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INFLUENCE OF CIRCULAR ECONOMY BUSINESS PRACTICES ON FINANCIAL SUSTAINABILITY OF SOCIAL ENTERPRISES IN NAIROBI COUNTY, KENYA

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ADMISSION NUMBER: 170408

A RESEARCH THESIS SUBMITTED TO THE STRATHMORE UNIVERSITY BUSINESS SCHOOL IN THE PARTIAL FULFILMENT OF THE DEGREE OF MSC IN DEVELOPMENT FINANCE AT STRATHMORE UNIVERSITY

Strathmore University Business School (SBS)

Nairobi, Kenya

MAY 2026

DECLARATION

I declare that this thesis has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the proposal.

Kanja Pamela Thiaine

Admission Number: 170408

Signature  Date: 20th May 2026

Approval

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Signature Date: 20th May 2026

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ABSTRACT

The worldwide initiative for sustainable development and reduced carbon emissions has compelled companies to adopt strategies that harmonize economic, social, and environmental objectives. Prominent social and ecological issues in Kenya highlight the significance of social entrepreneurs within the economy. Numerous social companies, however, face challenges regarding financial sustainability due to their dependence on donor funding and governmental support. For these companies to thrive, they need to enhance their technical capabilities which is essential for their financial viability and survival. This study sought to assess the impact of circular economy business practices on the financial sustainability of social companies. The study was anchored on the circular economy framework proposed by Ellen MacArthur Foundation framework for CE: resource efficiency, waste management, regenerative nature practices, and product life extension, and was grounded on resource-efficiency, legitimacy and circular economy theories. The research technique was based on positivist research philosophy and utilised a descriptive - correlational research design, employing structured questionnaires to gather data from social entrepreneurs. The target respondents were one-key knowledgeable informant from each social enterprise targeting sample size of 183. The response rate achieved was 142 respondents accounting for 78%. Data analysis was done using SPSS version 29. The study was expected to contribute to circular economy and social entrepreneurship literature by empirically linking circular economy business practices to financial sustainability of social enterprises in a developing economy context. The study findings revealed that circular economy practices have a positive and statistically significant effect on the financial sustainability of social enterprises in Kenya. The results showed that waste reduction emerged as the strongest predictor of financial sustainability, followed by resource efficiency, product life extension, and regenerative practices. Specifically, practices that directly influence operational efficiency, such as waste minimization, recycling, and efficient resource utilization, demonstrated stronger and more immediate effects on financial performance. In contrast, regenerative practices, while significant, exhibited relatively weaker effects, suggesting that their financial benefits are more indirect and long-term in nature. The regression results further indicated that the model explained a substantial proportion of variation in financial sustainability, highlighting the importance of integrating circular practices within enterprise operations. Practically, the findings informed social enterprise managers on how resource efficiency, waste management, regenerative practices and product life extension enhance financial resilience. Policymakers and ecosystem actors obtain insights from findings to design supportive frameworks that promote financially sustainable, impact-driven enterprises.

Keywords: Circular Economy, Financial Sustainability, Social Enterprise, resource efficiency, Waste Management, Regenerative nature practices, Product Life Extension.

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LIST OF ABBREVIATIONS

ANDE	Aspen Network of Development Entrepreneurs
CBP	Circular Business Practices
CE	Circular Economy
CircE	Circular Economy
GCF	Green Climate Fund
GDP	Gross Domestic Product
KCV	Kenya Climate Ventures
MSW	Municipal Solid Waste
NACOSTI	National Commission for Science, Technology and Innovation
RET	Resource Efficiency Theory
SDGs	Sustainable Development Goals
SE	Social Enterprise
SEGPC	Social Enterprise Government Private Collaboration
SMEs	Small and Medium sized Enterprises
UN	United Nations
WEF	World Economic Forum
WtE	Waste to Energy

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DEFINITION OF TERMS

Circular Economy (CE): An economic system that seeks to minimize waste and pollution, retain products and materials in use for as long as possible, and regenerate natural systems, thereby supporting environmental sustainability and economic value creation (Ellen MacArthur Foundation, 2015; Lieder & Rashid, 2016; Nikolaou et al., 2021).

Circular Business Practices (CBP): Operational and strategic activities adopted by enterprises to implement circular economy principles across the value chain, including resource efficiency, waste reduction, reuse, recycling, and regenerative practices (Rossi et al., 2020; Moric et al., 2020).

Financial Sustainability: The ability of an organization to generate sufficient and stable financial resources to support ongoing operations, withstand external shocks, and achieve long-term objectives without excessive dependence on external funding (Saebi et al., 2019; Arhin et al., 2018).

Social Enterprise: An organization that pursues social and environmental objectives through market-based activities while reinvesting surpluses to advance its mission and ensure long-term sustainability (Saebi et al., 2019; Hussain et al., 2023).

Resource Efficiency: The effective use of materials, energy, and water in production and operational processes to reduce costs, minimize environmental impact, and improve financial performance (Rexhäuser & Rammer, 2014; Moric et al., 2020).

Waste Management: The systematic handling of waste through reduction, segregation, reuse, recycling, and recovery processes aimed at minimizing environmental harm and enhancing economic outcomes (Rossi et al., 2020; UNEP, 2019).

Regenerative nature Practices: Business activities that contribute to the restoration and renewal of natural systems, including ecosystem conservation, sustainable resource use, and biodiversity enhancement (Ellen MacArthur Foundation, 2015; Nikolaou et al., 2021).

Value Chain: The sequence of interconnected activities through which organizations create, deliver, and capture value, including sourcing, production, distribution, consumption, and post-consumption processes (Rossi et al., 2020; Moric et al., 2020).

DEDICATION

I dedicate this thesis to the Almighty God for his unconditional love. To my family and friends for their endless support.

ACKNOWLEDGEMENT

I wish to express my sincere gratitude to the Almighty God for granting me good health, wisdom, strength and perseverance throughout the study period. I am deeply grateful to my supervisor Dr. Maria Mumbi Wachira for her invaluable guidance, patience, constructive and gentle criticism, encouragement and continuous support throughout the research process. Her insights and dedication greatly enriched this study.

I also thank all my lecturers and other stakeholders of the university for providing the conducive academic environment and resources necessary during my study. I am deeply grateful to my family and friends and the Congregation of Sisters of Charity of the Incarnate Word, Houston, Texas, for their moral and financial support throughout the study period.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Social enterprises have drawn a lot of attention recently and are recognised for using their business models to address some of the most pressing global issues, such as poverty, education, environmental sustainability, and health care (Grilo & Moreira, 2022). Social entrepreneurship is progressively acknowledged as a framework and initiatives that foster social transformation through innovation while delivering both social and economic advantages. Since the early 2000s, the volume of academic research on social entrepreneurship across several fields has consistently risen (Granados et al., 2011; Dionisio, 2019)

Most of the research characterises social enterprises as businesses that combine a profit-motive with a social mission. For the purposes of this study, social enterprises, the other elements of are generation of revenue through sales of products and services and demonstration of innovation and mission (Bjørnbet et al., 2021) According to Rivera-Santos et al., (2015), the social enterprises are marked by ecological, social, and economic challenges that frequently turn into chances for business endeavours that take social objectives into account. Social, economic, and environmental performance are the three pillars that make up social enterprises' sustainable performance. Empirical and conceptual analyses indicate that organizations exhibiting characteristics typical of social enterprises such as market-driven revenue generating coupled with community benefit outcomes are becoming increasingly common across many areas and industries (M. F. Kamaludin, 2023a)

The World Economic Forum reports that there are over 10 million social enterprises globally (WEF, 2024). In addition, they generate over $ 2 trillion annually in various sectors from agriculture to financial services. As a result, more than 200 million new jobs are created for people around the world (WEF, 2024). A similar survey conducted by British Council (2022) on the Global state of social enterprises indicates that social businesses prioritise social and environmental missions and reinvest their revenues to further these missions in agriculture, health, and the environment, community development, education, environmental protection, and employment creation.

A study by Siemens Stiftung, (2020) revealed that social enterprises can potentially play a crucial role through their impact business models to provide employment and income opportunities for vulnerable populations. However, for social businesses to provide significant decent jobs, they need to be financially and technically supported to strengthen them (Siemens Stiftung, 2020). This study estimates that social enterprises can potentially create more than one million additional jobs by 2030 as projected in the 12 selected countries. This projects that there would be more than 5.5 direct jobs overall in social enterprises in 2030. These jobs was be created in existing markets, and in emerging markets thus creating new value and many more direct income opportunities in these countries.

Khan et al., (2025) asserts that in social entrepreneurship, profit serves as a tool to achieve a goal rather than being an objective. According to Bacq and Janssen, (2011) social entrepreneurs are people (or groups of people) who see, assess, and take advantage of chances to create social value through business ventures while using a variety of available resources. The British council (2020) posits that despite not having sustainability as the primary goal of social enterprises, many of them are crucial in addressing the current climate crisis. Social enterprises also need to innovate different ways of doing business to continue to thrive (Harsanto et al., 2022). Harsanto et al., (2022) examined how social enterprises' sustainability-oriented innovation strikes a balance between social goals and profit-making. In contrast to commercial organisations, the study found that process and organisational innovation are more common in social enterprises and environmental innovation than product innovation. Despite structural limitations, the study suggests investigating how social enterprises innovation might improve financial sustainability.

A study conducted in Sweden by Henriksson et al. (2019) on social and ecological entrepreneurship within the circular economy context highlights the limited understanding of social entrepreneurship from an integrated entrepreneurial perspective. The authors observe that success in social entrepreneurship is inherently multidimensional, often requiring the simultaneous achievement of social outcomes such as job creation, community development, and the attainment of social objectives and financial outcomes, including revenue generation, return on investment, and net profitability. Despite the importance of integrating these dimensions, the study notes that relatively few empirical frameworks adequately capture both social and financial performance in a unified manner. Existing literature frequently prioritizes either social impact or financial outcomes or lacks sufficient methodological clarity to

meaningfully examine their interrelationship, particularly within circular economy–oriented business models.

Existing research on social companies focusses on important elements that make social firms successful like performance, sustainability, and incentives for social enterprises. The use of a solid business plan, creative funding, social innovation, and supporting legislation were identified as crucial success elements (Stratan, 2017). Long-term economic, social, and environmental success while remaining sustainable and be accountable over time is what is meant by social enterprises' sustainable performance. Environmental, financial, and social circumstances, employee contributions, and innovative practices were found to be important determinants of sustainable performance by several studies, including (Iskandar et al., 2023). The same prospects were mentioned by Musinguzi et al., (2025). They emphasized the need for social enterprises to identify their critical success factors in order to attain sustainability. Maseno and Wanyoike, (2022) found that social innovation and social purpose are positively correlated with the sustained performance of social enterprises in Kenya.

The lack of sustainability and ongoing funding challenges faced by social enterprises is well documented in the literature. Scholars therefore highlight the importance of supportive ecosystems that enable collaboration, resource mobilization, and capacity development among social enterprises. These ecosystems include support networks, incubators, and accelerators, which enhance access to financial, technical, and managerial resources at different stages of enterprise development (World Bank Group, 2021). Previous studies have examined the performance and financial challenges of social enterprises. Much of this work focuses on achieving sustainable social impact, fostering innovation, adopting sustainable business models, and creating value. However, empirical evidence on the adoption of circular business practices by social enterprises remains limited. There is little evidence showing whether the integration of circular economy practices contributes to the financial sustainability of social enterprises. This study therefore examines the influence of circular business practices on the financial sustainability of social enterprises. The focus is on resource efficiency, waste management, and regenerative practices.

1.1.1 Circular Business Practices

A widely accepted description of the circular economy utilizes the memorable 3Rs: reduction, reuse, and recycling, outlining a pragmatic approach to the notion (Liu et al. 2017). An essential concept in this context is the distinction between the circular economy and the linear production

system: the linear system regards end-of-life products as waste, whereas the circular economy views them as resources, which subsequently affects the environment, resource deficit, and economic advantages (Bassi & Dias, 2019). The decisions made by companies and individuals about generation of products and their utilization practices are essential for sustainable development, and consumers must also adopt circular economy principles. Consequently, numerous studies have examined the characteristics of so-called eco conscious buyers and their behaviours pertaining to domestic waste reduction, reuse, recycling, and eco-friendly purchasing across various global regions. The Ellen MacArthur Foundation (2015) provides a broader perspective by defining the circular economy as an industrial system that is restorative and regenerative by intention and design, with the capacity to generate both environmental and economic benefits.

The (CE) has garnered attention as a vital tool for facilitating this transition and achieving the objective of sustainability (Lieder and Rashid, 2016; Rossi et al. 2020; Nikolaou et al. 2021). Empirical research has extensively evidenced the advantages of circular economy solutions for the environment (Bjørnbet et al. 2021). The circular economy framework developed by the Ellen MacArthur Foundation is based on three core principles: improving resource efficiency by circulating products and materials, eliminating waste and pollution, and regenerating natural systems (Ellen MacArthur Foundation, 2015).This implies that the three principles can be incorporated in the daily running of business operations for social enterprises to not only promote social impact but also environmental impact which can potentially cause economic impact due to the benefits that are reaped from circular economic practices. Aming'a et al. (2023) assert that human being's brief existence on the earth, persist in exploiting natural systems to meet consumption and production demands, resulting in anthropogenic effects. This effect is profoundly harmful to the earth and society, resulting in earth deterioration, which poses a significant threat to the environment and adversely impacts corporate operations and supply chains from an economic standpoint. Businesses and supply chain activities have recently seen significant risk disruptions due to a climate crisis. The literature suggests that a change from linear system to circular system can help social enterprises to thrive through adoption of circular business practices to promote their financial sustainability.

According to Chauhan et al., (2022), the UN's SDGs emphasize the importance of involving supply-chain stakeholders in ecologically sustainable practices. This is crucial because stakeholder have a say in the daily running of the businesses whether they exist for impact or

commercial purposes. Small and medium-sized enterprises (SMEs) are significant contributors to several supply chains; nonetheless, their operations often exert considerable environmental effects. Aminoff & Kettunen, (2016) argue that supply chain management is a relevant component of modern civilization that can facilitate the transition to circular economies. Inspired by this perspective, the research of Aming'a et al. (2024) acknowledges the significance of integrating circular economy and closed-loop models into supply chains to improve their resilience and sustainability. Integrating circular economy principles into the supply chain enhances efficiency and ensures that resources and processes are utilized effectively. However, the transition to sustainable practices remains challenging for social enterprises, as they often operate with limited resources that are primarily allocated to addressing immediate social needs, thereby constraining their capacity to invest in sustainability-oriented initiatives. As a result, empirical evidence demonstrating the benefits of allocating limited resources to sustainable activities is required to support SMEs' decision-making processes. Accordingly, this study posits that circular business practices should be integrated across the entire value chain, requiring social enterprises to critically evaluate their business operations from a long-term sustainability perspective. Existing research has largely examined circular economy, social innovation, and environmental innovation in isolation, with limited attention to how external contextual factors influence the adoption of sustainable practices and technologies among SMEs in emerging economies.

As a result, proof demonstrating the benefits of spending limited resources in sustainable activities is required to support SMEs' decision-making processes. This study argues that, the circular business practices should be integrated in every part of the value chain and so it is necessary that social businesses critically evaluate how they are doing businesses with the end in mind. Research has largely examined circular economy practices without linking them to social and environmental innovation in SMEs. Few studies consider the external factors, such as market conditions, policies, or resource constraints, that influence how these enterprises implement sustainable practices and technologies in emerging economies. Kinoti & Barasa, (2022) posit that in Nairobi County, there is a particular interest in the implementation of circular economy (CE) models, particularly among small and medium-sized enterprises (SMEs) and manufacturing firms. However, entrepreneurial barriers continue to preclude the adoption of circular business models. Barriers such as restricted access to green funding, insufficient policy frameworks, disjointed material recovery systems, and deficiencies in

business model innovation might impede social enterprises from fully capitalising on the financial advantages of the circular economy (Zhang et al., 2026).

Rodríguez-Espíndola et al. (2022) examines the impact of outside influences on the adoption of closed loop economy and innovation, as well as their influence on sustainable-oriented innovation and performance. In this study, they gathered and analysed responses from 165 Mexican SMEs using structural equation modelling to determine the link of impacts between components. The findings show that, while both government assistance and customer pressure encourage the adoption of the circular economy, only government support directly adds to technology deployment. The primary conclusion is that a circular economy fostering sustainability-oriented innovation positively influences financial, environmental, and social performance (Rodríguez-Espíndola et al. 2022). This is a crucial conclusion for managers in SMEs regarding the potential advantages of investing in the sustainable aspects of circular economy principles and sustainability-oriented innovation to improve social, economic, and environmental performance (Rodríguez-Espíndola et al. 2022).

Khan et al. (2025) assert that social organizations are somewhat aware of the circular economy's concepts and tenets, with 53% of respondents stating that they were aware of them. However, they do not view the circular economy as one of the most crucial elements of a social enterprise's success. Even if about half of the respondents reported using and reusing internal resources, the circular economy's tenets are not thought to be that crucial for a social business's long-term viability. The circular economy emphasizes keeping materials in use for as long as possible, reducing pollution and supporting the restoration of natural resources (Ellen MacArthur Foundation, 2015). The circular economy protects planetary boundaries and helps to overcome global challenges such as pollution, waste, and biodiversity loss by delinking economic activity from the overconsumption of natural resources. However, other studies demonstrate that cutting costs by making effective use of resources like water and garbage leads to improved earnings and a more stable market position, providing businesses with a prolonged competitive edge(Moric et al., 2020)

Therefore, social enterprises are uniquely positioned to address persistent problems and societal issues in a society where commercial businesses would not be able to provide solutions (Defourny et al. 2021). Empirical evidence consistently supports the view that commercial businesses pursue businesses that benefit them immediately or in the long run because profit is

their main motive. Governments on the other hand, fail to provide for all citizens due to inadequate funds and other resources. According to research, firms can gain a long-term competitive edge by reducing costs through the efficient use of resources like water and garbage, which lead to increased profitability and a more consolidated market position (Moric et al., 2020). The analysis strongly supports the claim that since social enterprises have the potential for growth just like traditional businesses, the adoption of circular business practices can be a path to solve the challenges of resource constraints. With better economic and social performance, social enterprises can stay in business for a long time and continue to contribute to the impact in the society.

