility of social enterprises. By integrating financial, social, and environmental metrics into the investment process, such a framework can ensure that social enterprises not only achieve their financial goals but also create lasting positive impacts on society [46]. With collaboration among

investors, social enterprises, governments, and civil society, impact investing can become a transformative force in addressing global challenges while generating competitive returns for investors [47].

2.1 Proposed Conceptual Model

The concept of impact investing is growing in prominence as investors increasingly seek to generate social and environmental returns alongside financial profit. Social enterprises, which prioritize the creation of positive societal impacts while operating within a profit-driven framework, represent an ideal sector for the application of impact investing [48]. A comprehensive and inclusive impact investing framework for social enterprises must balance profitability, sustainability, and social responsibility, all while ensuring that each aspect of the enterprise's operations remains interconnected and aligned with its mission [49]. The proposed model aims to create a system that fosters measurable social and environmental change without compromising on financial returns, and one that emphasizes inclusivity, transparency, and long-term viability [50]. At the heart of the proposed model is the alignment of impact goals with business operations. Social enterprises are inherently focused on achieving social objectives but often face the challenge of navigating the tension between their mission and the financial expectations of investors [51]. This model proposes a framework that integrates impact measurement tools and financial models to ensure that profitability and sustainability do not come at the expense of social responsibility. Impact measurement should not be a peripheral activity; instead, it should be embedded into the enterprise's core strategy, and its outcomes should be closely monitored alongside financial performance indicators [52].

The model emphasizes the importance of inclusivity in every step of the impact investing process. Inclusive finance for social enterprises goes beyond simply providing capital; it involves creating a financial ecosystem that is accessible to a wide range of enterprises, particularly those that may not traditionally attract mainstream investors [53]. This may include smaller, local social enterprises or those operating in underfunded regions, whose impact is often most profound but whose access to capital is limited [54]. In fostering inclusivity, the model advocates for diverse investor profiles—ranging from philanthropic foundations to impact-focused venture capitalists and institutional investors—who bring different types of capital, expertise, and value-adding support to the table [55]. The integration of sustainability within the framework is also key to ensuring that social enterprises do not merely achieve short-term success but also create long-term, enduring value. Sustainability is addressed through both operational efficiency and the adoption of scalable business models [56]. Social enterprises must be encouraged to innovate around sustainable business practices that mitigate environmental impact and foster resilience in the face of economic fluctuations. For instance, incorporating circular economy principles, such as reducing waste and maximizing resource efficiency, can contribute to the long-term sustainability of both the enterprise and the wider community [57]. This model supports the use of green technologies and sustainable supply chains, ensuring that environmental concerns are considered in tandem with economic goals.

The model also underscores the importance of corporate social responsibility (CSR) in driving long-term success. Social enterprises inherently pursue CSR through their mission-driven goals, but impact investors must ensure that these efforts are aligned with the broader financial and strategic objectives of the business [58]. This can be achieved through careful governance, including the integration of social impact metrics into performance evaluations, stakeholder engagement, and transparent reporting. Investors can play a pivotal role by demanding a high level of accountability from social enterprises in demonstrating both financial returns and the real-world impact of their activities [59]. This reporting should be transparent, providing clear and verifiable data on the social outcomes of the enterprise, allowing both investors and stakeholders to assess whether the business is meeting its intended social, environmental, and financial goals [60]. Moreover, the framework encourages collaboration between social enterprises and investors, ensuring that both parties share a common vision for impact. Rather than viewing the relationship between investor and enterprise as one of transactional profit-making, the model advocates for a partnership approach, where investors actively support the enterprise through mentorship, capacity building, and strategic guidance [61]. By integrating investor knowledge and expertise, social enterprises are better positioned to scale their impact while maintaining alignment with their mission.

The inclusive impact investing framework seeks to address the systemic barriers that prevent social enterprises from thriving. These barriers can include lack of access to capital, regulatory challenges, and market entry difficulties, particularly in emerging economies or underserved communities [62]. The proposed model calls for multi-stakeholder collaboration between government bodies, investors, social enterprises, and non-profit organizations to create a supportive environment that addresses these barriers. Policy reforms, including incentives for impact investments and regulatory frameworks that encourage social enterprise growth, should be advocated for at the regional and national levels [63]. In doing so, the model creates a robust infrastructure for social enterprises to scale effectively while maintaining their focus on delivering measurable social impact. The proposed conceptual model for an inclusive impact investing framework offers a balanced approach to

maximizing profitability, sustainability, and social responsibility for social enterprises [64]. By embedding impact measurement, fostering inclusivity, prioritizing sustainability, and ensuring responsible governance, this model aims to create a thriving ecosystem that supports social enterprises in achieving their mission while delivering financial returns [65]. The collaborative efforts of investors, social enterprises, and other stakeholders will be key to its success, ensuring that social enterprises have the tools and resources they need to create lasting positive change in society

2.2 Implementation Approach

The concept of impact investing has gained significant traction in recent years, especially within the context of social enterprises. Social enterprises are organizations that seek to address pressing societal issues through market-driven solutions while ensuring that their operations remain financially viable [66]. Impact investing is designed to align capital investment with positive social or environmental outcomes. In this regard, creating an inclusive impact investing framework for social enterprises becomes essential to maximize profitability, sustainability, and social responsibility [67]. The objective is to establish a structure that encourages the flow of capital into social enterprises, enables these organizations to scale, and ensures the responsible and transparent delivery of social and environmental benefits.