Additionally, increasing resource efficiency promotes profitability and favourable returns (Rexhäuser & Rammer (2014). Researchers claim that several variables, such as size, country, industry, the significance of research and development, and above all the percentage of turnover allocated to the circular economy, affect the relationship between businesses' financial performance over the long term. They also claim that a circular economy-based business model can be used to combat issues with resource depletion, waste generation, pollution, and climate change (Moric et al., 2020). Evidence from further research done shows companies that adopted circular economy have reaped financial benefits due to cost savings that are associated with material use efficiency. Although there is no direct connection between financial sustainability of social enterprises from adoption of circular economy, it is possible to compare the companies with social enterprise since social enterprises possess the potential to profit and growth like traditional businesses. Although no direct evidence links circular economy adoption to the financial sustainability of social enterprises, comparisons with traditional businesses suggest that social enterprises also have the potential to generate profit and achieve growth. Social enterprises often operate without a clear policy framework defining their boundaries, but they can be considered alongside other impact-driven businesses that use similar measures to enhance social and economic performance. According to Batista-Canino et al., (2025) study on scientific advancements in entrepreneurship in the circular economy, integrating circular business practices into all facets of business operations is necessary to make the shift from a linear economy to a sustainable form of corporate sustainability. Because resources are scarce, the circular economy is viewed as a production and consumption model that is necessary to guarantee sustainability and economic growth (Benz, 2022; Di Vaio et al., 2022; Walker et al., 2021). It is being marketed as a substitute for the conventional and prevailing linear business model (Uhrenholt et al., 2022)

According to (Rodríguez-Espíndola et al., 2022) a circular economy prolongs the life of the resources used in production, extending their traditional cycle. This results in positive effects on social, environmental, and financial performance by lowering emissions and pollution as well as resource consumption and waste disposal. Kenya's circular business practices hub is located in the informal Jua Kali sector, where metal and plastic garbage are recovered and converted into household products. Since the 1990s, fundis (artisans) have pioneered modular designs that turn scrap into affordable products, some even for export—though their influence is mostly unknown. Geissdoerfer et al., 2017a states that the circular economy (CE) idea, which prioritises waste minimisation, resource efficiency, and value preservation via reuse, repair, remanufacturing, and recycling, offers a potential remedy for financial stability challenges. Circular economy is regarded as a remedy for economic, environmental, and social issues. The relationship between the circular economy (CE) and sustainability is intricate, and the link between circular economy practices (CEPs) and enterprises' sustainability performance (SP) remains underexplored. Despite the global advocacy of the circular economy as a solution to sustainability challenges, its integration into business models, particularly within the social enterprise sector, is still in the process of evolving (De Angelis & Vesci, 2025). The precise impact of implementing circular economy business practices on the financial sustainability of social enterprises in metropolitan low- and middle-income settings, such as Nairobi, is yet inadequately examined (De Angelis & Vesci, 2025).

1.1.2 Financial sustainability of social enterprises.

In the developing field of academic research on sustainability, investigations into sustainability within social entrepreneurship remain relatively underexplored, primarily owing to the prevalent misconception regarding the distinction between these two concepts (Kamaludin, 2023). Sustainability in social entrepreneurship is described as the process of establishing long-term solutions to social, economic, or environmental challenges that are not being addressed through continuous improvement of operational efficiencies. Social entrepreneurial sustainability should encompass the three sustainability dimensions: social sustainability, economic sustainability, and environmental sustainability. (F. M. Santos, 2012) asserts that in the realm of social entrepreneurship, sustainability is defined as the creation of enduring, mission-oriented solutions to social or environmental issues that traditional market systems inadequately address.

For the social enterprises to attain financial sustainability, they must engage in commercial activities (Sampaio & Sebastião, 2024). According to (Staicu, 2018) social companies struggle to preserve both economic sustainability and social impact. This study, done in eight countries in East and Central Europe, revealed that social entrepreneurs in various nations are developing under a variety of institutional and legal frameworks. According to the survey, most social enterprises combine revenue and non-market sources like grants, subsidies, and contributions with earned revenue from market activities to remain sustainable. Over-reliance on one source of finance, particularly public funding, poses threats to their viability. The study found out that financial sustainability depends on the ability of the social enterprise to combine revenue streams effectively, properly balance stakeholder relationships, innovative business models and multiple funding sources to survive.

Scaffidi et al. (2025) assert that a social entrepreneur's path is paved with obstacles, ranging from obtaining capital to negotiating regulatory frameworks and encouraging laws. Modern social entrepreneurs, however, exhibit incredible tenacity and was. Even at the cultural level, they provide creativity, aren't afraid to take chances, and keep going when they don't succeed. They can comprehend the requirements and viewpoints of the people they serve, which guarantees that their solutions are pertinent, original, and successful. The survival and scalability of social enterprises depend heavily on sustainability. Social entrepreneurs can lessen their reliance on outside funding sources, increase the effect of their projects, and reinvest their earnings (Dantas et al. 2022) Social enterprises can become self-sufficient and continue to operate without continuously depending on grants or donations thanks to this strategy.

Therefore, the social entrepreneurs need to apply for financial instruments that can help their social enterprises to be sustainable. To close the gap in green financing, both domestic and foreign resources was be mobilised by country-based financiers like Kenya Climate Ventures (KCV) in Kenya and global entities like the Green Climate Fund (GCF), among others (KCV, 2024). To address the financial demands of ending poverty, business ventures that are the focus of various financiers pledge to alter overall production and consumption patterns by incorporating mitigation and adaptation strategies for climate change. To close the gap, though, an atmosphere that encourages creative solutions and reduces the perceived high investment risks must be established. Altering regulatory frameworks, coordinating current financial incentives, expanding the pool of green financiers, bringing public sector funding into line with

environmental viewpoints, funding resource-based green projects, and implementation of climate-smart economy. This is supported by Hussain et al. (2023), who conducted a systematic literature review on the performance of social enterprises. Their findings indicate that social enterprises receive strong financial and social support and can integrate different types of resources and goals. Oeding and Newby (2025) highlight challenges faced by social enterprises in Ghana, including overreliance on donor funding, which negatively affects financial sustainability. They apply a six-part typology of financial sustainability, originally proposed by Arhin et al. (2018), which includes income diversification, cost reduction, partnerships, sector visibility, credit building, and collaboration. A balanced and diversified approach is recommended to strengthen financial resilience.

Research on social enterprises continues to gain attention from policymakers and academics, yet there is limited evidence on their performance (Saebi et al., 2019). According to The World Economic Forum (2024), social enterprises contributed $96 trillion to global GDP in 2021, representing about 2% of the global economy. This is larger than the apparel industry and almost twice the size of the advertising industry, highlighting the sector's significant economic impact. This then means that social enterprises are in a unique position to solve societal problems and address enduring issues in a society where the commercial businesses would not offer solutions (Defourny et al. 2021). Thus, social enterprises distinguish themselves from commercial business by their stance in societal influence and economic feasibility (Jayawardhana et al. 2022). However, for the social businesses to attain their dual mission, they must be financially sustainable. With their contribution, to the GDP, they can leverage on their contribution to economic growth and climate action by adopting circular business practices. Adopting circular economy may be an avenue for the social enterprises to overcome financial challenges because it helps them to save costs through adopting efficient operational processes. This helps them to be more attractive to the funders and customers especially in the current rise of climate action. Collectively, these studies demonstrate that social enterprises face persistent financial sustainability challenges linked to overreliance on donor funding and limited revenue diversification. While prior research has examined sustainability, innovation, and performance in social enterprises, little empirical work has focused on the role of circular economy business practices as a pathway to financial sustainability, particularly in developing economies such as Kenya.

Ntamu et al., 2021 carried out a study in Uganda among social enterprises where young people are trying to solve societal problems through social entrepreneurship. Being poor themselves and located in the poorest communities, establishing their enterprise faces fundamental challenges of obtaining resources and if accessed, sustaining the flow of resources to continue and grow their enterprise. Engaging external donors and leveraging community social resources is a common approach to initiate their enterprise; but, maintaining momentum after donor funding concludes necessitates strategic and managerial adjustments.

The current body of literature primarily concentrates on conceptual aspects or large corporate disclosures, which presents a void in the comprehension of how CE practices translate into tangible financial benefits for small-scale SEs (D'Mello, 2024; De Angelis & Vesci, 2025; Muzamwese et al., 2024). According to (Gonçalves et al., 2022), there is evidence that CE practices can result in cost savings and new revenue sources by reducing material inputs and waste. However, the mechanisms that connect specific CE strategies to measurable financial outcomes for SEs in regions such as Sub-Saharan Africa are not well-documented. For instance, research conducted by (Anjum et al., 2024) on emerging CE enterprises in rural South Punjab indicates that the implementation of CE practices can have a positive impact on financial sustainability, cost savings, revenue development, and profitability. However, these findings may not be directly applicable to the urban context of Nairobi.

1.1.3 Social enterprises in Kenya

Saebi et al. (2019b) note that research on social entrepreneurship and social enterprises (SEs) has increased in the past decade, with studies addressing various aspects to develop a body of knowledge and guide the formation, mandate, operations, and impact of SEs. Despite studies like Nicholls, (2010) noting the absence of a final consensus on the meaning of social entrepreneurship, efforts have been made to delineate the characteristics and functions of social enterprises. This assertion arises from the variability in social entrepreneurship activity and participation, encompassing their objectives (Foss & Saebi, 2017). Although there is ongoing debate on the definition of social entrepreneurship, Mair & Martí, (2006) characterize it as the innovative amalgamation of resources aimed at seizing chances to effectuate social change and fulfill societal demands.

A social enterprise is an organization that pursues a primary social or environmental mission while generating a significant proportion of its income through commercial activities and reinvesting surplus revenues to advance that mission rather than maximizing profit (Mair &

Martí, 2006; Bacq & Janssen, 2011). This definition is consistent with the British Council (2022), which characterizes social enterprises as mission-driven organizations that apply market-based approaches to address social and environmental challenges while prioritizing impact over profit distribution. Accordingly, the study excludes purely charitable organizations that rely entirely on donations and grants, as well as state-owned enterprises whose operations are largely policy-driven and government-funded. The focus is on independently operated social enterprises registered in Kenya as limited liability companies, cooperatives, or non-governmental organizations that engage in trading activities to sustain their operations (British Council, 2017; Saebi et al., 2019).

In the Kenyan context, social enterprises operate across sectors such as sanitation, renewable energy, agriculture, and waste management, particularly in urban areas such as Nairobi, Mombasa, and Kisumu (British Council, 2022; Murithi et al., 2024). For example, some social enterprises generate revenue through sanitation and waste recovery services while improving public health outcomes, others apply pay-as-you-go business models to expand access to clean energy, and others convert waste materials into marketable products while creating employment opportunities. These enterprises illustrate the hybrid nature of social enterprises in Kenya, combining social and environmental objectives with commercially viable business models to enhance financial sustainability (Saebi et al., 2019; Defourny et al., 2021).

The world Economic Forum (2025) posits that there are 2.18 million social enterprises in the Africa, making up 17% of the 12.7 million businesses with employees and contributing 3.2% to the continents' GDP. In the Kenyan context, there is a growing trend of social enterprises characterised by startups, incubators, accelerators and the creation of social finance (British Council, 2022). Social enterprises function across various areas, including healthcare, education, renewable energy, and agriculture, and are crucial in promoting the Sustainable Development Goals (SDGs). These purpose-driven organizations utilize market-oriented strategies to tackle social and environmental challenges, rendering them an attractive choice for promoting inclusive economic growth and sustainable development. Social enterprises employ new business models to address intricate issues such as poverty, inequality, climate change, and access to education and healthcare (Quaye et al. 2024).

Due to a lack of specific policy framework in Kenya, social enterprises are registered under the various existing laws for NGOs, cooperatives, and limited companies, self-help groups and welfare associations (The British Council, 2017). Murithi et al., (2024) further notes that there

are no definitive policies guiding the social sector, save from a uniform approach that dictates the small and medium policies. This study reiterates that the current policies fail to recognize the social sector as they do not address its mixed model. Most of the social enterprises in Kenya operate in major cities of Nairobi, Mombasa and Kisumu and they are estimated to be 80,000. Social enterprises financial sustainability was increase their impact and help them to endure for a long time. For the purposes of this study, we specifically look at the social enterprises which focus on resource efficiency, waste management and regenerative nature practices to promote how the social enterprises can improve financial sustainability by strategically applying these principles from Ellen MacArthur foundation principles.

Despite the challenges such as lack of access to funding, markets and other vital resources, recent data shows that social entrepreneurs can prosper in business. These challenges in obtaining debt capital are attributed to lack of information from the social enterprises to prove to the financial institutions that they have ability to pay. Besides, the Social Enterprises Society of Kenya (2023) identified unsustainable performance of social enterprises to be caused by a lack of access to funding and to markets, lack of trust from large corporations, unskilled workers and lack of supportive policy framework. With most impact capital funds concentrating their investments in Kenya, East Africa has emerged as a regional centre for foreign impact capital. Approximately $2.5 billion was invested at the regional level, while $240 million was committed to investment in Kenya in 2015. Thus, there is a compelling business justification for assisting in the growth of social enterprises in Africa.

Social enterprises in Kenya are supported by an elaborate ecosystem that includes organizations, actors, and networks supporting social enterprises to achieve their objectives. These ecosystems are financial institutions, infrastructure and human capital, information networks (The world bank group, 2021). Aspen Network of Entrepreneurs, 2023 identified some institutions such as United States International University – A (USIU) and Strathmore University who empower social entrepreneurs with relevant training and support for infrastructure and human capital. Other initiatives such as @iBizAfrica at Strathmore University, iHub and Nailab are incubators and centres for development (The world bank group, 2021). According to (Magale, 2021) Green bonds may appeal to a wide spectrum of investors seeking environmentally conscientious investments. According to (Wurgler, 2022) investors are becoming more aware of sustainability and are prepared to pay a premium for green bonds. Kenyan investors are unaware of green bonds and lack a strong commitment to

responsible investing. Social enterprises essentially have a dual mission: to attain both social impact and economic sustainability (Yunita Fitria et al., 2025; Cheah et al., 2019). This hybrid nature frequently results in unique operational issues, such as obtaining stable finance and efficiently managing financial resources (Argiolas et al., 2024).

1.2 Statement of the Problem

Social entrepreneurship is regarded as one of the most significant contributors to a country's economy and community social transformation due to its twin objective of attaining financial sustainability and social impact (Hisyam & Lin, 2023). Social enterprises are considered sustainable when they can produce both operational and impactful results over time (Burkett, 2010). However, to obtain the necessary financial capital, this criterion requires them to engage in commercial operations; as a result, social enterprises have emerged as autonomous organisations with both economic and social goals (Sampaio & Sebastião, 2024).

Despite the increasing recognition of social enterprises (SEs) in addressing socio-economic challenges in Kenya, they frequently encounter significant financial sustainability challenges (Maseno et al., 2025; Cheah et al., 2019). According to Staicu (2018); access to finances is a significant barrier for many social entrepreneurs. Social companies in Asia for instance struggle to achieve sustainable performance because in most cases, funding social causes results in a deliberate decrease in prospective earnings, which lowers revenues and profitability (Kamaludin et al., 2022). Thus, social businesses must use an innovative approach to business to maximise their social impact, fully accomplish their social aim, and create a sustainable and successful business model (Gigauri et al., 2022). Although an extensive body of literature exists on social entrepreneurship, sustainability, and circular economy business practices, these constructs are largely examined in isolation. Existing research appears to favour either CE or SE on occasion (El Chaarani & Raimi, 2022) ignoring their potential integration for business model innovation (Geissdoerfer et al. 2018).

Further research indicates that numerous non-governmental organisations (NGOs) in Nairobi County, which exhibit comparable operational traits to social enterprises (SEs), have challenges in financial sustainability, with only a minimal proportion attaining satisfactory levels (Wanja & Ronald, 2025). Evidence indicates that only a small fraction of NGOs around 10% achieve robust financial sustainability whereas more than 70% encounter challenges in sustaining steady operations beyond their first phase of organization. Moreover, many NGOs reportedly face challenges in sustaining themselves during their initial five to six years of

operation which is frequently attributed to excessive dependence on donor funding and inadequate income diversification strategies. These patterns indicate that the diminishment of external funding is a significant catalyst for financial instability. Financial planning techniques are essential for long-term sustainability; nevertheless, their execution and efficacy are sometimes obstructed by declining donor financing and the need to pursue commercial opportunities (Wanja & Ronald, 2025).

Consequently, there is an urgent necessity to examine the impact of circular economy business practices on the financial viability of social enterprises in Nairobi County, Kenya. Comprehending this link is essential for formulating customised strategies and policy recommendations that can assist these firms in attaining their dual social and financial goals within a demanding operational context. This study was elucidate how social enterprises can adeptly manage the shift to a circular economy, securing enduring financial stability while concurrently fostering environmental conservation and sustainable development in the region (Maseno et al., 2025; Zhang et al., 2026)

While circular economy practices are widely acknowledged for their contribution to environmental and operational sustainability, empirical evidence linking specific circular economy business practices namely resource efficiency, waste management, and regenerative practices, to the financial sustainability of social enterprises remains limited. Existing studies tend to focus either on social entrepreneurship performance without integrating circular economy perspectives or on circular economy adoption within conventional commercial enterprises. Moreover, much of the available empirical evidence is derived from developed economies, with minimal attention given to social enterprises operating in urban developing contexts such as Nairobi County, Kenya. This limited and fragmented evidence base constrains the ability of social enterprise managers and policymakers to make informed, evidence-based decisions regarding investments in circular business practices. Consequently, this study seeks to empirically examine the influence of circular economy business practices on the financial sustainability of social enterprises in Kenya, thereby addressing a critical contextual and empirical gap in the literature.

1.3 Objectives of the study

1.3.1 General Objective

The general objective of the study was to examine the influence of circular economy business practices on the financial sustainability of social enterprises in Nairobi County, Kenya.

1.3.2 Specific Objectives

The specific objectives of the study were:

i. To determine the effect of resource efficiency practices on the financial sustainability of social enterprises in Nairobi County, Kenya.

ii. To establish the effect of waste management practices on the financial sustainability of social enterprises in Nairobi County, Kenya.

iii. To examine the effect of regenerative nature practices on the financial sustainability of social enterprises in Nairobi County, Kenya.

iv. To establish the effect of product life extension practices on the financial sustainability of social enterprises in Nairobi County, Kenya.

1.4 Research Questions

i. What effect does resource efficiency practices have on financial sustainability of social enterprises?

ii. What effect does efficient waste management practise have on financial management of social enterprises?

iii. What effect does regenerative nature practices have on financial sustainability of social enterprises?

iv. What effect does product life extension practices on the financial sustainability of social enterprises in Nairobi County, Kenya.

1.5 Scope of the study

The study aimed to examine the influence of circular business models on financial sustainability of social enterprises in Nairobi Kenya. The unit of analysis for this study was social enterprises operating within Nairobi County, Kenya, while the unit of observation was one key knowledgeable individual from the firm identified through purposive sampling. The primary target for purposive sample was enterprise owners while other categories such as managers, finance officer and sustainability officer were considered in cases where the owner

was not available. The study utilised cross-sectional data collected in April 2026. The geographical scope was limited to Nairobi County due to the high concentration of social enterprises and availability of supporting ecosystems.

1.6 Significance of the study

This research on the impact of circular business models on the financial sustainability of social companies is highly significant in contemporary society. The circular economy is increasingly recognized as a method for environmental preservation and minimizing the planet's carbon imprint. Social firms facing challenges in financial sustainability benefit from the use of circular business strategies. Understanding the advantages of a circular economy would enable social companies to implement circular business practices, thereby achieving sustainability and long-term viability. The results offer significant insights to researchers, policymakers, and social entrepreneurs.