The implementation of an inclusive impact investing framework begins by recognizing the necessity of providing clear guidelines that allow investors to identify viable social enterprises [68]. This requires a rigorous set of criteria that considers not only financial performance but also the social impact generated by the enterprise. Social impact measurement becomes one of the key components of the framework. Standardizing methods to evaluate social returns on investment (SROI) enables both investors and enterprises to understand the true value being created [69]. Tools like the Global Impact Investing Rating System (GIIRS) and IRIS (Impact Reporting and Investment Standards) have been developed to assist in this task. By creating an environment where social and environmental outcomes are quantifiable, investors are empowered to make informed decisions based on both financial returns and social impact. To ensure profitability within this framework, the focus must also shift toward providing a sustainable business model for social enterprises [70]. Often, social enterprises face the challenge of balancing the dual goals of social good and financial returns. Many social enterprises operate in underserved or emerging markets, where the path to profitability may be more challenging due to higher risks, a lack of access to capital, or fluctuating demand for socially-driven products and services. Therefore, the framework must include provisions for risk management and capacity-building. Risk-adjusted returns should be a key consideration for impact investors, and blended finance models, which combine concessional and commercial capital, can be employed to attract investors with varying risk appetites. For social enterprises, this approach can provide the necessary financial support to scale operations and grow their impact while maintaining financial viability. The inclusion of diverse stakeholders is another vital element of the framework, especially for ensuring social responsibility and inclusivity. Impact investing in social enterprises has the potential to address some of the most significant challenges facing marginalized communities, such as access to education, healthcare, clean energy, and affordable housing. By involving local communities and affected populations in the design and implementation of the social enterprise models, the framework can ensure that the solutions are both relevant and effective. Social enterprises can incorporate participatory approaches to design their offerings, ensuring that they meet the actual needs of the communities they serve. Additionally, the involvement of stakeholders in decision-making processes, such as impact measurement, governance, and monitoring, fosters a sense of ownership and accountability, which is critical for long-term success.

Another critical feature of the inclusive impact investing framework is the emphasis on transparency and accountability. Social enterprises must have robust mechanisms in place to report their financial and social impact performance. This could include quarterly or annual reporting on key performance indicators (KPIs) related to both financial outcomes and social goals. Additionally, the involvement of third-party organizations that specialize in impact measurement and audit processes can help validate the claims made by social enterprises. By holding social enterprises accountable to their commitments, investors can ensure that the investments continue to deliver on their promises over time. This transparency also creates a positive feedback loop, wherein both investors and social enterprises share a common goal of achieving measurable social impact, which can further attract additional investment and support. To ensure long-term sustainability, the framework should address the need for capacity-building, particularly in areas like leadership development, financial management, and impact measurement. Many social enterprises, especially in their early stages, may lack the technical expertise required to manage growth and scale operations effectively. By incorporating capacity-building programs into the framework, impact investors can help equip social entrepreneurs with the skills needed to navigate the complex landscape of impact investing. Providing training and mentorship in areas such as governance, operations, and financial management helps social enterprises improve their operational efficiency, which in turn contributes to the long-term sustainability of both the enterprise and its social mission.

Furthermore, the framework should also recognize the importance of collaboration across sectors. Partnerships between governments, nonprofits, private investors, and social enterprises are essential for creating a comprehensive ecosystem that supports social impact. Governments can play a critical role in providing regulatory support, policy incentives, and infrastructure that promotes impact investing. Nonprofits and NGOs can provide expertise and insights on the social issues being addressed, while private investors bring in the necessary financial resources. By facilitating multi-stakeholder collaborations, the framework ensures that social enterprises have access to the resources and support they need to achieve their goals. Additionally, collaboration fosters innovation, as it encourages the exchange of ideas and best practices, leading to more effective and scalable solutions. An inclusive impact investing framework for social enterprises should prioritize maximizing profitability, sustainability, and social responsibility. Through the integration of impact measurement tools, risk management strategies, stakeholder inclusivity, transparency, capacity-building, and cross-sector collaboration, this framework can effectively support the growth and scaling of social enterprises. This comprehensive approach ensures that social enterprises can continue to generate lasting, positive social change while remaining financially viable and attractive to impact investors. By embracing this inclusive framework, the potential for creating systemic change through impact investing becomes a powerful tool for addressing some of the world's most pressing challenges.