1.6.1 Policy makers

The findings of the study enable the government and regulating bodies for social enterprises to develop policies and interventions that enable social enterprises to be financially sustainable. It aided policy makers in formulating and executing strategies that support social enterprises with collaboration with stakeholders and all ecosystems.

1.6.2 Social enterprises

The findings of the study help social entrepreneurs to understand the benefits of circular business practices and how to incorporate them in their operations. It also helps them to know how to leverage on circular business practices to gain a competitive edge. Social entrepreneurs also gain insights on how to gain from different ecosystems.

1.6.3 Academicians

The study helped scholars and academicians with insights on the circular economy and how in influences financial sustainability of social entrepreneurs. It also helped future researchers to fill in the gap of this study.

1.7 Chapter Summary

This chapter has provided the background and foundation of the study by introducing the concepts of social enterprises, circular economy business practices, and financial sustainability within the Kenyan context. The chapter highlighted the growing importance of social enterprises globally and in Kenya, particularly their role in addressing social and environmental

challenges while striving for financial sustainability. The discussion established that although circular economy practices are increasingly recognized for their environmental and operational benefits, there remains limited empirical evidence linking these practices to the financial sustainability of social enterprises, especially in developing economies such as Kenya. This gap forms the basis of the current study.

The chapter further presented the statement of the problem, clearly articulated the research objectives and research questions, and defined the scope and significance of the study. The geographical scope was limited to Nairobi County, Kenya, with clearly defined units of analysis and observation.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides an overview of current studies regarding the impact of circular business practices on the financial viability of social enterprises. The chapter initially provides a theoretical overview that introduces two foundational ideas for the study: resource-based view and legitimacy theory. Furthermore, the chapter delineates the empirical literature on the subject and emphasizes the research deficiencies that the study intends to rectify. Furthermore, the conceptual framework is also presented as well as highlighting how the variables was be operationalized.

2.2 Theoretical Review

The theoretical review that incorporates the two theories used to support this study is discussed in this section. The two theories are resource efficiency theory and legitimacy theory. Discussed in this section are the proponents of the theories, the main principles of the theories, and the applicability of the theories in this research.

2.2.1 Resource efficiency theory

Resource Efficiency Theory (RET) is a multidisciplinary framework aimed at optimising the use of natural resources to attain sustainable development by maximising functional output in relation to material and energy inputs, while concurrently minimising environmental impacts and systemic risks (Van Ewijk, 2018; Gordon et al., 2023; Koh et al., 2016). This approach is mainly based on ecological economics, industrial ecology, and sustainability science (Van Ewijk, 2018). It differentiates itself from simple resource productivity by including a comprehensive systems view that considers rebound effects, cascading consequences throughout supply chains, temporal dynamics such as durability vs obsolescence, and equity factors (Figge et al., 2021; Metic & Pigosso, 2022)

Significant fundamental contributors to the principles of resource efficiency include Robert U. Ayres, who pioneered industrial metabolism and material flow analysis, essential for comprehending resource consumption and waste production in industrial systems. Thomas Graedel co-developed frameworks for industrial ecology that examine industrial processes

through the lens of natural ecosystems, highlighting material and energy flows to enhance overall system efficiency. John R. Ehrenfeld further developed the notion by asserting that "sustainability encompasses resource efficiency and systemic responsibility," so incorporating wider social and environmental factors beyond just technological efficiency (Geissdoerfer et al., 2017b)

The resource efficiency theory effectively underpins the examination of how circular economy business practices impact the financial sustainability of social enterprises in Nairobi County, Kenya, by providing a framework to examine how social enterprises utilise circular economy strategies to optimise resource use, hence improving their economic sustainability. Proponents of RET consider resource efficiency a vital catalyst for attaining environmental sustainability and economic competitiveness (Geissdoerfer et al., 2017b). They contend that by maximising the utilisation of natural resources over the product lifetime, enterprises may markedly diminish waste, decrease production expenses, and promote innovation. By lowering the demand for new raw materials and minimising waste disposal expenses, SEs can substantially decrease operational costs (Machoka & Mutabazi, 2023). The decrease in input expenses and waste management charges can be objectively assessed, illustrating the direct financial advantages resulting from improved resource efficiency. In regions such as Ngong Town which is contextually like Nairobi, circular economy efforts especially seek to alleviate waste and diminish resource consumption, hence immediately facilitating cost reductions for Social enterprises engaged in these activities (Machoka & Mutabazi, 2023).

Moreover, resource efficiency theory clarifies how circular economy techniques might provide new revenue sources for social enterprises. The conversion of waste materials into valuable products, such as recycling plastic into new items, or offering services like repair and remanufacturing, enables social enterprises to penetrate new markets and client demographics (De Angelis & Vesci, 2025). The generation of value from previously underutilised resources results directly from enhanced resource efficiency. The research may thus concentrate on revenue derived from the sales of circular products, repair services, or material recovery operations, directly associating these with the resource-efficient operational models of social enterprises (De Angelis & Vesci, 2025). Organisations exhibiting exceptional resource efficiency frequently offer a persuasive value proposition to clients and stakeholders who emphasise sustainability. This may result in heightened sales, strengthened collaborations, and enhanced access to "green finance" or impact investments, all of which are essential for

financial stability (Gonçalves et al., 2022). By utilising this approach, this study could assess how resource efficiency affects customer acquisition, stakeholder involvement, and access to funding, consequently influencing overall financial sustainability (D'Mello, 2024).

The fundamental ideas of RET are grounded in the laws of thermodynamics, including those pertaining to entropy and energy degradation, alongside the conservation of material flow and the acknowledgement of biophysical constraints on economic growth (Hernandez & Cullen, 2019; Graedel, 2019). RET has a crucial role in facilitating transitions to sustainable production and consumption habits, particularly in the framework of a circular economy (Al-Thani & Al-Ansari, 2021; Figge & Thorpe, 2023). A primary method utilised in RET is Material Flow Analysis (MFA), which measures the transport, change, and accumulation of materials within a specified system (Graedel, 2019; Deng et al., 2023). MFA can predict the transfer of phosphorus from mines to agricultural use and its subsequent environmental dispersion, thereby identifying potential loss pathways and intervention opportunities. This meticulous accounting aids in the formulation and assessment of circular economy initiatives, pinpointing areas where materials can be perpetually circulated to eradicate waste.

Fundamental concepts within RET encompass dematerialisation, circularity intensity, and service substitution (Van Ewijk, 2018). Dematerialisation entails minimising the total quantity of materials employed to provide a certain function or service, whereas circularity intensity denotes the degree to which resources are maintained in use for an extended duration (Figge et al., 2021). Service substitution advocates for frameworks that facilitate access to services without necessitating individual ownership of the product, exemplified by mobility-as-a-service in lieu of car ownership. A major problem in attaining resource efficiency is the rebound effect (or Jevons Paradox), wherein enhancements in efficiency can paradoxically result in a net rise in resource usage (Metic & Pigosso, 2022). This transpires as heightened efficiency can reduce the effective cost of a service, hence stimulating more use. The rebound effect can occur at various levels: direct (e.g., operating more fuel-efficient vehicles), indirect (reallocating savings to other resource-intensive products), and economy-wide (stimulating economic growth). A 10% enhancement in energy efficiency does not necessarily result in a 10% decrease in energy usage owing to behavioural and economic reactions. The Bioresource Utilisation Index, which measures and contrasts resource efficiency in the generation of renewable bioresources, is one of several metrics used to assess resource efficiency (Vamza et al., 2021).

Resource efficiency theory is limited in that it emphasizes optimization of input – output ratios and cost reduction, frequently neglecting wider systemic and structural limitations that affect financial sustainability results. It presumes that enterprises possess equal access to technology, resources and knowledge necessary for efficient enhancements which is often not true especially in emerging economies. The theory minimizes the significance to behavioural, institutional and market aspects that influence the adoption of efficiency methods. Furthermore, it may inadequately reflect long term environmental restoration and social aspects of sustainability by emphasizing immediate economic benefits over comprehensive circular economy transformations.

2.2.2 Legitimacy Theory

Weber et al. (1978) established the sociological basis for the concept of legitimacy, seeing it as necessary for institutional power and societal acceptance which implies that it is a contract between the organization and the society. Building on this, Suchman, (1995) made an important contribution by defining organisational legitimacy in three categories: pragmatic, moral, and cognitive. According to Dowling and Pfeffer, (1975), organisational survival is dependent on legitimacy, as corporations strive to conform to prevailing social norms and values. More recently, (Deegan, 2013) demonstrated that legitimacy theory is commonly used in studies on sustainability, social and environmental reporting. In this study, legitimacy theory informs the selection of 'waste management' and 'regenerative practices' as independent variables. This study suggests that effective adoption of these practices strengthens legitimacy, which in turn positively impacts financial sustainability.

Legitimacy theory posits that corporations should strive to align their performance with established social standards. The approach centres on a contractual relationship between business and society, aligning to do socially acceptable behaviours, such as the adoption of a circular economy, in exchange for societal support of particular goals and overall sustainability (Branco & Rodrigues, 2006). The theoretical literature debate posits that legitimacy is influenced and regulated by the external environment (Matsumura et al., 2014) and (Dowling & Pfeffer, 1975) assert that businesses, as abstract entities established by society, must validate their legitimacy, as their long-term survival is contingent upon societal support.. Matsumura et al. (2014) advise that enterprises must enhance their environmental sustainability to ensure long-term viability. The present environmental condition has numerous direct and indirect implications for corporate management and long-term sustainability; thus, legitimacy theory

effectively elucidates the rationale for adopting a circular economy (CE). Circular business strategies enable social companies to exhibit congruence with social and environmental principles, essential for sustaining legitimacy among stakeholders (government, donors, customers, and communities).

According to Legitimacy Theory, social enterprises adopt practices aligned with societal and environmental norms to gain stakeholder support. Therefore, this study hypothesize that adoption of waste management and regenerative practices positively influences financial sustainability. Adopting methods that are consistent with community standards, such as environmental responsibility, efficiency, and regenerative operations, can help social enterprises gain legitimacy, which in turn supports financial sustainability. From a legitimacy standpoint, resource efficiency indicates responsible stewardship of finite resources, which aligns with society norms such as sustainability and responsible consumption. This alignment can attract customers, investors, and partners who value environmental responsibility, resulting in increased income streams, lower expenses, and improved long-term financial viability.

Efficient waste management displays a dedication to environmental protection and regulatory compliance, which strengthens an organization's moral and practical validity. Such legitimacy can result in cost savings from waste reduction, improved regulatory interactions, and a stronger brand recognition, all of which improve financial management and stability. Regenerative methods, such as ecosystem restoration, soil health improvement, and biodiversity enhancement, help to strengthen a social enterprise's cognitive and moral legitimacy by framing it as an environmental inventor and custodian. This can help the firm stand out in the market, build stakeholder trust, and gain access to finance or collaborations based on environmental effect, ultimately improving financial sustainability. Hence, legitimacy theory provides the theoretical justification for measuring operationalization indicators such as waste segregation, recycling adoption, and ecosystem restoration.

The limitation of the legitimacy theory is that it is broad and subjective in nature y highlighting external societal influences while minimizing internal organizational issues like management capacity, and financial limitations. It also lacks explanatory capacity regarding financial outcomes making it unable to elucidate financial sustainability in social enterprises. It also descriptive rather than predictive meaning that it doesn’t anticipate occurrences.

2.2.3 Circular Economy Theory

The circular economy theory refers to a sustainable economic framework that substitutes the conventional linear model of take – make – dispose with regenerative system where materials are kept in circulation for as long as possible. These materials are perpetually circulated through reuse, recycle and remanufacture which leads to reduction of waste and environmental harm.

Rooted in the principles of thermodynamics by (Pearce & Turner, 1990), the concept has achieved significant prominence due to the groundbreaking efforts by Ellen MacArthur Foundation, whose 2010 report "Towards the Circular Economy") spurred worldwide policy and corporate adoption of CE principles. The concept was further advocated by organizations like Ellen MacArthur Foundation underscores the necessity of waste elimination, the circulation of products at their maximum value and regeneration of natural ecosystems thus dissociating economic growth from resource consumption. Proponents of circular economy are academics like (Geissdoerfer et al., 2017b) and (Kirchherr et al., 2017) alongside policy makers and international organizations, who contend that the model improves resource efficiency stimulates innovation in business models, and encourages sustainable economic development.

In Kenya, CE is progressively endorsed by policy makers to achieve environment sustainability, economic development and optimal resource management. However, the theory is criticised for lacking definitive theoretical boundaries, presenting many and occasionally contradicting meanings thereby rendering its practical application uncertain. Critics argue that CE may be excessively utopian as total circularity is restricted to physical forms like material degradation principles and it frequently neglects social equality concerns while perpetuating the current capitalist structures. Besides the critiques, CE has numerous benefits encompassing environmental gains through waste reduction and resources preservation, economic advantages through cost efficiency and innovation and business competitiveness especially in burgeoning fields like recycling, refurbishing, remanufacturing and reusing. However, the idea is constrained by obstacles such as inadequate infrastructure, limited funding and lack of technological capacity particularly in emerging economies like Kenya.

In relation to the financial sustainability of social enterprises in Nairobi County, circular economy business practices significantly contribute by facilitating revenue diversification through waste value recovery, minimizing operational costs though resource efficiency and improving access to funding from impact investors and green finance initiatives. For tis study, the CE theory was selected as a theoretical framework because of its elucidation of how

organizations might attain sustained economic value by prolonging use of resources, goods and materials. The theory offers an appropriate framework for analysing how resource efficiency, waste reduction, regenerative nature practices and product life extension enhance the financial sustainability of social enterprises.

2.3 Empirical Review

This section discusses empirical literature on circular business practices and the financial sustainability of social companies. It closely examines existing studies, showing both their strengths and limitations. The study is structured according to the study's objectives, maintaining the focus and relevance.

2.3.1 Resource Efficiency and financial sustainability of social enterprises

The circular economy (CE) concept is based on the principle of resource efficiency, which comprises reducing input usage and increasing product longevity. Adopting efficient resource flows helps social firms maintain long-term financial viability by lowering operating expenses and increasing profit margins. According to empirical research, organisations that employ resource-efficient methods experience operational savings and increased financial resilience (Ghisellini & Ulgiati, 2024). Recent research has found a positive relationship between CE use and financial performance, notably among SMEs and social organisations. Circular techniques, including product-as-a-service models and closed-loop systems, frequently improve operational efficiency, increase customer loyalty, and generate new revenue streams (Kirchherr, Urbinati, et al., 2023). Resource efficiency emerges as a key mechanism within the CE framework for decreasing waste while protecting and improving economic performance by lowering material prices, increasing margins, and creating new income opportunities improve social enterprises' financial resilience (Ghisellini & Ulgiati, 2020). Empirical studies (Ghisellini & Ulgiati, 2024; Kirchherr, Urbinati, et al., 2023) show a positive relationship between resource efficiency and financial performance among SMEs and social enterprises.

Empirical studies (Ghisellini & Ulgiati, 2024; Kirchherr, Urbinati, et al., 2023) show a positive relationship between resource efficiency and financial performance among SMEs and social enterprises. However, contradictions exist: Khan et al. (2025) found that social enterprises are aware of CE principles but do not consider them critical for success, whereas Moric et al. (2020) demonstrate that CE adoption improves profits and market position. This suggests contextual factors such as resource constraints, policy frameworks, and market readiness may

moderate the effectiveness of CE practices. Resource efficiency reduces operating costs and minimizes waste, enabling social enterprises to improve margins without heavy upfront investments (Lüdeke-Freund et al., 2019). Despite these benefits, small social enterprises often lack the resources and expertise to implement complex CE practices fully, highlighting a research gap this study seeks to address.

Extant literature presents inconclusive data concerning this association, and current reviews exhibit shortcomings (Magnano et al., 2024a). Research on CEPs and their influence on SP remains incomplete and is dispersed across various fields. This study identifies criteria for future research, emphasises opportunities for theoretical advancement, and consolidates Community Engagement Practices (CEPs). Nonetheless, the study possesses limitations as it is a qualitative review susceptible to researcher bias, confined to peer-reviewed publications, and may not have recognised all relevant elements (Magnano et al., 2024a). This study employs a quantitative design to improve generalizability and rigor, addressing the limited application of quantitative methods in social entrepreneurship research.

Ciambotti & Pedrini, 2021 study on hybrid strategies of social enterprises to overcome resource constraints, enhances social bricolage theory by illustrating that resource scarcity serves not only as an obstacle but also as a stimulus for creativity. Nonetheless, the study highlights persistent obstacles confronting social enterprises: conflicts between social impact and financial viability, reliance on funding sources, and the intricacies of functioning within weak institutional frameworks. The research indicates that hybridity generates strategic opportunities while concurrently exacerbating managerial and structural pressures that influence the sustainability and scalability of social enterprises. Bricolage theory underscores improvisation and innovative utilization of available resources to tackle social issues, whereas resource efficiency theory which is anchoring this study prioritizes the maximization of outputs through optimal input allocation. Moreover, legitimacy theory stresses the necessity for organizations to conform to societal expectations to sustain stakeholder approval. Collectively, these ideas provide synergistic insights into how social companies might attain sustainability under scarcity, operational limitations, and societal oversight.

In an ideal society, a metric for efficiency that is both environmentally and socially just would be essential. The measurement unit for resource efficiency and the circular economy significantly influences policymakers' acceptance and the trajectory of green policy in modern society (Di Maio et al., 2017a). Di Maio et al., (2017b) define resource efficiency as the ratio

of the value added by a product to the value of the resources utilized in its production or a related activity. In their latest report "Growth Within," the EMF and McKinsey assert that resource productivity represents a significantly underutilized avenue for potential future income, competitiveness, and corporate revitalization. Their findings indicate that hardly five percent of the residual value of most material commodities is realized and utilized upon disposal of the products. Businesses allocate substantial financial resources to eliminate what may be valuable assets.

Adopting CE techniques has been found to be essential for reaching sustainability objectives, providing social, environmental, and economic benefits (D'Angelo et al. 2023). Additionally, the SME's adoption of CE processes is viewed as a quicker path to achieving sustainable development goals, highlighting its possible benefits for the environment and the economy (Massari and Giannoccaro 2023). The idea's attractiveness stems from its capacity to disentangle environmental degradation and the use of natural resources from economic and social progress (Mura et al. 2020). From the standpoint of the business case, the circular economy seeks to reduce the number of resources needed for operations and is probably going to lead to reduced production costs for companies that have higher resource productivity, higher economic output, and better environmental performance. Similarly, customers can offer higher-value products or services with a green label and, as a result, be able to pay more (McDowall et al. 2017)

According to a Defra-commissioned report (Oakdene Hollins 2017), UK businesses may save between £5.7 and £7.2 billion if they take advantage of free or inexpensive options for efficient use of energy and water. The study further suggests strategies that require no financial investment for resource efficiency. This implies that since the social enterprises are already struggling with financial sustainability, they can adopt measures for resource measures that do not require any financial investment as they strive to develop more and attain the sustainability they desire. These strategies are quick wins that can be embedded in the operations of the organizations like procedural and behavioural changes. Dobbs et al. (2011) predict 2.9 trillion dollars in savings from more efficient use of materials, food, water, and energy on a worldwide scale. Resource efficiency reduces expenses and reduces less production of waste. According to (Lüdeke-Freund et al., 2019) circular economy business models such as reuse, repair, and recycling minimise production costs and lessen dependency on virgin resources. The long-term

financial stability of social companies, particularly those with limited resources, can be greatly improved by these savings.

Due to the need for organisational and structural changes, implementing CE activities may potentially have disadvantages (Ünal et al. 2019) because it requires financial investments. This means that the social companies need to do more to acquire resources that was enable them to make the necessary changes. However, there are local and simple ways that can be adopted to facilitate resource efficiency. Reducing emissions, in particular, calls for energy efficiency-driven practices (Stahel, 2013) a move towards the use of natural, recyclable, long-lasting, and easily separable environmentally friendly materials (Bocken et al. 2014).Redesigning the value chain and the major participants, if they do not adhere to CE practices (Lewandowski, 2016) and putting in place a reverse-flow for collecting product materials from customers when the product is no longer in use and reusing them (Ormazabal et al. 2018). Resource efficiency involves how well the resources are utilized to produce inputs with minimal loss. Thus, social enterprises should use resources efficiency to avoid waste generation through a closed loop system.

Furthermore, the new CE principles may put companies' established procedures and practices to the test (Ghisellini & Ulgiati, 2020). As a result of the CE practices, social enterprises may need to make additional efforts, which may involve restructuring the entire supply chain to ensure resource efficiency (Lieder & Rashid, 2016). Although earlier research has evaluated the benefits of CE for business performance using various metrics, such as firm productivity (Moric et al., 2020) or a firm's market value (Aboulamer, 2018) argue that, in keeping with more recent studies on the subject (Demirel & Danisman, 2019), economic performance must be the primary focus in order to give social businesses an economic assessment of the effects of CE. A circular economy can bridge the gap between the world's expanding population and natural resource scarcity by encouraging the adoption of closing-the-loop production patterns within an economic system (Ghisellini & Ulgiati, 2020). To do so, businesses must rethink production and consumption systems and devise strategies for educating designers and consumers to adopt a more circular way of thinking (Smith et al., 2017).

Using a chosen list of 106 publications, de Lima et al. (2021) carried out a comprehensive literature review to determine the uncertainties associated with circular supply chains and the uncertainty management techniques that can be employed to improve their sustainability performance by mitigating them. Mora-Contreras et al., (2023) posit that the practices most

studied in circular economy are eco design at 48%, recycling and remanufacturing at 41%, green manufacturing 32%, green purchasing and investment recovery at 27%, internal environment and reverse logistics at 23%. From this we can deduce that companies adopting circular business practices can generate revenue through use of these practices. The components of the new business models that promote resource efficiency are explained where adjustments are required to make better use of the resources. Therefore, social enterprises are in a unique position to contribute to this change of circular business practices adoption for financial sustainability.

2.3.2 Waste Management and Financial sustainability of social enterprises

The way social enterprises handle waste after it has been generated can contribute to changes in their value chain as posited by Kalkanis et al., (2022). In this context, waste is increasingly viewed not merely as an output to be managed, but as a resource that can be minimized, recycled, and converted into usable inputs, thereby contributing to both environmental and economic outcomes. Effective waste management, particularly through waste reduction practices, has been shown to reduce environmental impact, create employment opportunities, support energy efficiency, and contribute to economic growth. The circular economy (CE) also emphasizes on designing out waste and preserving resource value. Since social companies are mission-driven, they are increasingly implementing CE principles to balance financial sustainability with social and environmental impact (Murray et al., 2017). Social enterprises are increasingly adopting practices such as recycling, reuse of waste materials, and waste-to-resource conversion to balance financial sustainability with social and environmental objectives. Some of the practices involve transformation of waste into usable outputs, processing waste into raw materials such as plastic shredding, and reducing waste generation at source. These practices reflect a shift from traditional waste handling toward firm-level waste reduction and valorisation strategies, which are more directly linked to operational efficiency and financial sustainability.

Effective waste management techniques significantly lower environmental pollution while producing financial benefits for social businesses and communities, according to empirical research (Bhandari et al., 2025). Limited infrastructure and a dependence on informal recycling methods are characteristics of Nepal's garbage management. More than 60% of Nepal's municipal solid waste is organic, according to studies by (Lohani et al., 2021). The absence of source segregation is still a significant obstacle, Jha et al., (2024). Weak policy enforcement

and low public knowledge have also hindered the government's attempts to enhance waste management (Biswakarma et al., 2023)

According to (Scheinberg et al., 2022) 20–30% of municipal solid waste is recovered by informal recyclers through material sorting and sales. In Nepal, acknowledging and assisting the unorganised sector could improve waste management results while addressing social inequality (Black et al., 2019). The integration continuum, which shows how informal waste sectors progressively become acknowledged and integrated into formal systems, has been mapped by a number of academics (Dangi et al., 2023). The informal recycling industry in Africa, and especially in Kenya, is a prime example of trash management in action. Most of the recyclable trash in Kenya is collected by informal recyclers, but they sometimes do not have access to official financing or social protections. By incorporating these players into formal systems through organised market connections and microcredit, resource-efficient techniques can be scaled up, increasing their financial sustainability (Wordofa et al., 2024). Successful examples from South Africa and Latin America, where waste picker cooperatives have obtained contracts, social protection, and better working circumstances, are highlighted by (Kain et al., 2022).

In terms of tactics, (Barros et al., 2021) for instance, emphasize the importance of giving sustainable tactics, such as putting in place a circular supply chain, top priority. Their findings indicate that for businesses to successfully accomplish CE, they must coordinate, collaborate and set up their activities among various organisational functions and economic units. This strategy seeks to minimise leaks and reduce resource usage by closing energy and waste loops. In the context of a circular supply chain, (Geissdoerfer et al., 2018) also stress the need of cooperation and collaboration in achieving long-term competitive advantages. Businesses may support a smooth and long-lasting shift towards sustainability by embracing such cooperative initiatives and putting circular processes into place, which was advance both economic growth and environmental preservation (Villalba-Eguiluz et al., 2023). Rey-Martí et al., (2021) contend that waste should be considered a valuable commodity and resource in a circular economy. Enhanced trash management, waste valorisation, and WtE technologies promote sustainable development by lowering anthropogenic emissions, decreasing dependency on landfills and fossil fuels, and creating new economic opportunities that contribute to GDP growth and social welfare.

Some researchers have attempted to investigate the involvement of grassroots waste management participants considering the socio-environmental entrepreneurship literature. (Damtew & Desta, 2015) for example, looked at the potential and difficulties faced by micro and small enterprises (MSEs) engaged in solid waste management in a few Ethiopian cities. According to their findings, MSEs could potentially benefit from waste management by offering high-quality services, safeguarding the environment, creating jobs by charging those who are wishing to pay, and promoting social fairness. However, the majority of MSEs were impacted by a lack of funding and support, community perception and awareness, poor training, an unorganised fee collection method, and low revenue. A study by (Rahman, 2025) on exploring the role of social entrepreneurs in a just transition to the circular economy: a case study of waste management and recycling in Indonesia discovered that social enterprises have the ability to disrupt and affect the existing socio-technical system in Indonesian waste management regimes, particularly community-based waste management and digital platform models.

In India, (Varghese & Antony, 2024) proposed a six-tier Social Enterprise-Government-Private (SEGP) collaboration for municipal solid waste (MSW). The various levels of the model focus on reducing plastic use and waste minimisation, assisting the poor, sorting waste at the source and transferring it to coloured waste bins, developing waste collection infrastructure, generating revenue from waste, and developing waste management infrastructure. The revenue generated by the SEGP model was address the governments and social enterprises' waste management fund shortage. The model aims to solve the fundamental objective of MSW management by focussing on several societal concerns such as poverty reduction, unemployment, pollution, and poisoning of rivers and seas. The potential transition is viewed by Kirchherr, Yang, et al. (2023) as an economic system that challenges the conventional linear model of growth and helps businesses stay viable through optimisation of resources.

In Tanzania, Charles, 2021) examined how five waste collection and recycling in social enterprises in Dar es Salaam emerged, overcame start up challenges and sustained their operations. Their greatest motivation was to take the opportunity to fill the gap created by public waste management. They address social and environmental goals such as creating jobs for the community and empowering people. The study found that despite the challenges of low startup capital, negative perceptions about waste, competition from well-established

organizations, poor working conditions, and limited access to funding, the social enterprises sustained themselves by using strategies like those of commercial businesses. The study does not show how the social enterprises gain their financial sustainability from the waste collection operations. It only shows the inability of social enterprises to survive without external support.

Circular resource recovery has been made possible in Kenya by integrating informal recycling operators through microcredit and formal market links, which has improved cost management and revenue stability (Sustainable Finance in Kenya and developing countries). Nairobi City County's circular initiatives and Kenya's Sustainable Waste Management Act (2022), which are intended to encourage material reuse and efficiency as economically feasible circular practices, are in line with these practices (Transitioning circular economy in Kenya). According to a report by Ministry of Foreign Affairs (2021) the coast Project, in collaboration with organisations such as Takataka Solutions (organised waste collection and sorting), Mr. Green Africa (integration of informal waste pickers through trading points, fixed market prices, and incentives), and Close the Gap's Circular Economy Hub in Mombasa, is strengthening Kenya's circular economy ecosystem. These programs not only formalise and expand waste management operations but also foster a new workforce of digitally savvy young people in the hub area.

The above literature shows that effective waste management reduces environmental impact while generating financial benefits (Bhandari et al., 2025). Social enterprises that integrate informal waste sectors, such as Kenya's waste pickers, have demonstrated improved cost management and revenue stability (Wordofa et al., 2024). While Charles (2021) examined social enterprises in Tanzania, the study highlighted funding and societal perception challenges but did not quantify the financial sustainability gains from waste management. This highlights a methodological limitation and underscores the need for empirical research measuring financial outcomes of CE-based waste management in social enterprises.

2.3.3 Regenerative nature practices and financial sustainability of social enterprises.

Jovanović-Vujatović et al. (2024a) define a regenerative business as purpose-driven, retrospective, characterized by circular flows, aimed at dynamic equilibrium, yielding net-positive outcomes, and fostering mutuality and stakeholder engagement. Di Maio et al. (2017b) further expound this technique, By stating that the fraction of a product's resources that are salvaged for reuse at the conclusion of its lifecycle promote resource conservation within the economy and material reutilization. Although reuse, repair, and recycling are

essential for product durability, there is currently a deficiency in research regarding circular economy evaluation and metrics (Elia et al., 2017).

Regenerative enterprises aim to restore ecosystems, promote social fairness, and create good long-term consequences as cited by Jovanović-Vujatović et al., (2024). Andreucci et al., (2021) suggest that performance in regenerative firms goes beyond financial measures. Bojković et al., (2011) proposes a comprehensive approach that prioritises regeneration over sustainability, considering the Triple Bottom Line (people, planet and profit). In this context, performance management in regenerative enterprises encompasses not only the evaluation of profits and financial metrics but also the assessment of an enterprise's ability to foster long-term ecological restoration, social equity, and economic resilience in terms of profit and value creation. (Hahn & Tampe, 2021)

Hahn & Tampe, (2021b) assert that sustainable firms prioritize environmental and social performance in conjunction with financial viability. Profit is vital in a regenerative enterprise, although it is viewed as part of a larger framework where financial achievement is intricately linked to favourable environmental results and social equality. Nevertheless, prevailing conceptions of corporate sustainability focus on the company and its business logic, seeking to create solutions that transform less detrimental social and environmental practices into competitive advantages. There is a lack of real-world examples and extensive business case research on how supply chain processes and production activities create, capture, and distribute value (De Angelis & Vesci, 2025)

According to Hopkinson et al. (2018), successful circular economy practices require the simultaneous deployment of key building blocks like circular design, circular business model innovation, reverse network management, and system enablers such as new forms of innovation and collaboration across the value chain. Regenerative economics transcends sustainability studies, presenting a transformative framework that aims to create economic systems that restore and enhance ecological, social, and financial resilience. Unlike old models that focus mainly on aiming to minimize harm, regenerative economic models create systems that renew and sustain critical resources for life. Regenerative economics seeks to transcend linear, extractive economic models to promote flourishing ecosystems and societies that coexist harmoniously with the biosphere (Shannon et al., 2022). To support this argument, a regenerative social enterprise redirects financial capital from the current harmful system to create value for itself and environment. Hutchins and Sutherland (2008) suggest that social

enterprises' targets for sustainability may include auditing suppliers and ensuring high compliance with social policies. According to Ahi and Searcy (2015) environmental factors might include product indicators like recycled material content and life cycle emissions, as well as site-specific metrics like achieving compliance minimums. Further research suggests that redesigning products can lead to longer lifespans and reduced waste ((Esbensen & Velis, 2016; Elia et al., 2017)

Social enterprises adopting regenerative processes in the CE allows for possible income, profit, and margins to be allocated to byproducts or emissions that were previously considered production waste (Zou et al., 2017; Cong et al., 2017). Emissions, energy, and water loss from any process are considered 'value loss' (Zou et al., 2017). Maximising the utility and lifecycle of materials is crucial for 'raising value' within the social enterprise's system (Congnget al., 2017; Elia et al.). One of the few examples of producing a value-related indicator is based on the value of non-sustainable or 'stressed' output, or industry sector value addition (Di Maio et al., 2017b)

According to Edwards et al., (2024) regenerative sustainability acknowledges the importance of reforming organisations like social enterprises to reverse the unsustainable paths the world is currently on. Regenerative firms do more than only reduce harm, produce zero emissions, and maximise the effective use of natural resources; they also restore and improve well-being in social and environmental systems. Incorrect implementation of circular business practices or other sustainable practices can harm the planet rather than benefit it (Mang & Reed, 2012) Additionally, a lack of whole systems thinking fails to consider the impact of actions on interconnected earth systems (Arora & Rovenpor, 2018). Thus, social enterprises can leverage on this environmental change to gain competitive advantage in the market. Green initiatives and responsible business practices are crucial for social organisations to thrive in competitive marketplaces, despite uncertainty about their impact. Camilleri (2017) suggests that organisations can increase societal and economic value by connecting corporate objectives, governance strategies, stakeholder management, and environmental responsibilities. According to Kožená and Mlázovský (2021),enhanced brand loyalty benefits enterprises.

In summary, regenerative practices extend product life cycles, restore ecosystems, and promote social equity (Jovanović-Vujatović et al., 2024b; Andreucci et al., 2021b).. However, the current literature emphasizes sustainability broadly but lacks detailed metrics for how regenerative practices translate into financial outcomes, particularly in social enterprises (Elia

et al., 2017) This study aims to fill this gap by assessing whether regenerative practices directly influence social enterprise financial sustainability.

2.3.4 Product Life Extension Practices and Financial Sustainability

Kimaro et al., (2026) refers to product life extension as a value retention strategy that maintains the embedded materials previously invested in products. Purushothaman et al., (2025) supports this by stating that product life extension is a fundamental CE technique aimed at extending the functional life span of products through activities such as repair, refurbishing, remanufacturing, upgrading, maintenance, reusing and redistribution. within the CE concept PLE holds a significant role since it allows firms to concurrently create economic, environmental and social value. This study recognizes PLE as a highly successful circular strategy for enhancing resource efficiency and developing sustainable business models.

PLE can enhance the financial stability of social enterprises. According to (Magnano et al., 2024b) social enterprises must devise ways to generate revenue while also contributing positively to the society. Thus, employing PLE strategies can provide new revenue streams while reducing operational expenses. Extant literature indicates that extending the lifespan of products enables organizations to recoup value from items typically discarded, so enhancing revenues and optimizing resource utilization. Empirical research indicates that PLE enhances income diversification. Refurbished or remanufactured products provide secondary markets that allow enterprises to cater to price sensitive consumers while generating supplementary revenue. These not only enhance financial performance but also client connections and bolster organizational resilience (Henriques et al., 2023). At a more strategic level, global literature regards product life extension as a fundamental element of circular business models but with an uneven adoption and underdeveloped financial correlation. In addition to this, (Psarommatis et al., 2025) in systematic reviews, claim that reuse and repurposing strategies are sustainable and add value but are limited by technological, financial, and institutional barriers.

The significance of PLE is particularly visible among social enterprises operating withing the CE. Van Opstal et al., (2024) discovered that social enterprises that engage in PLE strategies generate economic and social value by fostering employment and facilitating resource recovery. Their research indicated that firms involved in circular business practices cultivate sustainable trajectories by utilizing product life extension activities. These findings are relevant to SEs in Nairobi County where unemployment and resource limitation present challenges for circular business models. Increasing peer-reviewed research, positions PLE within broader

circular-economy strategies that emphasize durability, servicing, refurbishment, and reuse to maintain value and reduce environmental impact.

However, the viability and importance of product life extension as a crucial circular economy practice is largely evident in the informal and hybrid enterprise settings. Cross & Murray, (2018) conducted a study utilising ethnographic and qualitative methods focusing on Kenya's off-grid solar ecosystem. The study findings demonstrated that repair practices are vital and actively implemented in informal markets due to the critical reliance on product functionality in terms of affordability and use. The study concluded that repair is a socio-economic activity supporting product lifecycles and livelihoods in line with principles of product life extension. Harrington & Wambugu, (2021) agree with this study by focusing on institutional and systems analysis, adding to empirical evidence that improving repair ecosystems improve product longevity and system sustainability.

Derks et al., (2024) conducted a study and utilised survey and case study method in Kenya and revealed that Opportunities for circularity exist but the study concluded that enterprises tend to prioritise waste disposal and recycling over upstream product life extension strategies. These findings support the argument that PLE is underdeveloped compared to other circular economy dimensions like waste reduction and material recovery. The inconsistent application is more evident in formal and financially structured contexts. Such a tension provides an excellent empirical basis to examine how practices of product life extension affect financial sustainability, particularly among social enterprises whose adoption may be constrained by or enhanced by hybrid objectives.

Manu et al., (2026) utilised panel data analysis of 33 African countries and found that circular economy practices are more driven by technological capability, financial systems, and policy frameworks than by only firm lifecycle strategies. They conclude that financial and operational effects mediate circular economy adoption for effective achievement of sustainability results. In a cross-country analytical study (Buda, 2026) points out that limited finance, inadequate infrastructure and weak industrial ecosystems are barriers to advanced circular strategies such as repair and refurbishment. The studies suggest that PLE practices in circular economy but require supportive institutional contexts to be able to be translated into financial sustainability outcomes.

More recent studies have focused explicitly on operational aspects of product life extension in manufacturing and industrial contexts. Ahmed et al., (2024) developed a decision support framework for reuse, refurbishment, remanufacturing, and recycling showing that product life extension can increase value recovery and reduce material costs. Similarly, in a multiple case study across European production facilities (Gróf & Netland, 2025) show that product life extending operations are necessary for circular transitions but are often hindered by productivity and operation inefficiencies. The study findings point to a major contradiction whereby PLE may improve sustainability outcomes but also introduce operational trade-offs that impair firm efficiency and short-term financial performance. This suggests that PLE's financial benefits may depend on how firms implement PLE in their production processes.