2.3 Case study applications

In recent years, the concept of impact investing has gained significant attention as a tool for driving social, environmental, and economic changes through investments that generate both financial returns and measurable social impact. Among the various sectors where impact investing has been applied, social enterprises stand out as a critical focal point. These enterprises combine the goals of profitability with social responsibility, aiming to address societal issues such as poverty, inequality, education, healthcare, and environmental sustainability. The challenge for social enterprises is to balance these often-competing objectives—financial profitability, social impact, and sustainability—in a way that ensures long-term success and growth. To achieve this, an inclusive impact investing framework can provide the necessary structure for maximizing not only the profitability of social enterprises but also their sustainability and social responsibility.

An inclusive impact investing framework for social enterprises operates on the belief that financial performance should not be viewed in isolation from social outcomes. Rather, the dual goal of such investments is to ensure both financial returns and measurable social benefits. The framework encourages investors to view social enterprises as more than just vehicles for profit but as integral parts of the social and environmental fabric that can contribute to long-term societal improvement. By incorporating social and environmental considerations into the investment decision-making process, investors are able to identify enterprises that are genuinely committed to driving positive change. The success of an inclusive impact investing framework depends largely on clear and consistent metrics for measuring impact. These metrics must go beyond the traditional financial indicators to include social, environmental, and governance factors. For instance, measuring the environmental impact of a social enterprise might involve evaluating its carbon footprint, resource use, or the effectiveness of its recycling programs. On the social side, metrics could focus on factors such as job creation in underserved communities, access to education or healthcare for marginalized groups, and improvements in quality of life for beneficiaries of the enterprise's services. Investors in social enterprises can use these metrics to ensure that their investments align with their values and objectives, and to monitor and evaluate progress toward the achievement of desired outcomes.

To maximize profitability, social enterprises must also embrace a sustainable business model that allows them to generate revenue while achieving their social mission. This is particularly important because many social enterprises face challenges in securing traditional forms of funding, such as venture capital or loans, due to their dual mission of social impact and financial returns. Inclusive impact investing encourages social enterprises to adopt innovative financial models, such as blended finance, that combine traditional equity investments with philanthropic funding, to bridge the gap between market-based solutions and social objectives. In this way, social enterprises can attract a diverse pool of investors, each contributing different types of capital and expertise to support the long-term success and scalability of the enterprise. The notion of sustainability within an inclusive impact investing framework extends beyond financial viability to include environmental and social dimensions. Environmental sustainability requires social enterprises to take a proactive approach to mitigating their ecological footprint, whether through the adoption of renewable energy, eco-friendly supply chains, or sustainable sourcing practices. Social sustainability, on the other hand, demands that enterprises create lasting positive effects on the communities they serve. This can involve providing workers with fair wages, offering training and development opportunities, and ensuring that products and services meet the needs of low-income or underserved populations. By embedding sustainability into every aspect of their operations, social enterprises can achieve a level of resilience that will help them weather economic and social challenges over the long term.

Importantly, an inclusive impact investing framework does not solely focus on financial returns or social impact in isolation. Rather, it emphasizes the interconnectedness of these two dimensions, advocating for a holistic approach that ensures investors, social enterprises, and communities all benefit from the process. For example, a social enterprise that provides affordable solar energy solutions to rural communities might see financial returns through the sale of solar panels, but it also delivers social impact by improving access to clean energy, creating jobs in underserved areas, and contributing to the reduction of carbon emissions. This symbiotic relationship between profitability and social responsibility is central to the philosophy of impact investing and is essential for achieving long-term success and scalability. One of the main advantages of an inclusive impact investing framework is its ability to attract a wide range of investors. While traditional investors may prioritize financial returns alone, impact investors are more inclined to consider social and environmental outcomes as part of their investment strategy. This broader view of value creation allows social enterprises to tap into new sources of capital, including both institutional and individual investors who share a commitment to addressing social issues. Furthermore, inclusive impact investing can help overcome some of the barriers faced by social enterprises in accessing capital, such as a lack of traditional funding avenues or a perceived risk associated with their dual mission.

An important aspect of maximizing the effectiveness of an inclusive impact investing framework is the involvement of diverse stakeholders in the process. This includes not only investors and social enterprises but also local communities, government agencies, and civil society organizations. By engaging a broad range of stakeholders, social enterprises can ensure that their activities are aligned with the needs of the communities they serve and that they are accountable to all parties involved. Moreover, the collaboration between these stakeholders can help to build a supportive ecosystem for social enterprises, fostering innovation, sharing of best practices, and creating an enabling environment for scaling up social impact. An inclusive impact investing framework provides a powerful mechanism for maximizing the profitability, sustainability, and social responsibility of social enterprises. By emphasizing the importance of both financial performance and social impact, and by encouraging the adoption of sustainable business models, this framework ensures that social enterprises can thrive while addressing some of the world's most pressing challenges. The key to its success lies in creating robust metrics for measuring impact, adopting innovative financial models, and fostering collaboration among diverse stakeholders. With the right structure and support, social enterprises can become a driving force for positive change, delivering both financial returns and lasting social benefits.