Aryee & Kanda, (2024) note that despite the advantages associated with PLE, there are challenges that may restrict the financial rewards linked to PLE strategies. Repair and refurbishment endeavours often require skilled workers, specialist equipment and effective reverse logistic frameworks. The labour-intensive characteristics of these operations. Moreover, consumer perceptions of the quality of refurbished products may influence market adoption and income generation.

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Table 0.1: Summary of Research Gaps

Author and year of publication	Study focus	Methodology	Findings	Research gap
Charles, G. (2021).	Sustainability of Social Enterprises Involved in Waste Collection and Recycling Activities: Lessons from Tanzania	The paper used qualitative approach whereby 40 grassroots waste initiatives were mapped and purposefully selected 5 that fit the definition of social enterprises.	The study findings showed that most social enterprises face the challenges of access to finance, negative societal perceptions and lack of clear structures and policy implications.	The study did not show how these social enterprises function and sustain themselves financially in the long-term. This gap was filled by the current study whereby we was find out whether proper waste management leads to financial sustainability of SEs.
Stratan, D. (2017).	The project aims to simulate social entrepreneurship activities utilising circular economy	A narrative review of circular economy models, corporate strategies, and social entrepreneurship practices.	Many social enterprises are aware of circular economy ideas, but few consider them critical success elements, owing	Highlight sustainability broadly, although neglect to discuss how social companies can integrate social effect, environmental objectives, and

	principles in conventional business processes. Its goal is to discover the key characteristics that enable the long-term viability of social businesses and to create a conceptual framework for incorporating circular business model aspects into social enterprise strategy.		to limited implementation and comprehension.	financial viability into a unified business strategy.
Majid, S., Ahmad, N., Habib, A., Javed, S. A., & Ahmad, N. (2025).	Transitioning to a Circular Economy: Exploring the Roles of Green Financing, Sustainable Entrepreneurship, State Policy and Environmental Awareness (Pakistan) Journal of Science Review	This study employs a strong sampling framework and extensive data collection procedures to target professionals and stakeholders in green finance and entrepreneurship, mainly	The findings support the adoption of CE by adopting a holistic approach that combines financial incentives, policy frameworks, and consumer education to overcome barriers. In this scenario, the transition to CE can be considered the most	Quantifying green investment and its advancement and identifying the factors that support and impede green financing using a quantitative methodology

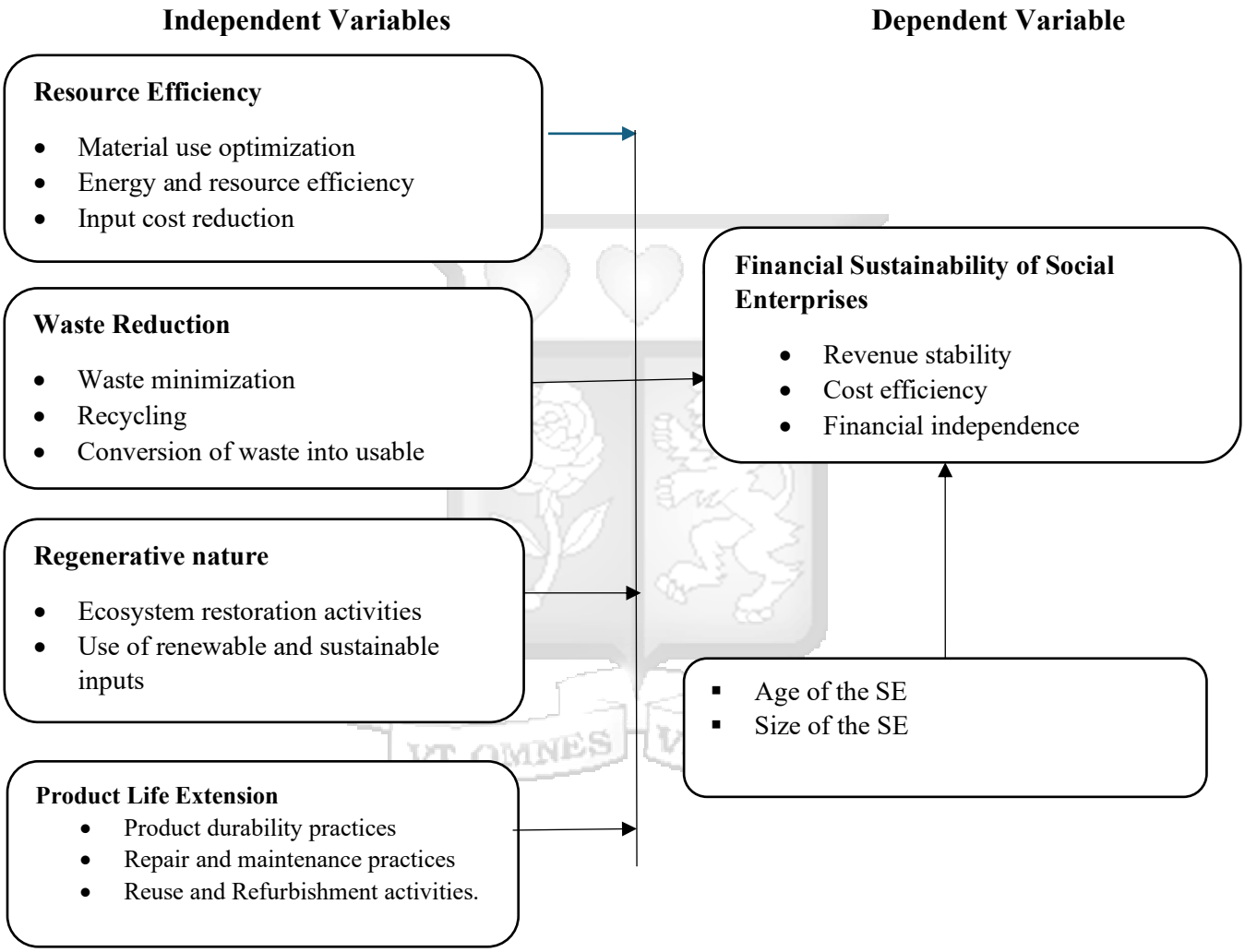
		those who are engaged in the application of green economy practices in developing economies.	viable route to realizing sustainable development for the world in the face of burgeoning environmental challenge.	
Dantas, R. M., Ilyas, A., Martins, J. M., & Rita, J. X. (2022). Journal of open innovation	Circular Entrepreneurship in Emerging Markets through the Lens of Sustainability (Portugal & Pakistan)	This study used a multi-case approach, which is frequently applied in circular business literature.	Their opinion of this Endeavor is that CE is a good option for making a good income, as opposed to alternative sources of earning.	To explore what types of innovation processes, activities, and ideas are involved in these enterprises and finally identify the constraints that they face.
Rey-Martí et al. (2021)	To assess the correlation between social companies in Spain and their social effect, as measured in terms of social sustainability.	The study was a survey of 62 Spanish work integration social businesses using fuzzy-set qualitative comparative analysis.	The findings demonstrated the significance of the training provided to social entrepreneurs, along with the organization and strategic development of social businesses	This study only focused on one type of social enterprises in Spain and the findings from the study can therefore have limited generalizability.

Source: Researcher (2025).

2.5 Conceptual Framework

Figure 2.1 presents the conceptual framework that guided the study. The independent variable is resource efficiency, waste reduction, regenerative nature practices and product life extension. The control variable in this study is age and size of the social enterprises. The dependent variable in this study is financial sustainability of social enterprises.

Figure 2.1: Conceptual framework



Source: Researcher (2025).

2.6 Operationalization of Variables

Table 2.2 presents the operationalization of the research variables, along with their indicators and statistical measurements.

TABLE 0.2: OPERATIONALIZATION OF VARIABLES

Variable	Description	Indicators	Measurement	Supporting Literature
Financial Sustainability	The ability of an enterprise to generate sufficient revenue to cover its expenses and continue operating in the long term.	• Revenue stability • Cost efficiency • Financial independence • Growth and reinvestment capacity	Five-point Liker scale (1-5) 1 = strongly disagree, 2 =disagree, 3 = neutral, 4 = agree, 5 = strongly agree.	Staicu, D. (2018). Financial sustainability of social enterprise
Resource efficiency	Using resources in the most effective and sustainable way throughout their entire life cycle minimizing waste and maximizing value	• Material use optimization • Energy and resource efficiency • Input cost reduction	Five-point Liker scale (1-5)	Di Maio, F., Rem, P. C., Baldé, K., & Polder, M. (2017b).
Waste reduction	Focuses on minimizing waste generation and maximizing resource utilization throughout the cycle. The aim is to keep the materials in circulation for as long as possible.	• Waste minimization • Recycling • Conversion of waste into usable outputs	Five-point Liker scale (1-5)	Moustakas, K., & Loizidou, M. (2023).

Regenerative nature practices	Involves restoration of used products to a 'like-new' or better condition to extend their life cycle. The aim is to preserve energy and materials invested in original manufacturing.	• Ecosystem restoration activities • Use of renewable and sustainable inputs • Environmental stewardship initiatives	Five-point Liker scale (1-5)	(Hahn & Tampe, 2021)
Product Life Extension	Product life extension (PLE) encompasses measures designed to extend the functional lifespan of items by practices such as repair, reuse, refurbishing, remanufacturing, and routine maintenance.	• Product durability practices • Repair and maintenance practices • Reuse and Refurbishment activities.	Five-point Liker scale (1-5)	Bocken, N. M. P., Short, S. W., Rana, P., & Evans, S. (2014).

Source: Researcher (2025)

2.7 Chapter Summary

This chapter has presented the theoretical framework that supports the research, reviewed the existing empirical studies, and identified the areas that the present study aims to address. Theoretical framework has provided the two theories that was anchor the study which are resource-based view theory and legitimacy theory. The chapter has also presented a review of literature and the overview of the gaps that justifies the current study. Moreover, the chapter has presented the conceptual framework that outlines the proposed relationships between circular business practices, financial sustainability of social enterprises. The chapter also provides the operationalization of the study

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CHAPTER THREE

2 RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology that was applied in the study. It explicates the research philosophy applied, it elaborates on the research design that was used, it presents the population and the sampling design that was adopted, it also describes the data collection tool, method, and procedure, as well as the data analysis and presentation strategies that were put to use. It also outlines the ethical guidelines that the researcher followed.

3.2 Research Philosophy

The research philosophy, according to Kothari (2004), outlines the viewpoint of the best ways to collect, examine, and apply data for a particular topic. Knowledge is the basis that helps researchers identify, comprehend, and reduce biases in their work (Sekaran & Bougie, 2016). Positivism, pragmatism, realism, and interpretivism are the four primary schools of philosophy (Kothari & Garg, 2014). Since the goal of the study was to investigate cause-and-effect relationships between circular business practices and financial sustainability, the study adopted a positivist research philosophy. Positivism assumes reality is objective, measurable, and independent of perception, making it suitable for testing relationships using quantifiable data (Tashakkori et al., 2021). The independent variables (resource efficiency, waste reduction, regenerative practices, and product life extension) and the dependent variable (financial sustainability) are all measurable. Positivism ensures the study relies on empirical evidence rather than subjective interpretations, which aligned with the aim to examine how adoption of circular business practices affects financial sustainability of social enterprises in Nairobi, Kenya (Cooper & Schindler, 2014; Saunders et al., 2014).

3.3 Research design

A research design is a blueprint that guides how the research questions were answered, including data collection, measurement, and analysis (Saunders et al., 2016). While descriptive designs are often considered weak for testing effects, this study applied descriptive-correlational design because it not only described the adoption of circular business practices but also examined the relationships between these practices and financial sustainability. The correlational aspect allowed testing the strength and direction of associations between

variables, making it adequate for examining effects without manipulating independent variables. Hence, the design is both descriptive, that is profiling social enterprises and CE adoption and explanatory in part, assessing relationships (Creswell & Poth, 2016). This approach enabled the study to provide a correct profile of social enterprises in Nairobi, including their adoption of circular business practices and examine the relationships between resource efficiency, waste reduction, regenerative practices, product life extension and financial sustainability.

3.4 Target Population

Population is a complete collection of elements of interest in research, sharing common characteristics (Creswell & Creswell, 2022). The target population for this study is social enterprises in Nairobi, including those registered under Aspen Network of Development Entrepreneurs (ANDE), Benefit Corporations (B Corps), Sector-specific sources, Kenya Climate Innovation Centre, Ashoka Kenya Fellows, Sustainable Inclusive Business Kenya, and GrowthAfrica. The total identifiable target population from the sources is 274 while the firms duplicate across the sources due to merging of databases. However, some social enterprises are duplicated across the registries, resulting in a total of 183 social enterprises after-duplication. Although Kenya has no official definitions for social enterprises, our study used an operational definition informed by the duality of social and environmental impact and profit-making as distinguishing features of social enterprises. Eligibility was defined by enterprises meeting a sampling frame established based on enterprise profiles extracted from three of the most-used, recognized enterprise ecosystem database platforms (accelerator portfolios, impact-investor network profiles), as well as by entries from circular economy directories. The distribution of the firms is shown in table 3.1.

TABLE 2.1: TARGET POPULATION

Source	Description	Total retrieved	Unique After Deduplication
Sector-specific sources	Waste, energy, agriculture, water and sanitation circular enterprises from registries (NEMA)	88	84
ANDE member-derived portfolios	Enterprises extracted from portfolios of 19 ANDE-linked members	64	34
Kenya Climate Innovation Centre	KCIC-supported climate and circular enterprises	36	21
GrowthAfrica	Accelerator portfolio companies	36	26

Ashoka Kenya Fellows	Kenya-relevant social impact ventures	30	16
B Lab Kenya B Corps	Kenya-active certified B Corps	20	2
	Total	**274**	**183**

These enterprises vary in size, sector, and stage of CE adoption. The study targets managers, owners, and staff involved in implementing circular business practices.

3.5 Sampling Design

Sampling entails a process of selecting some elements from the population that were used to represent the study population (Creswell & Creswell, 2022). The study employed census approach implying the target sampling frame was all the 183 social enterprises. Census approach was imperative since the population was finite, manageable and heterogenous across the sector. This study then applied purposive sampling, a non-probabilistic technique that selects one participant who was characterised as most knowledgeable about and involved in circular business practices (Schindler, 2022). The characteristics of the target respondents included owners, managers, finance officers, operations officers, and sustainability officers. However, the primary respondent was the owner, whereby either of the manager, finance officer, operations officer, and sustainability officer was approached in hierarchical order only when the owner was not available to participate in the study.

For the purpose of this study, social enterprises were defined as legally registered, market-based organizations operating in Nairobi County that generate revenue through commercial activities and reinvest surpluses toward social or environmental objectives. Faith-based charities and purely donor-funded NGOs were excluded unless they engage in sustained commercial activities. Purposive sampling enabled the researcher to deliberately choose participants who were most likely to provide relevant, rich, and detailed information about the research subject. Instead of picking volunteers at random, the researcher decided based on who was most instructive or representative of the specific features under investigation.

3.5.1 Sample Size

The process of selecting specific individuals or items from a larger population is referred to as sampling. The sampling technique is the method used to select the sample (Kothari, 2017). The study targeted a sample size of 183 circular economy social enterprises in Nairobi County Kenya. one-knowledgeable respondent was selected from each of the organisation and the

research instrument was distributed to all the 183 respondents. However, the study achieved a total response rate of 142 usable responses accounting for 78% of the total sample size.

3.6 Data Collection Instrument

Data collection is the process of acquiring information for research, using either primary or secondary sources (Sekaran & Bougie, 2016). Primary data sources are original data gathered firsthand through such methods like surveys, interviews and observations while secondary sources consist of preexisting information obtained from recorded materials, periodicals, databases and written documents (Kothari & Garg 2019). Primary data was collected using a structured questionnaire, divided into five sections: as follows; section 1 background data, section II comprised of questions on circular economy practices, resource efficiency, waste reduction, regenerative nature practices and product life extension and Part V had questions on dependent variable financial sustainability. The study employed be a five-point Likert scale where; 1 = strongly disagree, 2 = disagree, 3 = moderately agree, 4 = agree and 5 = strongly agree to determine the level of adoption of circular economy practices and the influence on financial sustainability. The questionnaire was administered electronically via google forms as well as physically through drop and pick.

3.6.1 Data Analysis

Data analysis refers to the systematic process of scrutinizing, cleaning, transforming and modelling data collected in research. It enables the researcher to reduce the collected data to manageable size, developing summaries, identifying patterns and administering statistical techniques (Creswell & Creswell, 2022).

Inferential statistics was utilised to ascertain the influence of circular business practices on the financial sustainability of social businesses. Moreover, the study analysed data using descriptive statistics to identify the patterns, characteristics of the respondents' perceptions.

Both linear and multiple regression models were utilised to examine how circular business practices shape the financial sustainability of the social enterprises in Nairobi, Kenya:

The regression model was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 \, \varepsilon$$

Where, Y = Financial Sustainability

β_0 = Constant

β_i = Coefficients of independent variables

X_1 = Resource Efficiency

X_2 = Waste Management

X_3 = Regenerative nature practices

X_4 = Product Life extension

X_5 = Size

X_6 = Age

ε = Error term

3.7 Diagnostic tests

The study performed various diagnostic tests to confirm the reliability and robustness of the model. The specific tests selected include those that test the assumptions underlying the ordinary least square model (OLS) which in this study is the multiple regression. They were normality test, multicollinearity and heteroscedasticity.

3.7.1 Normality

The study conducted normality of residuals test to establish if there were errors that follow a normal distribution. The test is imperative for achievement of a valid hypothesis testing. Statistical tests such as Kolmogorov-Smirnov and Shapiro-Wilk test were utilised to confirm that residuals are significantly different from normality. The findings showed that the p-value was higher than 0.05, indicating that the residuals were normalised.

3.7.2 Multicollinearity Test

Multicollinearity test was assessed as supporting diagnostics rather than main analysis. A VIF threshold of 5 was applied, with VIF < 5 indicating no serious multicollinearity (Shrestha, 2020). High multicollinearity may skew regression coefficients, overestimate standard errors and obscure the model. Multicollinearity was assessed by Variance Inflation Factor (VIF) and Tolerance values. A VIF value lower than 10 and a tolerance above 0.1 indicated no detrimental multicollinearity of the predictor variables, such as circular economy practices and firm sustainability.

3.7.3 Heteroscedasticity Test

The study performed a heteroscedasticity test to establish whether the error variance is constant which is a major violation of OLS assumptions (Kumar, 2023). Violation imply that standard errors are biased and thus may produce inefficient estimates and hypothesis testing based on biased standard errors. The study found that there was no heteroscedasticity implying that it is appropriate for running the model.

3.8 Research Quality

This section discussed the validity and reliability of the research instrument. It outlines how the study upholds research quality using a systematic scientific approach and an appropriate study design. The focus was on assessing the alignment between the procedures and the questions, selecting suitable participants, measuring outcomes accurately, and minimizing potential threats to both internal and external validity that may arise from the instrument (Lindgreen et al., 2021).

3.8.1 Validity of Instrument

Instrument validity refers to the extent to which a tool accurately measures the concept it is intended to assess (Cooper & Schindler, 2018). In this study, three forms of validity were evaluated: Content validity was assessed to ensure that the items in the instrument reflected the conceptual framework guiding the study. As part of this process, the research supervisor reviewed the questionnaire to confirm that the questions were complete, accurate, and adequately represented the required knowledge domain.

The instrument was pilot tested with five entrepreneurs prior to the commencement of main data collection, five entrepreneurs of whom came from social enterprises not employed in the final study. The aim of the pilot was to test clarity, relevance and suitability of questionnaire items, the instrument as a whole and to provide insights for the refinement of the instrument's content. Participant feedback resulted in wording changes, rephrasing ambiguous statements, removing technical terms, changing question order, and clarifying instructions to facilitate better understanding on the part of the respondent. The results of the pilot verified that the instrument was conceptually, technically, and logistically appropriate for its intended purpose. The process helped improve the face validity and usability of the instrument.

Face validity concerns whether an instrument appears to assess what it is designed to measure. To assess this, the questionnaire was given to five randomly selected social entrepreneurs from

the social enterprises during the pilot phase, and these individuals were excluded from the final study. The characteristics of the selected individuals include sustainability officer in firms not included in the main study. The enterprises approached were outside of the study focus which is Nairobi County, Kenya. Their feedback helped refine the tool by improving the clarity of the questions, eliminating double-barrelled items, and removing any ambiguous wording, thereby strengthening the overall validity of the instrument.

Exploratory Factor Analysis (EFA) was performed to confirm the structure of the questionnaire items underlying the instrument. Analysis was focused on construct validity which involved convergent validity (items measuring the same construct are related) and discriminant validity (items measuring different constructs). EFA also confirmed the variables were dimensional and items were correlated with theoretical constructs supporting content validity. Factor analysis results are presented in Chapter Four and were used to design composite measures for subsequent analysis.

3.8.2 Reliability of instrument

Reliability refers to how consistently an instrument measures what it is intended to measure meaning that if the same measure is administered under the same conditions, it should produce the same results (Khan, 2018). To verify the internal consistency of our data-collection tool, the study applied a Cronbach's alpha analysis. The Cronbach's alpha coefficient serves as a baseline indicator of the instrument's reliability. The reliability test results are presented in table.

TABLE 2.2: RELIABILITY TEST

Variable	Cronbach's Alpha	Decision
Resource Efficiency	0.854	Reliable
Waste Management	0.868	Reliable
Regenerative nature practices	0.799	Reliable
Product life extension	0.782	Reliable

3.9 Ethical Responsibility

Ethical considerations refer to the moral principles that guide behaviour and decision-making in research (Onuselogu & Shahzad, 2023). The study obtained ethical letter and acceptance from Strathmore University Institutional Ethics Review Committee (SU-IERC) and proceeded

to obtain a research permit from National Commission for Science, Technology and Innovation (NACOSTI). In examining how circular business practices affect the financial sustainability of social enterprises, several ethical issues were addressed. Participants were provided with a cover letter guaranteeing that the information they share was kept confidential and used exclusively for academic research. The researcher considered all necessary measures to ensure that data collected, analysed, and reported is handled honestly, without any form of manipulation or falsification. In addition, proper citation and referencing was applied throughout the study to acknowledge original authors and prevent plagiarism.

3.10 Chapter Summary

This chapter introduced the research methodology and established the philosophical framework. Subsequently, it detailed the research design, target population and sampling design including justification for sample size. It concluded by outlining the data collection instruments and the planned procedures for systematic analysis.

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CHAPTER FOUR

3 PRESENTATION OF FINDINGS

4.1 Introduction

Chapter four presented the findings which were conducted using the data collected from target respondents across the social enterprises. The section involved response rate, demographic information, descriptive statistics, and inferential statistics. Diagnostic tests were conducted to establish the reliability and validity of the model before conducting regression analysis.

4.2 Response rate

The study achieved a response rate of 142 respondents which translates to 78% of the total targeted sample size.

TABLE 3.1: RESPONSE RATE

Questionnaires returned	142	78%
Questionnaires not returned	41	22%
Total	183	100

4.3 Demographic Information

TABLE 3.2: DEMOGRAPHIC INFORMATION

Category	**Frequency**	**Percentage (%)**
Owner	38	26.8%
Head of Department	29	20.4%
Accountant	21	14.8%
Operations	34	23.9%
Internal Auditor	20	14.1%
Gender	**Frequency**	**Percentage (%)**
Male	84	59.2%
Female	58	40.8%
Highest Level of Education	**Frequency**	**Percentage (%)**
Doctorate Degree	6	4.2%

Master's Degree	32	22.5%
Bachelor's Degree	72	50.7%
Diploma	32	22.5%
Years of Professional Experience	**Frequency**	**Percentage (%)**
1 to 5 Years	34	23.9%
6 to 10 Years	46	32.4%
11 to 15 Years	31	21.8%
16 to 20 Years	19	13.4%
Over 20 Years	12	8.5%
Total	**142**	**100%**
Sector	**Frequency**	**Percentage (%)**
Waste Management and Recycling	28	19.7
Circular Manufacturing and Materials	14	9.9
Renewable Energy and Clean Technology	26	18.3
Sustainable Agriculture and Food Systems	24	16.9
Water, Sanitation and Circular Utilities	16	11.3
Circular Economy Enablers (Technology and Platforms)	20	14.1
Multi-sector Circular Enterprises (Hybrid Models)	14	9.9
Total	**142**	**100.0**

Source: (Researcher, 2025)

The breakdown by job category indicates that most respondents work in strategic and operational roles within their organizations. Owners were 26.8% of respondents and operations staff 23.9%, suggesting that a large percentage of the data came out of those directly involved in decision-making and day-to-day management. Heads of departments represented another significant proportion (20.4%), supporting the reliability of responses in capturing strategic and functional perspectives. A relative lower representation of internal auditors (14.1%) compared to accountants (14.8%) reflects the structural reality of many social enterprises which outsource or limit formal audit functions.

Among all the 142 returned questionnaires, 59.2% represented male respondents and 40.8% female respondents. While this distribution is slightly male dominated, it also reflects the social

enterprises of Kenya that are increasingly involving women in leadership and operational roles. A large number of female respondents contribute to the study's inclusive nature.

In terms of educational attainment, the results indicate that the largest number of respondents had a bachelor's degree (50.7%) followed by master's and diplomas (both 22.5%). Only 4.2% had doctoral training. This pattern corresponds to the profile of social enterprise professionals, in which practical and technical expertise at undergraduate and postgraduate levels is more common than doctoral specialisation. The relatively high education level of the respondents indicate that they have the knowledge and capacity to comprehend and answer questions regarding circular economy practices and financial sustainability.

In terms of professional experience, 32.4% of respondents had 6 to 10 years of experience, 23.9% 1 to 5 years and 21.8% 11 to 15 years. Fewer respondents had experience beyond 15 years, suggesting the sector is dominated by young but experienced professionals. This distribution reflects an equilibrium between incipient and expert practitioners and is presumably good enough to capture both innovative and established views pertaining to circular economy practices. Those characteristics generally suggest that respondents were prepared to provide informed and reliable insights relevant to the study objectives.

The sectoral distribution indicates that waste management and recycling (19.7%) and renewable energy and clean technology (18.3%) are the largest proportions of the sample followed by sustainable agriculture and food systems (16.9%). This pattern shows the dominant circular economy activity in Kenya where waste recovery, clean energy access and sustainable food systems drive innovation. Circular economy enablers like technology platforms represent 14.1% of the firms surveyed, demonstrating the growing importance of digital solutions for circular value chains. More specialized segments are water, sanitation and circular utils (13.3%), and Circular manufacturing and materials (9.9%), and Multi-sector enterprises (9.9%) which operate in multiple domains. The sectoral distribution indicates that the sample captures a representative cross-section of circular economy enterprises in Kenya.

4.4 Descriptive Statistics

4.4.1 Descriptive Statistics for Age and Firm Size

TABLE 3.3: DESCRIPTIVE STATISTICS FOR AGE AND FIRM SIZE

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Firm Age (Years)	142	2	22	8.7	4.6
Firm Size (Employees)	142	3	128	29.4	24.8

The descriptive statistics of firm characteristics indicate that sampled enterprises are mostly young and small to medium-sized enterprises. The average firm age was 8.7 years with enterprises ranging from 2 to 22 years of operation. This suggests the sector is dominated by relatively new ventures that have emerged in the last decade as circular economy-oriented enterprises in Kenya. Age variation also shows early-stage as well as more established enterprises are represented.

Firm size averaged 29.4, with a wide dispersion of 3 to 128 employees. That difference reflects a heterogeneity of social enterprises, most of which operate on a small scale, but some have grown to moderate levels of maturity. The relatively large standard deviation indicates that firm size varies quite a bit with respect to sector and business model, thus confirming the need to control for firm size in the regression analysis.

4.4.2 Descriptive Statistics for Resource Efficiency Practices

TABLE 3.4: DESCRIPTIVE STATISTICS FOR RESOURCE EFFICIENCY PRACTICES

Statement	N	Mean	Median	Std. Dev
Our enterprise minimizes material losses during production or service delivery	142	4.18	4	0.71
Our enterprise has measures in place to prevent material losses during production or service delivery.	142	4.12	4	0.74
Our enterprise monitors and controls energy use in its operations.	142	4.26	4	0.68
Our enterprise tracks resource use to prevent excess consumption.	142	4.09	4	0.76

Our enterprise uses resource management practices to keep input costs within planned levels.	142	4.21	4	0.7
Our enterprise tracks resource-related costs to control overall operating expenses.	142	4.15	4	0.73

Table 4.4 indicate that the social enterprises actively practice resources efficiency in the operations. Monitoring and controlling of energy use had the highest mean score (Mean = 4.26 SD = 0.68), and the lowest mean was for tracking resource use to prevent excess consumption (Mean = 4.09 SD = 0.76). The findings imply that firms have more firmly established and visible mechanisms for energy consumption management than broader systems of resource use tracking and optimization. In practice energy control is an immediate and operational practice across the social enterprises whereas a more generalised resource monitoring may require more standardized systems not fully developed uniformly across firms. However, both practices are paramount in social enterprises evident by the high level of agreements across the surveyed enterprises.

The responses show that resource efficiency is mainly a matter of cost management and operation necessity and not a major environmental concern across the surveyed enterprises. Strong agreement on energy control, cost tracking and input cost management practices indicates that firms are taking advantage of efficiency measures to stabilise expenses and improve margins. The finding is consistent with Ghisellini and Ulgiati (2024) argument that organisations using resource efficient practices have lower operating costs and better financial resilience. Similarly, Kirchherr et al. (2023) claim that Circular economy practices increase operational efficacy and generate new revenue streams in SMEs and social enterprises. This study results agree with those studies' findings ascertaining that resource efficiency is an economic mechanism for financial sustainability.

Nevertheless, the relative lower emphasis on systematic resource tracking is an indication of a more experiential reality (Mean = 4.15). Firms are aware of efficiency practices but not necessarily formalised in comparison to other practices such as monitoring and control of energy use. The findings agree with Ludeke-Freund et al. (2019) who argued that enterprises practice circular economy models such as reuse, recycling, costs reduction and resource dependence but are often implemented only when the firm has internal resources and capabilities. Similarly, Khan et al. In (2025) argue that some social enterprises acknowledge circular economy practices but do not consider them critical to success, often because of

capacity constraints. The findings and empirical evidence indicate why firms have lower systemic resource tracking practice.

The findings support the argument of Di Maio et al. (2017) that resources efficiency is therefore related to value creation through optimal input use rather than complete investment in systems. The surveyed enterprises seem to be more focused on immediate and tangible benefits such as energy savings, cost control whereas the is less application of more complex and continuous tracking practices. Therefore, the responses confirm the broader view that resource efficiency is often incremental and pragmatic rather than systematised in social enterprises. The results indicate resource efficiency as a central and operationally grounded practice in the social enterprises corresponding to empirical literature. The study identified a gap between practice and system maturity which could further enhance financial sustainability.

4.4.3 Descriptive Statistics for Waste Reduction Practices

TABLE 3.5: DESCRIPTIVE STATISTICS FOR WASTE REDUCTION PRACTICES

Statement	N	Mean	Median	Std. Dev
There are processes in place to keep waste levels low in its operations.	142	4.11	4	0.75
Our enterprise monitors the amount of waste generated during its activities.	142	3.97	4	0.98
Our enterprise separates waste to support reuse or recycling.	142	4.23	4	0.69
Our enterprise reuses materials within its operations where applicable.	142	4.17	4	0.72
Our enterprise converts waste materials into useful products or inputs.	142	3.87	4	1.36
Systems for processing waste into usable outputs have been implemented in our enterprise	142	3.86	4	1.21

Table 4.5 shows waste reduction practices are widespread in the surveyed social enterprises but slightly less practiced compared to resource efficiency practices. The highest mean score was for waste separation to support reuse of waste materials and recycling (Mean = 4.23 SD = 0.69), and lowest mean was for systems processing waste into usable outputs (Mean = 4.02 SD

= 0.81). That means firms are more consistent in implementing basic, operational waste practices than in constructing structured systems to change waste into economic value.

The findings reveal that the social enterprises are practicing separation of waste and reuse of waste materials more compared to strategies such as waste processing and conversion. The response reveal that firms have waste reduction operations in place but do not fully capture the practice strategically. Waste minimisation and reduction are actively internalised as part of their normal business operations. However, there is lag in terms of valorisation which is a key step in achievement of full loop circular economy. The responses indicate that firms are practicing creation of value by turning waste into practical economy and societal applications but not prominently as other waste management practices in regard to circular economy. The disparities create a tension whereby waste management practices may indicate high circularity, but the results show that most of it is done at the lowest levels of waste hierarchy (reduce and reuse) and less consistently at higher value activities like processing and transformation. The higher standard deviation with processing systems confirms that different firms may have structured systems while others involve temporary and externally supported mechanisms.

The study supports partially and contends with the arguments by Kalkanis et al. (2022) who argue that waste management reorients value chains by presenting waste as an economic resource. The current findings contend that while firms are clearly reducing waste, waste is not consistently translated into structured value chains by social enterprises in Nairobi Kenya. Similarly, Murray et al. (2017) place reuse and recycling at the centre of circular economy adoption in firms. However, the current study reveal that full circular integration in terms of material recovery and creation of value is not yet realised in social enterprises indicating the existence of revenue instabilities.

The findings also agree with constraints identified in developing country contexts. Studies such as Lohani et al. (2021) and Jha et al. (2024) identified infrastructure and formal system gaps as barriers to waste management. The findings are reflected in the current descriptives whereby enterprises are wasing to handle waste at the simplest level but not yet able to scale up more advanced processing systems for value creation. In the African context, Wordofa et al. (2024) point out the role of informal systems and their integration in formal structures. The variation established in the current study suggests that such integration is incomplete and inconsistent with higher level waste practices. More so, the current study findings challenge less optimistic assumptions in the literature that waste management is a quick way to financial sustainability.

While Bhandari et al. (2025) claim waste management brings financial benefits, the current results suggest that these benefits may be contingent on the type and depth of practices applied relative to valorisation of waste. Basic waste reduction leads to cost savings but without a structured waste processing and value recovery system waste may not realize its full financial potential.

The descriptive findings show waste reduction as a general but unevenly developed process. Social enterprises are actively moving beyond awareness to implementation mainly for low cost and operational practices. However, the transition to more advanced value-producing waste systems is partial and inconsistent across the social enterprises. Such a pattern supports but also extends the empirical literature in that waste management is not uniformly related to financial sustainability. It depends on system development and firm readiness to transform from waste reduction to waste valorisation.

4.4.4 Descriptive Statistics for Regenerative Nature Practices

TABLE 3.6: DESCRIPTIVE STATISTICS FOR REGENERATIVE NATURE PRACTICES

Statement	N	Mean	Median	Std. Dev
Our enterprise carries out activities that restore or improve natural ecosystems.	142	3.41	3	1.08
Our enterprise integrates environmental restoration into its operations.	142	3.33	3	1.21
Our enterprise uses inputs that can be naturally replenished over time.	142	3.52	3	0.94
Our enterprise prioritizes the use of environmentally sustainable inputs in its operations.	142	3.61	4	0.9
Our enterprise follows practices that protect the surrounding environment.	142	3.68	4	0.88
Our enterprise has measures in place to manage its environmental impact.	142	3.57	4	0.91

Table 4.6 shows moderate to uneven regenerative nature practice adoption in the surveyed social enterprises. The highest Mean score was for actively adopting practices of protecting the

environment (Mean: 3.68, SD: 0.88), and the lowest for including environmental restoration in operations (Mean: 3.33, SD: 1.01). The findings imply that firms are aligned more with protective and compliance-oriented actions than deeper regenerative nature practices requiring restoration to be integrated in core business processes.

In regard to regenerative nature practices there is stratification in responses whereby firms seems to strategically adopt practices that are easier to implement. There is high level of agreement among sustainable input practices and management of environmental impact. In contrast, practices involving deliberate ecosystem restoration or operation reconfiguration show weaker and more dispersed responses. The findings indicate that while social enterprises are considering sustainability practices on a operational level, there is inconsistencies and limited focus on enhancing the environmental systems.

The wide variation in responses, especially for the lower-scoring items, suggests a tension within the sector. Some firms seem to be moving towards regenerative models, but many are still at-risk mitigation rather than value generation. It implies that very often environmental efforts are formulated in terms of avoiding harm rather than in terms of producing quantifiable ecological and economic benefits. The findings provide empirical evidence explaining why regenerative nature practices might have weaker relations with financial sustainability than more immediate cost-driven practices like resource efficiency.

The findings are consistent with empirical literature such as Hahn and Tampe (2021), who argue that environmental protection is becoming more integrated into firm performance. On the other hand, the limited integration of full regenerative practices supports the concern of Elia et al. (2017) who argued that there is inadequate clear metrics and practical frameworks for the implementation and evaluation of regeneration in business contexts. In a similar manner, Jovanovic-Vujatovic et al. (2024) confirm that regenerative enterprises are systems that produce net-positive environmental outcomes yet most of the firms have not yet achieved the benefits of the circular economy practice. However, the findings contrast and extend the argument by Zou et al. (2017) by stating that although regenerative practices are associated with long-term value creative and competitive advantage, the benefits are not guaranteed and are not immediate. Major factors affecting the achievement include firm-specific capabilities, access to resources and the ability to redesign operations. The findings imply that regenerative practices are emerging and transitional rather than fully integrated in the sector. Firms are

aware and partial adopters, especially in environmental protection, but regenerative integration is uneven across social enterprises.