2.4 Discussions

Impact investing has emerged as a powerful tool for addressing social, environmental, and economic challenges, aligning financial returns with positive societal outcomes. An inclusive impact investing framework for social enterprises seeks to maximize profitability, sustainability, and social responsibility by integrating diverse stakeholder perspectives, ensuring accountability, and generating both financial and social value. At the core of this framework lies the understanding that businesses must go beyond traditional profit-maximization models, incorporating the needs of marginalized communities, environmental sustainability, and ethical practices into their strategies. The concept of impact investing has evolved significantly over the past two decades, influenced by the increasing recognition that financial markets alone cannot resolve global challenges such as poverty, inequality, and climate change. Social enterprises, which aim to address these issues through market-based solutions, have become central to this movement. These organizations operate with dual goals: achieving financial success while simultaneously contributing to social and environmental welfare. However, many social enterprises face challenges in balancing profitability with their social missions. This is where an inclusive impact investing framework comes into play, providing a structured approach to evaluating and supporting these ventures. The framework begins with a clear definition of what constitutes impact investing. It involves investments made with the intention to generate measurable, positive social or environmental outcomes, alongside a financial return. This dual expectation requires investors to consider a variety of metrics, not just financial performance. Key indicators might include improvements in health, education, access to clean water, or reductions in carbon emissions. The challenge for social enterprises is to design business models that can attract investment while also demonstrating a tangible, positive impact on society. An inclusive impact investing framework can help by establishing benchmarks and creating transparency around the impact measurement process.

One of the critical elements of an inclusive framework is stakeholder inclusion. Unlike traditional investment models that focus solely on financial stakeholders, an inclusive approach ensures that the voices of all affected communities are heard. Social enterprises, especially those targeting low-income or marginalized populations, must be responsive to the needs of the people they aim to serve. This requires close engagement with local communities, as well as an understanding of the cultural, social, and environmental contexts in which the enterprise operates. By incorporating the perspectives of these communities into business strategies, social enterprises can design solutions that are both effective and sustainable. Sustainability is another pillar of the

inclusive impact investing framework. Financial sustainability, environmental stewardship, and long-term social impact must be interwoven into a coherent strategy. Social enterprises need to build business models that can thrive in the long run while fulfilling their mission. This often involves creating hybrid revenue models that combine commercial viability with social good, such as charging for products or services in ways that are affordable to low-income populations or engaging in partnerships with governments or other entities to scale impact. The framework encourages social enterprises to think beyond short-term gains and focus on strategies that ensure long-term resilience, both financially and socially.

The inclusion of environmental sustainability in impact investing is also vital, particularly in the face of climate change and other global environmental crises. Many social enterprises are directly involved in addressing environmental issues, from renewable energy projects to waste management and conservation efforts. For these enterprises, the inclusive framework ensures that their environmental goals are not just a part of their mission but are integrated into their core business model. For instance, an impact investor may assess how a renewable energy enterprise is not only generating financial returns but also reducing greenhouse gas emissions and contributing to the global transition to a low-carbon economy. Maximizing profitability within an inclusive impact investing framework does not mean sacrificing social or environmental goals. On the contrary, it encourages the creation of innovative solutions that can address pressing societal issues while remaining financially viable. For example, social enterprises that provide affordable healthcare in underserved areas can create profitable models by leveraging technology, partnerships, and innovative delivery methods. These enterprises can attract investors who are motivated by both the potential for financial returns and the desire to make a positive impact. An inclusive approach to impact investing encourages investors to view profitability as a means to an end, rather than the end itself, ensuring that the pursuit of profit aligns with broader social and environmental objectives.

The role of investors is crucial in driving the success of social enterprises under this framework. Impact investors must not only provide capital but also offer strategic support, such as mentorship, networking, and expertise, to help enterprises grow sustainably. By working closely with social enterprises, investors can help them navigate challenges, scale their impact, and refine their business models. In turn, this collaborative approach increases the likelihood that these ventures will deliver both financial returns and social value, creating a win-win situation for all parties involved. Moreover, an inclusive impact investing framework encourages transparency and accountability. Social enterprises need to be transparent about their impact, ensuring that they measure and report on both financial and social outcomes. Investors, in turn, should hold enterprises accountable for delivering on their promises, using performance data to track progress and make informed decisions. This accountability fosters trust between investors, enterprises, and communities, strengthening the entire impact investing ecosystem. An inclusive impact investing framework for social enterprises offers a holistic approach to creating lasting, meaningful change. By focusing on profitability, sustainability, and social responsibility, the framework enables social enterprises to thrive while addressing some of the most pressing global challenges. Through stakeholder inclusion, long-term sustainability, and environmental stewardship, this framework ensures that social enterprises can maximize both their financial returns and their positive impact on society. For impact investors, it provides a pathway to support ventures that align with their values and contribute to the creation of a more equitable and sustainable world.

3 Conclusion

An inclusive impact investing framework for social enterprises presents a balanced approach to achieving profitability, sustainability, and social responsibility. By prioritizing long-term value creation over short-term profits, the framework encourages a harmonious alignment of financial objectives with positive societal impact. It recognizes the inherent challenges faced by social enterprises, such as limited access to capital and the need for innovative business models that integrate social and environmental goals. The framework advocates for the involvement of diverse stakeholders, including investors, communities, and government entities, to foster an ecosystem that supports both financial returns and the advancement of social good. The concept of impact investing is crucial in driving the growth of social enterprises by ensuring that investments are not only financially sound but also have measurable positive impacts. By emphasizing transparency, accountability, and responsible management, social enterprises are better equipped to demonstrate their value to both investors and society. Furthermore, it highlights the importance of scaling impact, encouraging enterprises to adopt strategies that amplify their positive effects on communities, the environment, and society at large. Through the careful balancing of profit and purpose, the inclusive framework fosters a sustainable model for social enterprises that attracts diverse investors, ensuring their financial viability while advancing social justice and equity. In conclusion, this framework serves as a powerful tool to empower social enterprises to thrive, offering a roadmap to create lasting change while achieving meaningful returns for all stakeholders involved.

References

- [1] Otokiti, B. O., Igwe, A. N., Ewim, C. P.-M., Ibeh, A. I., & Sikhakhane-Nwokediegwu, Z. (2022). A framework for developing resilient business models for Nigerian SMEs in response to economic disruptions. *International Journal of Multidisciplinary Research and Growth Evaluation*, 3(1), 647-659.
- [2] Otokiti, B. O., Igwe, A. N., Ewim, C. P.-M., & Ibeh, A. I. (2021). Developing a framework for leveraging social media as a strategic tool for growth in Nigerian women entrepreneurs. *International Journal of Multidisciplinary Research and Growth Evaluation*, 1(1), 597-607.
- [3] Otokiti, B. O., Igwe, A. N., Ewim, C. P.-M., & Ibeh, A. I. (2021). Developing a framework for leveraging social media as a strategic tool for growth in Nigerian women entrepreneurs. *International Journal of Multidisciplinary Research and Growth Evaluation*, 2(1), 597-607.
- [4] Kalina, I., Khurdei, V., Shevchuk, V., Vlasiuk, T., & Leonidov, I. (2022). Introduction of a corporate security risk management system: The experience of Poland. *Journal of Risk and Financial Management*, 15(8), 335.
- [5] Syrová, L., & Špička, J. (2022). Exploring the indirect links between enterprise risk management and the financial performance of SMEs. *Risk management*, 25(1), 1.
- [6] Oyegbade, I. K., Igwe, A. N., Ofodile, O. C., & Azubuike, C. (2021). Innovative financial planning and governance models for emerging markets: Insights from startups and banking audits. *Open Access Research Journal of Multidisciplinary Studies*, 1(2), 108-16.
- [7] Oyeniyi, L. D., Igwe, A. N., Ofodile, O. C., & Paul-Mikki, C. (2021). Optimizing risk management frameworks in banking: Strategies to enhance compliance and profitability amid regulatory challenges. *Journal Name Missing*.
- [8] Adewale, T. T., Olorunyomi, T. D., & Odonkor, T. N. (2021). AI-powered financial forensic systems: A conceptual framework for fraud detection and prevention. *Magna Sci Adv Res Rev*, 2(2), 119-36.
- [9] Adewale, T. T., Olorunyomi, T. D., & Odonkor, T. N. (2021). Advancing sustainability accounting: A unified model for ESG integration and auditing. *Int J Sci Res Arch*, 2(1), 169-85.
- [10] Oyedokun, O. O. (2019). *Green human resource management practices and its effect on the sustainable competitive edge in the Nigerian manufacturing industry (Dangote)* (Doctoral dissertation, Dublin Business School).
- [11] Apeh, O. O., Overen, O. K., & Meyer, E. L. (2021). Monthly, seasonal and yearly assessments of global solar radiation, clearness index and diffuse fractions in Alice, South Africa. *Sustainability*, 13(4), 2135.
- [12] Apeh, O.O., Chime, U.K., Agbo, S., Ezugwu, S., Taziwa, R., Meyer, E., Sutta, P., Maaza, M. and Ezema, F.I., (2019). Properties of nanostructured ZnO thin films synthesized using a modified aqueous chemical growth method. *Materials Research Express*, 6(5), p.056406.
- [13] Okogwu, C, Agho, MO Adeyinka, MA Odulaja, BA Eyo-Udo NL (2023), Exploring the integration of sustainable materials in supply chain management for environmental impact, *Engineering Science & Technology Journal* 4 (3), 49-65.
- [14] Okogwu, C., Agho, M. O., Adeyinka, M. A., Odulaja, B. A., Eyo-Udo, N. L., Daraojimba, C., & Banso, A. A. (2023). Exploring the integration of sustainable materials in supply chain management for environmental impact. *Engineering Science & Technology Journal*, 4(3), 49-65.
- [15] Ogunjobi, O. A., Eyo-Udo, N. L., Egbokhaebho, B. A., Daraojimba, C., Ikwue, U., & Banso, A. A. (2023). Analyzing historical trade dynamics and contemporary impacts of emerging materials technologies on international exchange and US strategy. *Engineering Science & Technology Journal*, 4(3), 101-119.
- [16] Uwaoma, P. U., Eboigbe, E. O., Eyo-Udo, N. L., Daraojimba, D. O., & Kaggwa, S. (2023). Space commerce and its economic implications for the US: A review: Delving into the commercialization of space, its prospects, challenges, and potential impact on the US economy. *World Journal of Advanced Research and Reviews*, 20(3), 952-965.
- [17] Daraojimba, C., Eyo-Udo, N. L., Egbokhaebho, B. A., Ofonagoro, K. A., Ogunjobi, O. A., Tula, O. A., & Banso, A. A. (2023). Mapping international research cooperation and intellectual property management in the field of materials science: an exploration of strategies, agreements, and hurdles. *Engineering Science & Technology Journal*, 4(3), 29-48.
- [18] Uwaoma, P. U., Eboigbe, E. O., Eyo-Udo, N. L., Ijiga, A. C., Kaggwa, S., & Daraojimba, D. O. (2023). The fourth industrial revolution and its impact on agricultural economics: preparing for the future in developing countries. *International Journal of Advanced Economics*, 5(9), 258-270.
- [19] Gidiagba, J. O., Daraojimba, C., Ofonagoro, K. A., Eyo-Udo, N. L., Egbokhaebho, B. A., Ogunjobi, O. A., & Banso, A. A. (2023). Economic impacts and innovations in materials science: a holistic exploration of nanotechnology and advanced materials. *Engineering Science & Technology Journal*, 4(3), 84-100.
- [20] Meyer, E. L., Apeh, O. O., & Overen, O. K. (2020). Electrical and meteorological data acquisition system of a commercial and domestic microgrid for monitoring pv parameters. *Applied Sciences*, 10(24), 9092.