4.4.5 Descriptive Statistics for Product Life Extension Practices

TABLE 3.7: DESCRIPTIVE STATISTICS FOR PRODUCT LIFE EXTENSION PRACTICES

Statement	N	Mean	Median	Std. Dev
Our enterprise uses products or materials designed for long-term use.	142	3.64	4	0.87
Our enterprise prioritises maintaining and servicing of products or equipment to extend their usable life.	142	3.78	4	0.82
Our enterprise practises regular repair of products or materials instead of replacement	142	3.55	3	0.91
Our enterprise carries out regular maintenance of products or equipment.	142	3.81	4	0.8
Our enterprise practises the reuse of products or materials within the operations.	142	3.72	4	0.85
Our enterprise engages in refurbishing or restoring used products for continued use.	142	3.49	3	0.94

Table 4.7 shows Product life extension as a moderately adopted circular economy practice, but not yet uniformly implemented in the social enterprises. The highest mean score was for the regular maintenance of products or equipment (Mean = 3.81, SD = 0.80), and the lowest for the refurbishment or restoration of used products for continued use (Mean = 3.49, SD = 0.94). It means that enterprises feel at ease with routine maintenance and servicing rather than with more sophisticated value-retention practices such as refurbishment which require technical capability, spare parts, skilled labour and often a more structured secondary-use market.

The pattern demonstrates that product life extension is more an operational cost-saving behaviour than an actual circular business model. Maintenance, servicing and reuse seem more familiar because they fit into everyday operations and help firms avoid premature replacement costs. However, lower agreement on repair instead of replacement and refurbishment indicates that enterprises have not institutionalised product life extension as a revenue stability, asset

recovery or long-term value creation strategy. The findings confirm appreciation and integration of product life extension practices, but it is uneven and inconsistent across the social enterprises.

This finding distinguishes product life extension from overall waste reduction. The enterprises seem more advanced in practices of asset preservation but less advanced in practices of deliberately restoring used products or materials for economic use. This suggests that many firms continue to operate at a level where they extend internal asset use rather than creating broader circular value systems based on repair, refurbishment and resale to secondary markets. Therefore, the findings support an argument that PLE should be treated as an imperative practice in the circular economy loop since it captures a different circular economy mechanism than waste sorting, recycling or waste conversion.

The findings are consistent with Muriithi and Ngare (2023), who noted that Kenya's circular economy policy frameworks recognize repair, reuse and refurbishment but that implementation is constrained by finance, infrastructure and technical capacity. These findings are also in agreement with Hansen et al. (2022), who pointed out repair and reuse are critical to sustainability in Kenyan off-grid solar but are under-prioritised in investor and enterprise decision making. Similarly, Opinde et al. (2024) claimed that a high proportion of off-grid solar e-waste is stored in households rather than repaired or recycled, suggesting weak lifecycle systems. They support the current descriptive pattern identified in this study that firms understand and practice some aspects of product life extension, but structured lifecycle management is underdeveloped.

However, the findings also contrast with those of Cross and Murray (2018) who demonstrated that repair practices are ingrained in Kenya's informal off-grid solar ecosystem particularly where affordability and continued use are critical. The variation arises from the focus of current study on social enterprises rather than informal repair markets. Maintenance and reuse may be adopted by social enterprises for internal efficiency reasons but may not have the specialist repair ecosystems and refurbishment models that are typical in informal markets. Harrington and Wambugu (2021) ascertain the argument by stating that product longevity is dependent on standards, training, spare-parts supply chains and repair infrastructure, which explains why refurbishment and formal repair practices were low scored in this study's descriptives. Evidence shows that firms have adopted the simpler and more immediate PLE elements such

as maintenance and reuse but not the deeper practices which could enhance financial sustainability.

4.4.6 Descriptive Statistics for Financial Sustainability

TABLE 3.8: DESCRIPTIVE STATISTICS FOR FINANCIAL SUSTAINABILITY

Statement	N	Mean	Median	Std. Dev
Our enterprise generates income that is consistent over time.	142	3.58	4	0.89
Our cash inflows are predictable and support regular operations.	142	3.52	3	0.92
Our enterprise is able to keep operational costs within planned levels	142	3.91	4	0.81
Our enterprise minimizes unnecessary expenses in its operations.	142	3.95	4	0.78
Our enterprise generates sufficient internal revenue to sustain its operations.	142	3.47	3	0.95
Our enterprise operates with minimal reliance on external funding such as grants or donations.	142	3.28	3	1.02
Our enterprise generates financial surplus that is reinvested into its activities.	142	3.42	3	0.97
Our enterprise has financial capacity to expand or scale its operations.	142	3.36	3	0.99

Table 4.8 reveal mixed and constrained financial sustainability among surveyed social enterprises. The highest mean score was for minimising unnecessary expenses (Mean = 3.95, SD = 0.78), followed by maintaining operational costs within planned limits (3.91 x SD = 0.81). The lowest mean, however, was for operating with no external funding (Mean = 3.28; SD = 1.02). The findings imply that firms have relatively good cost control but significant difficulties achieving financial independence.

The findings revealed an imbalance between cost management and revenue strength. The social enterprises perform better at controlling expenses than at producing stable and sufficient income streams. This reflects relatively low scores for income consistency, revenue sufficiency

and reinvestment capacity. Practically, this means many firms are maintaining operations through cost management rather than robust, predictable revenue generation.

The findings reveal observable characteristics and pattern around financial independence and growth capacity. The relatively low mean for external funding and moderate scores for reinvestment and expansion, suggest that many enterprises have not yet reached full financial autonomy. The relatively high standard deviations indicate disparities whereby some few firms are financially strong and can scale up while larger number is reliant on external financing and constrained in their growth. The differences are attributable to sector, maturity and market access. The descriptive findings point to partial and fragile financial sustainability characterised by relatively high-cost discipline but low revenue stability and independence. The descriptives are consistent with more general findings in the literature that social enterprises have difficulties making the transition from grant-supported or hybrid funding models to full self-sustaining operations.

4.5 Principal Component Analysis

4.5.1 KMO and Bartlett's Test

TABLE 3.9: KMO AND BARTLETT'S TEST

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.884
Bartlett's Test of Sphericity	Approx. Chi-Square	3736.234
	df	496
	Sig.	.000

The data was assessed for factor analysis suitability using Kaiser-Meyer-Olkin measure and Bartlett's Test of Sphericity. The findings indicate a KMO of 0.884 which imply that there is sufficient sampling adequacy because the correlations between the variables are compact enough to produce reliable factors. Bartlett's Test of Sphericity (kh2 = 3736.234 df = 496 p 0.001) revealed the test was statistically significant indicating that the correlation matrix is not an identity matrix and that the variables have relationships. Together these results indicate that the dataset was suitable for Principal Component Analysis & that the factor structure derived from the data is likely to be valid and reliable.

4.5.2 Total Variance Explained

TABLE 3.10: TOTAL VARIANCE EXPLAINED

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.776	24.301	24.301	7.776	24.301	24.301	5.294	16.544	16.544
2	5.465	17.079	41.380	5.465	17.079	41.380	4.844	15.136	31.680
3	5.230	16.345	57.726	5.230	16.345	57.726	4.729	14.779	46.459
4	3.717	11.617	69.343	3.717	11.617	69.343	4.670	14.593	61.052
5	1.886	5.895	75.237	1.886	5.895	75.237	4.539	14.185	75.237
6	.602	1.881	77.118						
7	.538	1.682	78.800						
8	.523	1.636	80.436						
9	.479	1.498	81.933						
10	.427	1.333	83.266						
11	.411	1.284	84.550						
12	.404	1.261	85.812						
13	.385	1.202	87.014						
14	.349	1.089	88.103						
15	.336	1.048	89.152						
16	.322	1.007	90.159						
17	.315	.984	91.143						
18	.274	.857	92.000						
19	.262	.818	92.818						

20	.249	.779	93.597						
21	.237	.740	94.336						
22	.220	.687	95.024						
23	.214	.668	95.692						
24	.207	.648	96.340						
25	.185	.579	96.919						
26	.177	.552	97.471						
27	.167	.522	97.993						
28	.157	.492	98.485						
29	.149	.467	98.952						
30	.133	.414	99.366						
31	.107	.336	99.702						
32	.095	.298	100.000						

Extraction Method: Principal Component Analysis.

The Principal Component analysis showed five components had eigenvalues greater than one and were retained for Analysis. These five components explained 75.237% of variance which is an acceptable explanatory structure. First component had the largest proportion of variance (24.301%), then second (17.079%), third (16.345%), fourth (11.617%) and fifth (5.895%). The findings in the table presented relatively large cumulative variance which imply that the extracted factors adequately capture the underlying dimensions of the constructs. The structure means that measurement model is dimensional and hence justify its components use in subsequent analysis.

4.5.3 Rotated Component Matrix

TABLE 3.11: ROTATED COMPONENT MATRIXA

	Component				
	1	2	3	4	5
FS1	.799				
FS3	.794				
FS7	.780				
FS5	.779				
FS2	.778				

FS4	.761				
FS6	.751				
FS8	.745				
RP3		.899			
RP1		.893			
RP5		.887			
RP6		.874			
RP2		.871			
RP4		.863			
WR6			.877		
WR5			.875		
WR2			.871		
WR4			.858		
WR1			.843		
WR3			.835		
RE2				.866	
RE1				.865	
RE6				.863	
RE3				.858	
RE5				.852	
RE4				.844	
PLE4					.880
PLE2					.862
PLE3					.854
PLE5					.847
PLE1					.837
PLE6					.835

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Rotated component matrix obtained by Varimax rotation has a well-defined factor structure with high item loadings on components. All items loaded high on their intended constructs achieving factor loadings greater than 0.75 which are good correlations between observed variables and underlying factors. The Financial sustainability items (FS) loaded differently on the first component, Regenerative nature practices (RNP) on the second, Waste management (WM) on the third, Resource efficiency (RE) on the fourth and Product Life Extension (PLE) on the fifth. The findings indicated that there was no significant cross-loadings indicating that each construct is empirically different. The findings show good convergent and discriminant validity because measurement items capture intended constructs.

4.6 Correlation Analysis

The study performed correlation analysis to determine the direction, strength and relationship among the variables, financial sustainability, resource efficiency, waste management, regenerative nature practices and product life extension. Spearman correlation was utilised due to the utilisation of five-point Likert scale in the research instrument.

TABLE 3.12: CORRELATION ANALYSIS

			Financial Sustainability	Resource Efficiency	Waste Reduction	Product Life Extension	Regenerative nature Practices
Spearman's rho	Financial Sustainability	Correlation Coefficient	1.000				
		Sig. (2-tailed)	.				
		N	142				
	Resource Efficiency	Correlation Coefficient	.663**	1.000			

		Sig. (2-tailed)	.000	.			
		N	142	142			
	Waste Reduction	Correlation Coefficient	.714**	.591**	1.000		
		Sig. (2-tailed)	.000	.000	.		
		N	142	142	142		
	Product Life Extension	Correlation Coefficient	.590**	.503**	.508**	1.000	
		Sig. (2-tailed)	.000	.000	.000	.	
		N	142	142	142	142	
	Regenerative nature Practices	Correlation Coefficient	.498**	.440**	.439**	.310**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.
		N	142	142	142	142	142

**. Correlation is significant at the 0.01 level (2-tailed).

Correlation analysis shows that all circular economy practices are positively and statistically associated with financial sustainability (p 0.01), indicating that improvements in these practices are related to financial sustainability of the social enterprises. Waste reduction has the highest relationship with financial sustainability (r = 0.714) implying that waste minimization, recycling and conversion of waste into usable outputs directly and immediately affect financial sustainability indicators such as revenue generation and cost reduction. The findings are consistent with Bhandari et al. (2025) and Kalkanis et al. (2022) who argued that waste

management strategies increase operational efficiencies and add value through resource recovery. Resource efficiency also has a positive relationship r = 0.663, showing that social enterprise that optimize input use and control resource-related costs achieve financial sustainability. The finding confirms Geissdoerfer et al. (2018) claim that efficiency gains are one of the main drivers of circular economy.

Product life extension shows moderate but significant relationship r = 0.590 indicating repair, maintenance, reuse of products adds value to assets and reduces replacement costs. The finding agrees with Hansen et al. In (2022) who claimed that lifecycle management practices help with value retention over a longer term but not as impactful as cost measures. Regenerative Practices have the weakest, but significant, relationship r = 0.498, indicating that activities related to environmental restoration and sustainability are indirect and take longer to materialize. The finding agrees with Hahn and Tampe (2021) who claimed that regenerative practices create value over time even though they have low short term financial impact.

Positive inter-correlations among independent variables also suggest complementary rather than exclusive practices whereby social enterprises adopting one circular practice are more likely to adopt other as part of an integrated strategy. Strong association between waste reduction and resource efficiency r = 0.591 shows that firms with low waste also manage resources more effectively. Similarly, the moderate relationships between product life extension and other practices indicate that lifecycle strategies are often implemented together with operational improvements. The findings indicate that financial sustainability of social enterprises is dependent on several circular economy practices.

4.7 Diagnostic Statistics

The study performed various diagnostic tests to confirm the reliability and robustness of the model. The specific tests selected include those that test the assumptions underlying the ordinary least square model (OLS) which in this study is the multiple regression. They were normality test, multicollinearity and heteroscedasticity.

4.7.1 Normality Test

The study conducted normality of residuals test to establish if the errors that follow a normal distribution. The test is imperative for achievement of a valid hypothesis testing. Statistical

tests such as Kolmogorov-Smirnov and Shapiro-Wilk test were utilised to confirm that residuals are significantly different from normality.

TABLE 3.13: TEST OF NORMALITY

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Resource Efficiency	.077	142	.036	.985	142	.131
Waste Reduction	.087	142	.010	.980	142	.032
Product Life Extension	.043	142	.200*	.987	142	.206
Regenerative Nature Practices	.043	142	.200*	.990	142	.410
Financial Sustainability	.067	142	.200*	.975	142	.010

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Diagnostic tests show that data generally satisfy assumptions for regression analysis. Normality results are mixed with a slight deviation from normality for Resource Efficiency (p = 0.036) and Waste Reduction (p = 0.010) and a Shapiro-Wilk test showing almost normal distribution except for Waste Reduction (p = 0.032) and Financial Sustainability (p = 0.010). But because parametric techniques are robust to the Central Limit Theorem, because of the large sample size (N = 142) these minor deviations are not problematic.

4.7.2 Multicollinearity Test

Multicollinearity test was assessed as supporting diagnostics rather than main analysis. A VIF threshold of 5 was applied, with VIF < 5 indicating no serious multicollinearity (Shrestha, 2020). High multicollinearity may skew regression coefficients, overestimate standard errors and obscure the model. Multicollinearity was assessed by Variance Inflation Factor (VIF) and Tolerance values.

TABLE 3.14: MULTICOLLINEARITY TEST

Model	Collinearity Statistics

		Tolerance	VIF
1	(Constant)		
	Resource Efficiency	.507	1.973
	Waste Reduction	.532	1.879
	Product Life Extension	.622	1.607
	Regenerative nature Practices	.729	1.372

a. Dependent Variable: Financial Sustainability

Multicollinearity test also shows no serious interdependence problems among independent variables as all tolerance values are greater than 0.1 and all Variance Inflation Factor (VIF) values are between 1.372 and 1.973, well below the critical value of 5. This means independent variables are sufficiently different, so they do not skew regression estimates - this is a good thing for model results validity.

4.8 Univariate Regression Model

The study conducted linear regression model for each of the independent variables to determine their specific influence on financial sustainability without combined contribution from other independent variable dimensions. The independent variables under study were resource efficiency, waste management, regenerative nature practices and product life extension.

4.8.1 Resource Efficiency and Financial Sustainability

The linear regression model for resource efficiency was:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Where, Y = Financial Sustainability

β_0 = Constant

β_i = Coefficients of independent variables

X_1 = Resource Efficiency

ε = Error term

TABLE 3.15: LINEAR REGRESSION MODEL FOR RESOURCE EFFICIENCY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.690[a]	.476	.473	.34550	.476	127.428	1	140	.000

a. Predictors: (Constant), Resource Efficiency

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.211	1	15.211	127.428	.000[b]
	Residual	16.711	140	.119		
	Total	31.922	141			

a. Dependent Variable: Financial Sustainability

b. Predictors: (Constant), Resource Efficiency

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.331	.257		5.191	.000
	Resource Efficiency	.717	.064	.690	11.288	.000

a. Dependent Variable: Financial Sustainability

$$Y = 1.331 + 0.717X_1 + \varepsilon$$

Univariate regression results show resource efficiency strongly affects financial sustainability statistically. Model summary shows R = 0.690 which is a positive relationship between the two variables. Coefficient of determination $R^2 = 0.476$ indicates that resource efficiency explains 47.6% of variation in financial sustainability a large variation for a single predictor model. That demonstrates that enterprises which manage and optimize resource use have more stable and better financial results.

ANOVA results confirm that model is statistically significant (F = 127.428, p 0.001) and that resource efficiency is a good predictor of financial sustainability. A relatively high F shows

that the variation explained by the model is much larger than the unexplained variation supporting the reliability of regression results. It implies that the observed relationship was not due to random chance but rather reflects a general trend in the surveyed social enterprises and thus supports the use of resource efficiency as an explanatory variable.

Coefficient results show that resource efficiency increases financial sustainability significantly (0.717, p 0.001). The data imply that one unit increase in resource efficiency increases financial sustainability by 0.717 if other factors are constant. Narrow confidence interval 0.591 to 0.843 indicates precision of estimate. It shows that minimising material losses, controlling energy use and controlling input costs directly leads to better financial sustainability. The findings agree with circular economy literature, in which efficient use of resources increases profitability as well as operation costs of enterprises.

4.8.2 Waste Reduction and Financial Sustainability

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Where, Y = Financial Sustainability

β_0 = Constant

β_i = Coefficients of independent variables

X_1 = Waste Management

ε = Error term

TABLE 3.16: LINEAR REGRESSION MODEL FOR WASTE REDUCTION

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.725[a]	.526	.523	.32879	.526	155.298	1	140	.000

a. Predictors: (Constant), Waste Reduction

Model	Sum of Squares	df	Mean Square	F	Sig.

1	Regression	16.788	1	16.788	155.298	.000[b]
	Residual	15.134	140	.108		
	Total	31.922	141			

a. Dependent Variable: Financial Sustainability

b. Predictors: (Constant), Waste Reduction

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	(Constant)	1.670	.206		8.127	.000
	Waste Reduction	.654	.052	.725	12.462	.000

a. Dependent Variable: Financial Sustainability

$$Y = 1.670 + 0.654X_1 + \varepsilon$$

Univariate regression results show that waste reduction is statistically important to financial sustainability. Model summary shows a positive correlation coefficient R = 0.725, corresponding to waste reduction practices versus financial sustainability. Its coefficient of determination $R^2 = 0.526$ shows that waste reduction alone accounts for 52.6% of variation in financial sustainability which is higher than for resource efficiency. This suggests that waste minimization, recycling, and waste transformation in usable outputs is an imperative process for improving financial performance of social enterprises mainly through cost saving and value creation processes.

ANOVA results also show that the model is robust to a significant F-statistic (F = 155.298 p 0.001) compared to one without predictors. The relatively high F indicates that waste reduction has a strong explanatory power and that the observed relationship was not random. It implies waste reduction an important operational step towards financial viability in the enterprises studied.