- [21] Apeh, O. O., Meyer, E. L., & Overen, O. K. (2021). Modeling and experimental analysis of battery charge controllers for comparing three off-grid photovoltaic power plants. *Heliyon*, 7(11).
- [22] Tula, O. A., Daraojimba, C., Eyo-Udo, N. L., Egbokhaebho, B. A., Ofonagoro, K. A., Ogunjobi, O. A., ... & Bansa, A. A. (2023). Analyzing global evolution of materials research funding and its influence on innovation landscape: a case study of us investment strategies. *Engineering Science & Technology Journal*, 4(3), 120-139.
- [23] Onukwulu, E. C., Fiomotongha, J. E., Igwe, A. N., & Ewim, C. P. M. (2023). Transforming supply chain logistics in oil and gas: best practices for optimizing efficiency and reducing operational costs. *Journal of Advance Multidisciplinary Research*, 2(2), 59-76.
- [24] Abbey, A. B. N., Olaleye, I. A., Mokogwu, C., & Queen, A. (2023). Building econometric models for evaluating cost efficiency in healthcare procurement systems. *Int J Econ Finance Stud*.
- [25] EWIM, C. P. M., AZUBUIKE, C., AJANI, O. B., OYENIYI, L. D., & ADEWALE, T. T. (2023). Incorporating Climate Risk into Financial Strategies: Sustainable Solutions for Resilient Banking Systems.
- [26] Abbey, A. B. N., Olaleye, I. A., Mokogwu, C., & Queen, A. (2023). Developing economic frameworks for optimizing procurement strategies in public and private sectors. *J Bus Finance Res*.
- [27] Mutegi, H. K., Njeru, P. W., & Ongesa, N. T. (2015). Financial literacy and its impact on loan repayment by small and medium entrepreneurs.
- [28] Adewale, T. T., Olorunyomi, T. D., & Odonkor, T. N. (2023). Big data-driven financial analysis: A new paradigm for strategic insights and decision-making.
- [29] Abbey, A. B. N., Olaleye, I. A., Mokogwu, C., & Queen, A. (2023). Developing economic frameworks for optimizing procurement strategies in public and private sectors. *J Bus Finance Res*.
- [30] Adewale, T. T., Olaleye, I. A., Mokogwu, C., Abbey, A., & Olufemi-Philips, Q. A. (2023). Building econometric models for evaluating cost efficiency in healthcare procurement systems. *Int J Frontline Res Rev*, 1(3), 083-91.
- [31] Okeke, I. C., Agu, E. E., Ejike, O. G., Ewim, C. P., & Komolafe, M. O. (2023). A service delivery standardization framework for Nigeria's hospitality industry. *International Journal of Frontline Research and Reviews*, 1(3), 51-65.
- [32] Okeke, I. C., Agu, E. E., Ejike, O. G., Ewim, C. P., & Komolafe, M. O. (2023). A theoretical model for harmonizing local and international product standards for Nigerian exports. *International Journal of Frontline Research and Reviews*, 1(4), 74-93.
- [33] Okeke, I. C., Agu, E. E., Ejike, O. G., Ewim, C. P. M., & Komolafe, M. O. (2023). A framework for standardizing tax administration in Nigeria: Lessons from global practices. *International Journal of Frontline Research and Reviews*, 1(03), 033-050.
- [34] Lyons, A. C., Kass-Hanna, J., Liu, F., Greenlee, A. J., & Zeng, L. (2020). *Building financial resilience through financial and digital literacy in South Asia and Sub-Saharan Africa* (No. 1098). ADBI Working Paper Series.
- [35] Okeke, I. C., Agu, E. E., Ejike, O. G., Ewim, C. P., & Komolafe, M. O. (2023). A digital financial advisory standardization framework for client success in Nigeria. *International Journal of Frontline Research and Reviews*, 1(3), 18-32.
- [36] Okeke, I. C., Agu, E. E., Ejike, O. G., Ewim, C. P., & Komolafe, M. O. (2023). A technological model for standardizing digital financial services in Nigeria. *Int J Frontline Res Rev*, 1(4), 57-73.
- [37] Okeke, I. C., Agu, E. E., Ejike, O. G., Ewim, C. P., & Komolafe, M. O. (2023). A policy model for regulating and standardizing financial advisory services in Nigeria's capital market. *International Journal of Frontline Research and Reviews*, 1(4), 40-56.
- [38] Onukwulu, E. C., Agho, M. O., Eyo-Udo, N. L., Sule, A. K., & Azubuike, C. (2025). Integrating Green Logistics in Energy Supply Chains to Promote Sustainability. *International Journal of Research and Innovation in Applied Science*, 10(1), 86-117.
- [39] Okeke, I. C., Agu, E. E., Ejike, O. G., Ewim, C. P., & Komolafe, M. O. (2023). A theoretical framework for standardized financial advisory services in pension management in Nigeria. *Int J Frontline Res Rev*, 1(3), 66-82.
- [40] Okeke, I. C., Agu, E. E., Ejike, O. G., Ewim, C. P., & Komolafe, M. O. (2023). A digital taxation model for Nigeria: standardizing collection through technology integration. *Int J Frontline Res Rev*, 1(4), 18-39.
- [41] Eyo-Udo, N. L., Apeh, C. E., Bristol-Alagbariya, B., Udeh, C. A., & Ewim, C. P. M. (2025). Reviewing the role of networking in business success: USA and global perspectives.
- [42] Fiomotongha, J. E., Igwe, A. N., Ewim, C. P. M., & Onukwulu, E. C. (2023). Innovative trading strategies for optimizing profitability and reducing risk in global oil and gas markets. *Journal of Advance Multidisciplinary Research*, 2(1), 48-65.

- [43] Onukwulu, E. C., Fiemotongha, J. E., Igwe, A. N., & Ewim, C. P. M. (2023). Transforming supply chain logistics in oil and gas: best practices for optimizing efficiency and reducing operational costs. *Journal of Advance Multidisciplinary Research*, 2(2), 59-76.
- [44] Ferreira, J., & Coelho, A. (2020). Dynamic capabilities, innovation and branding capabilities and their impact on competitive advantage and SME's performance in Portugal: the moderating effects of entrepreneurial orientation. *International Journal of Innovation Science*, 12(3), 255-286.
- [45] EWIM, C. P. M., AZUBUIKE, C., AJANI, O. B., OYENIYI, L. D., & ADEWALE, T. T. (2023). Incorporating Climate Risk into Financial Strategies: Sustainable Solutions for Resilient Banking Systems.
- [46] Aminu, M., Akinsanya, A., Dako, D. A., & Oyedokun, O. (2024). Enhancing cyber threat detection through real-time threat intelligence and adaptive defense mechanisms. *International Journal of Computer Applications Technology and Research*, 13(8), 11-27.
- [47] AMINU, M., AKINSANYA, A., OYEDOKUN, O., & TOSIN, O. (2024). A Review of Advanced Cyber Threat Detection Techniques in Critical Infrastructure: Evolution, Current State, and Future Directions.
- [48] Aminu, M., Akinsanya, A., Dako, D. A., & Oyedokun, O. (2024). Enhancing cyber threat detection through real-time threat intelligence and adaptive defense mechanisms. *International Journal of Computer Applications Technology and Research*, 13(8), 11-27.
- [49] Alao, O. B., Dudu, O. F., Alonge, E. O., & Eze, C. E. (2024). Automation in financial reporting: A conceptual framework for efficiency and accuracy in US corporations. *Global Journal of Advanced Research and Reviews*, 2(02), 040-050.
- [50] Alonge, E. O., Dudu, O. F., & Alao, O. B. (2024). The impact of digital transformation on financial reporting and accountability in emerging markets. *International Journal of Science and Technology Research Archive*, 7(2), 025-049.
- [51] Ogunbiyi-Badaru, O., Alao, O. B., Dudu, O. F., & Alonge, E. O. (2024). Blockchain-enabled asset management: Opportunities, risks and global implications.
- [52] Ogunbiyi-Badaru, O., Alao, O. B., Dudu, O. F., & Alonge, E. O. (2024). The impact of FX and fixed income integration on global financial stability: A comprehensive analysis.
- [53] Akinrinola, O., Okoye, C. C., Ofodile, O. C., & Ugochukwu, C. E. (2024). Navigating and reviewing ethical dilemmas in AI development: Strategies for transparency, fairness, and accountability. *GSC Advanced Research and Reviews*, 18(3), 050-058.
- [54] Raji, M. A., Olodo, H. B., Oke, T. T., Addy, W. A., Ofodile, O. C., & Oyewole, A. T. (2024). Business strategies in virtual reality: a review of market opportunities and consumer experience. *International Journal of Management & Entrepreneurship Research*, 6(3), 722-736.
- [55] Apeh, O. O., Meyer, E. L., & Overen, O. K. (2022). Contributions of solar photovoltaic systems to environmental and socioeconomic aspects of national development—A review. *Energies*, 15(16), 5963.
- [56] Mbam, S. M., Obodo, R. M., Apeh, O. O., Nwanya, A. C., Ekwealor, A. B. C., Nwulu, N., & Ezema, F. I. (2023). Performance evaluation of Bi₂O₃@ GO and Bi₂O₃@ rGO composites electrode for supercapacitor application. *Journal of Materials Science: Materials in Electronics*, 34(18), 1405.
- [57] Apeh, O. O., & Nwulu, N. (2024). The Food-Energy-Water Nexus Optimization: A Systematic Literature Review. *Research on World Agricultural Economy*, 5(4).
- [57] Apeh, O. O., & Nwulu, N. I. (2024). The water-energy-food-ecosystem nexus scenario in Africa: Perspective and policy implementations. *Energy Reports*, 11, 5947-5962.
- [58] Apeh, O. O., & Nwulu, N. I. (2024). Unlocking economic growth: Harnessing renewable energy to mitigate load shedding in Southern Africa. *e-Prime-Advances in Electrical Engineering, Electronics and Energy*, 10, 100869.
- [59] Overen, O. K., Oobileke, K., Meyer, E. L., Makaka, G., & Apeh, O. O. (2024). A hybrid solar-biogas system for post-COVID-19 rural energy access. *Clean Energy*, 8(1), 84-99.
- [60] Addy, W. A., Ofodile, O. C., Adeoye, O. B., Oyewole, A. T., Okoye, C. C., Odeyemi, O., & Ololade, Y. J. (2024). Data-driven sustainability: How fintech innovations are supporting green finance. *Engineering Science & Technology Journal*, 5(3), 760-773.
- [61] Ezeife, E., Kokogho, E., Odio, P. E., & Adeyanju, M. O. (2025). Agile tax technology development in the US: A conceptual framework for scalable and efficient enterprise solutions. *Gulf Journal of Advance Business Research*, 3(2), 512-526.
- [62] Odio, P. E., Okon, R., Adeyanju, M. O., Ewim, C. P. M., & Onwuzulike, O. C. (2025). Blockchain and Cybersecurity: A dual approach to securing financial transactions in Fintech. *Gulf Journal of Advance Business Research*, 3(2), 380-409.
- [63] Egbuhuzor, N. S., Ajayi, A. J., Akhigbe, E. E., Agbede, O. O., Ewim, C. P. M., & Ajiga, D. I. (2025). AI and data-driven insights: Transforming customer relationship management (CRM) in financial services. *Gulf Journal of Advance Business Research*, 3(2), 483-511.

- [64] Eyo-Udo, N. L., Apeh, C. E., Bristol-Alagbariya, B., Udeh, C. A., & Ewim, C. P. M. (2025). Reviewing the role of networking in business success: USA and global perspectives.
- [65] Eyo-Udo, N. L., Apeh, C. E., Bristol-Alagbariya, B., Udeh, C. A., & Ewim, C. P. M. (2025). International Trade Law in the Modern World: A Review of Evolving Practices and Agreements.
- [66] Apeh, O. O., & Nwulu, N. I. (2025). Machine learning approach for short-and long-term global solar irradiance prediction. *Journal of Environmental & Earth Sciences*| Volume, 7(01).
- [67] Apeh, O. O., & Nwulu, N. I. (2025). Improving traceability and sustainability in the agri-food industry through blockchain technology: A bibliometric approach, benefits and challenges. *Energy Nexus*, 17, 100388.
- [68] Arinze, C. A., Agho, M. O., Eyo-Udo, N. L., Abbey, A. B. N., & Onukwulu, E. C. (2025). AI-Driven Transport and Distribution Optimization Model (TDOM) for the downstream petroleum sector: enhancing sme supply chains and sustainability.
- [69] Eyo-Udo, N. L., Apeh, C. E., Bristol-Alagbariya, B., Udeh, C. A., & Ewim, C. P. M. (2025). The Evolution of Blockchain Technology in Accounting: A Review of Its Implications for Transparency and Accountability.
- [70] Eyo-Udo, N. L., Apeh, C. E., Bristol-Alagbariya, B., Udeh, C. A., & Ewim, C. P. M. (2025). Review of ethical considerations and dilemmas in the field of AI and machine learning.