Waste reduction has a positive, but very large effect on financial sustainability (b = 0.654, p 0.001) so one unit increase in waste reduction equals 0.654 increase in financial sustainability.

The narrow confidence interval of 0.550 to 0.757 is high precision. They show that enterprises actively reducing waste save money in operation and also generate additional value streams from recovered material. Results agree with circular economy literature where waste is considered a resource and waste reduction as a strategy is considered to be conducive to environmental as well as economic outcomes.

4.8.3 Regenerative Nature Practices and Financial Sustainability

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Where, Y = Financial Sustainability

β_0 = Constant

β_i = Coefficients of independent variables

X_1 = Regenerative nature practices

ε = Error term

TABLE 3.17: LINEAR REGRESSION MODEL FOR REGENERATIVE NATURE PRACTICES

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.526[a]	.277	.272	.40605	.277	53.616	1	140	.000

a. Predictors: (Constant), Regenerative nature Practices

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.840	1	8.840	53.616	.000[b]
	Residual	23.082	140	.165		
	Total	31.922	141			

a. Dependent Variable: Financial Sustainability

b. Predictors: (Constant), Regenerative nature Practices

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.870	.186		15.437	.000
	Regenerative nature Practices	.394	.054	.526	7.322	.000

a. Dependent Variable: Financial Sustainability

$$Y = 2.870 + 0.394X_1 + \varepsilon$$

Regenerative practices have a positive and statistically significant effect on financial sustainability albeit relatively moderately. In model summary there is a correlation coefficient R = 0.526 which indicates a moderate positive association between regenerative practices and financial sustainability. Its coefficient of determination R^2 = 0.277 shows that regenerative practices account for only 27.7% of the variation in financial sustainability compared to operations like waste reduction or resource efficiency. It implies that regenerative nature practices may have financial effects but have a more indirect and long-term effect.

ANOVA results show that the model is statistically significant (F = 53.616 p 0.001) and that regenerative practices explain financial sustainability of the enterprises. Explanatory power is lower than for other predictors, but the large F-statistic shows that this is consistent and not random variation. This suggests that regenerative practices like ecosystem restoration, sustainable input use and environmental stewardship are relevant to financial performance even if their effects are not so easily observed.

Coefficient results further indicate a positive and significant effect of regenerative practices on financial sustainability (b = 0.394 p 0.001). It implies that one unit increase in regenerative practices equals 0.394 increase in financial sustainability. Confidence interval 0.288 to 0.500 indicates reasonable precision of estimate. These findings suggest that regenerative activities may add brand value, stakeholder trust and resilience to enterprises rather than cost savings immediately. Results agree with more general sustainability literature arguing that regenerative practices create value in the long term and give advantage in the short term even though the financial benefit is less great than efficiency driven practices.

4.8.4 Product Life Extension and Financial Sustainability

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Where, Y = Financial Sustainability

β_0 = Constant

β_i = Coefficients of independent variables

X_1 = Regenerative nature practices

ε = Error term

TABLE 3.18: LINEAR REGRESSION MODEL FOR PRODUCT LIFE EXTENSION

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.609[a]	.371	.366	.37884	.371	82.429	1	140	.000

a. Predictors: (Constant), Product Life Extension

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.830	1	11.830	82.429	.000[b]
	Residual	20.092	140	.144		
	Total	31.922	141			

a. Dependent Variable: Financial Sustainability

b. Predictors: (Constant), Product Life Extension

	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound

1	(Constant)	2.230	.220		10.121	.000	1.794	2.665
	Product Life Extension	.546	.060	.609	9.079	.000	.427	.665

a. Dependent Variable: Financial Sustainability

$$Y = 2.230 + 0.546X_1 + \varepsilon$$

Regression results in univariate show statistically significant effect of product life extension on financial sustainability. Model summary shows R = 0.609 correlation coefficient between product life extension practices and financial sustainability. Product life extension coefficient of determination $R^2 = 0.371$ indicates 37.1% contribution to financial sustainability variation less than waste reduction and resource efficiency. This implies that repair, maintenance, reuse and refurbishment are all practices which contribute to better financial sustainability extending useful life of product and reducing replacement cost.

ANOVA confirms the model is statistically significant (F = 82.429, p 0.001) and product life extension is thus an explanation for financial sustainability in the investigated enterprises. F-statistic magnitude indicates high explanatory power of model versus random variation, which supports lifecycle management practices in influencing firm performance. It shows that enterprises which actively improve usability of their products are more likely to be financially stable.

The coefficient estimates further point to a positive and significant effect of product life extension on financial sustainability (b = 0.546, p 0.001), one unit increase in product life extension equals 0.546 increase in financial sustainability. The confidence interval is 0.427 to 0.665, which is reasonably close. All these findings suggest that by extending product lifecycles and by reducing the frequency of replacement enterprises can reduce operation costs and keep value in systems. They agree with the circular economy literature where product durability and lifecycle extension are considered very important for value retention and long-term financial performance even though they are not as immediate as waste reduction.

4.9 Multivariate Regression Model

Multiple regression model was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 4 + \beta_5 X_5 + \beta_6 X_6\, \varepsilon$$

Where, Y = Financial Sustainability

β_0 = Constant

β_i = Coefficients of independent variables

X_1 = Resource Efficiency

X_2 = Waste Management

X_3 = Regenerative nature practices

X_4 = Product life extension

X_5 = Size

X_6 = Age

ε = Error term

TABLE 3.19: MODEL SUMMARY

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.158[a]	.025	.011	.47322	.025	1.776	2	139	.173
2	.822[b]	.675	.661	.27714	.650	67.563	4	135	.000

a. Predictors: (Constant), Firm Age, Firm Size

b. Predictors: (Constant), Firm Age, Firm Size, Product Life Extension, Regenerative nature practices, Waste Reduction, Resource Efficiency

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Model summary results differentiate the explanatory power of control variables from the full model. Model 1 indicate that firm age and firm size have weak but not statistically significant interaction with financial sustainability. Coefficient of determination $R^2 = 0.025$ shows these firm characteristics explain only 2.5% of variation in financial sustainability. F-statistic F = 1.776 and p = 0.173 indicate that the model is not statistically significant. It means that firm age and size do not predict financial sustainability of social enterprises. Practically that findings reveal that being older or larger does not necessarily mean better financial sustainability.

In contrast, Model 2 with circular economy practices has a much better explanatory power. The model shows that R^2 is 0.675 implying that 67.5% of variation in financial sustainability is explained by resource efficiency, waste reduction, product life extension, and regenerative nature practices in addition to control variables (Firm size and age). The model's large F-

statistic (F = 67.563 p 0.001) shows that it is robust. That big R^2 change of 0.650 further explains almost all the variation explained by circular economy practices. That means financial sustainability is mainly driven by operational and strategic practices rather than by firm characteristics in social enterprises.

This means that enterprises likely can realize the largest initial financial return on investments in waste reduction and resource efficiency, and product life extension and regenerative practices will produce value over a longer time horizon through greater resilience, reputation and resource conservation.

TABLE 3.20: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.795	2	.398	1.776	.173[b]
	Residual	31.127	139	.224		
	Total	31.922	141			
2	Regression	21.553	6	3.592	46.768	.000[c]
	Residual	10.369	135	.077		
	Total	31.922	141			

a. Dependent Variable: Financial Sustainability

b. Predictors: (Constant), Firm Age, Firm Size

c. Predictors: (Constant), Firm Age, Firm Size, Product Life Extension, Regenerative nature Practices, Waste Reduction, Resource Efficiency

ANOVA results for model 1 show that the model with only control variables, firm age and firm size, is not statistically significant (F = 1.776 p = 0.173). Regression sum of squares is very small compared to residual sum of squares 31.127, so these explain only a very small part of the variation in financial sustainability. The findings imply that firm characteristics alone do not explain financial performance in sampled enterprises. Practically, this means that financial sustainability differs not because a firm is old or big but because of other underlying factors.

Model 2 in contrast has a statistically significant model F = 46.768 p 0.001 with circular economy practices. Regression sum of squares is 21.553, residual sum of squares is 10.369, which means that the model accounts for much more variation in financial sustainability. It

shows that resource efficiency, waste reduction, product life extension and regenerative nature practices increase the explanatory power of the model. The findings show that financial sustainability is largely driven by circular practices rather than firm characteristics confirming operational and strategic practices as drivers of social enterprise financial sustainability

TABLE 3.21: COEFFICIENTS

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.296	.131		32.849	.000
	Firm Size	-.007	.004	-.143	-1.704	.091
	Firm Age	.010	.011	.080	.957	.340
2	(Constant)	.871	.233		3.742	.000
	Firm Size	-.005	.002	-.112	-2.236	.027
	Firm Age	.002	.007	.019	.374	.709
	Resource Efficiency	.261	.072	.251	3.619	.000
	Waste Reduction	.361	.062	.401	5.863	.000
	Regenerative Practices	.108	.044	.144	2.463	.015
	Product Life Extension	.175	.056	.195	3.114	.002

a. Dependent Variable: Financial Sustainability

$$Y = 0.871 + 0.261X_1 + 0.361X_2 + 0.108X_3 + 0.175X_4 + -0.05X_5 + 0.002X_6\ \varepsilon$$

The coefficient results are the combined and detailed measures of financial sustainability indicating how each variable contributes to the relationship between independent and dependent variables. Firm size and firm age have no statistically significant effects in Model 1 confirming previous findings that structural characteristics are weak predictors of financial outcome in social enterprises. However, when circular economy practices are added to Model 2 the explanatory interpretation changes. Waste reduction is the best predictor (b = 0.401 p 0.001), indicating that firms that reduce waste, recycle material, and turn waste into usable outputs improve financial sustainability. The finding indicates that waste reduction enables immediate cost savings and resource recovery thereby enhancing profitability and cash flow

stability. The study findings agree with Kalkanis et al. (2022) and Bhandari et al. (2025) who claimed that waste valorisation and waste handling are imperative aspects for operational efficiency and for new revenue streams in circular economy enterprises.

Resource efficiency also shows a strong positive effect (b = 0.251, p 0.001) that firms which optimize input use, energy use and resource cost are financially sustainable. It implies that efficiency-driven strategies are still very important to enterprise performance especially when resources are managed well in the social enterprise. The findings agree with Geissdoerfer et al. (2018), who argue that better resource productivity is one of the simplest ways in which circular economy practices become financially useful. Product life extension also shows a positive influence (b = 0.195 p = 0.002) suggesting repair, maintenance, and refurbishment are financial sustainability drivers extending asset life and reducing replacement costs. The finding is consistent with Hansen et al. (2022) and Harrington and Wambugu (2021), who showed that better repair ecosystems and lifecycle management enable value retention albeit more slowly than operation efficiencies.

Regenerative nature practices have a relatively small effect (b = 0.144 p = 0.015), indicating that ecosystem restoration, use of sustainable inputs and environmental stewardship are all positive but have a less immediate effect on financial sustainability. The findings imply that regenerative nature practices add value mainly through indirect channels like better brand reputation, stakeholder trust, and resilience. The findings agree with Hahn and Tampe (2021) who claimed that regenerative nature practices are vital for long term value creation but not do not create immediate economic value.

The findings revealed that firm size is statistically significant in Model 2 with negative coefficient (b = -0.112 p = 0.027). It implies that larger firms may have less financial sustainability. The direction of influence is due to the necessities for higher operational cost and fixed cost incurred by larger firms. The finding corresponds to observations on SMEs that smaller firms are usually more flexible and cost effective. Interestingly, a multivariate model revealed a negative and statistically significant impact of firm size on financial sustainability (beta = -0.112, p = 0.027). In contrast to the prevailing theory that large firms have economies of scale and have a stronger financial capability, our findings suggest that larger social enterprises have lower levels of financial sustainability with fixed other factors. This may be due to increased administration, increased operating costs, and increased resource intensity that

are associated with organisational growth. Compared with commercial companies, which are usually more focused on profit-making, social enterprises may weigh up social impact objectives alongside financial targets and this introduces additional cost as the business grows. The finding suggests that it does not equate with financial sustainability simply by growing larger, that efficient management of resources, and circular economy practices can be more critical drivers of financial performance than firm size.

Firm age is however insignificant (b = 0.019 p = 0.709), implying that experience does not drive financial sustainability. The study findings show that financial sustainability is mainly determined by strategic and operational practices that directly affect cost efficiency and value creation rather than by firm characteristics themselves.

4.10 Chapter Summary

The chapter presents and analyses the study findings on how circular economy practices influence financial sustainability of social enterprises. It outlines the response rate and respondent demographics, then examines the extent to which such practices such as resource efficiency, waste reduction, regenerative practices and product life extension are adopted. Using correlation and regression analysis, the chapter establishes that all these practices affect financial sustainability, with waste reduction and resource efficiency showing the strongest impact. Diagnostic tests further confirm the reliability and validity of the data models.

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CHAPTER FIVE

SUMMARY, DISCUSSION, RECOMMENDATIONS

5.0 Introduction

Chapter five presents summaries, conclusions and recommendations based on findings in the previous chapter. It synthesizes the descriptive and inferential results with respect to study objectives, resource efficiency, waste reduction, product life extension, and regenerative nature practices on financial sustainability of social enterprises in Kenya. The chapter proceeds to draw conclusions from findings, contributions to policy, managerial implications and future research directions.

5.1 Effect of resource efficiency practices on the financial sustainability of social enterprises in Nairobi County, Kenya.

The first objective of the study was to determine the influence of resource efficiency practices on the financial sustainability of social enterprises in Nairobi, Kenya. The findings provide empirical support for the application of the resource efficiency theory. Descriptive results showed that the social enterprises apply circular economy practices in a moderate to high level, more attention being paid to operational practices of resource efficiency. The adoption of resource efficiency practices is aligned with global trends where companies that focus on improving the efficiency of resources tend to enjoy better financial performance (Aminoff and Kettunen, 2016). These findings are further supported by empirical studies like those of (Aboulamer, 2018) where he highlighted that adopting a circular business model, which emphasizes resource efficiency, enhances market equity value and long-term viability.

Resource efficiency strongly influences financial sustainability indicating that resource utilization should be optimized in social enterprises operations. Enterprises with good material, energy use, and other input management have better control of operation costs directly affecting financial stability. The study findings ascertain that resource efficiency practices are an effective and best approach to achievement of financial sustainability. The relatively high explanatory power of resource efficiency implies that there is awareness on the practices and firms are implementing them in their core operational strategies. Resource efficiency practices also were based on control of input costs and resource use optimisation.

Inferential results confirmed that all waste reduction, resource efficiency, regenerative nature practices and product life extension are positively and statistically significant for financial sustainability. These findings show that practices directly related to cost reduction and value recovery have a stronger and more immediate effect on financial sustainability. The findings show that financial sustainability is a function of circular practices whereby operational efficiency is central and sustainability-oriented practices enhancing performance in the long term.

Similarly, (Ahi & Searcy, 2015) found that sustainable supply chain practices, a key component of resource efficiency, lead to improved financial outcomes for businesses. Moreover, the integration of resource efficiency practices is not only financially beneficial but also environmentally responsible, aligning with the principles of the circular economy (Di Maio et al., 2017b). These global studies underscore the importance of resource efficiency as a cornerstone for financial sustainability in social enterprises. Resource efficiency practices, which focus on minimizing resource use and maximizing value, were found to be highly integrated into the operations of the social enterprises. The positive correlation between resource efficiency and financial sustainability supports previous research by (Di Maio et al., 2017b) which emphasizes the financial benefits of resource-efficient operations.

The results further align with circular economy studies which posit that optimal resource utilization boosts operational efficiency, decrease costs and improves company resilience. The study supports the assertions of (Geissdoerfer et al., 2018) and (Ghisellini & Ulgiati, 2024) that resource efficiency immediately enhances financial sustainability through cost minimization and increased production. Nevertheless, the data indicate that while firms actively implement efficiency techniques, systematic resource tracking in underdeveloped, implying that many social enterprises adopt resource efficiency incrementally rather than through completely institutionalized systems. The findings indicate that resource efficiency is an immediate technique that enhances financial sustainability of social enterprises.

5.2 Effect of waste management practices on the financial sustainability of social enterprises in Nairobi County, Kenya.

The second objective was to examine the influence of waste reduction practices on the financial sustainability of social enterprises in Nairobi County, Kenya. Waste reduction explained the

greatest variation in financial sustainability of social enterprises. The findings provide empirical support for the application of the resource efficiency and legitimacy theory.

Waste reduction practices, minimising waste generation and waste conversion to usable outputs had relatively higher mean scores suggesting firms are using waste as a resource. Waste reduction was the most important predictor, since cost control and value recovery are the central issues in social enterprise performance. This suggests that waste minimization, recycling, and waste conversion to usable outputs have immediate net financial benefit due to significant reduction in input cost and generating new revenue streams. The strong effect is in line with circular economy theory where waste is considered a resource not a liability, and with empirical data where waste valorisation is a driver of operational efficiency and financial performance.

In the Kenyan context social enterprises experience high resource constraints and high-cost pressures implying that's firms actively managing waste are better placed to survive financially. Supporting these findings, (Bhandari et al., 2025) emphasized that efficient waste management practices not only enhance environmental performance but also create financial opportunities for businesses. The role of waste management in improving social enterprise performance has been extensively discussed by scholars like (Bassi & Dias, 2019) who observed that SMEs in the EU that adopted effective waste management practices achieved better financial outcomes. Furthermore, studies such as those by (Black et al., 2019) illustrate that waste management not only enhances operational efficiency but also attracts impact investors, providing additional financial support for social enterprises.

These findings reinforce the financial benefits of waste management, particularly in the context of the circular economy. Waste management practices, particularly waste segregation and partnerships with waste recyclers, also emerged as a significant contributor to financial sustainability. The positive impact of waste management practices on financial performance highlights the value of minimizing waste and maximizing resource utilization, which has been a focus of previous studies in the field (Moustakas & Loizidou, 2022)

Nevertheless, the data indicates that waste reduction is the most financially impactful circular economy practice among the surveyed enterprises, but its complete financial potential is contingent upon the depth and sophistication of waste valorisation. The results corroborate

(Bhandari et al., 2025) and (Kalkanis et al., 2022) who contended that waste reduction improves operating efficiency and generates supplementary revenue sources. However, the data disclosed a significant discrepancy within the sector. While firms actively participate in fundamental waste management activities like reduction and reuse, sophisticated waste valorisation systems are deployed inconsistently. This implies that many firms have not quite shifted to comprehensive circular value systems that can optimize financial benefits from waste conversion. (Kral et al., 2019) noted that efficient circular systems rely on closed material loops that minimize waste accumulation and environmental impact. The findings further support (Kalkanis et al., 2022) assertion that the circular economy transcends conventional waste management by advocating for systemic redesign that precludes trash formation at its origin. The modest rather than robust consensus among respondents may indicate that waste reduction activities in social enterprises are still hindered by inadequate infrastructure, funding and technical expertise especially in emerging economies like Kenya.

5.3 Regenerative nature practices and financial sustainability of social enterprises.

Under the third objective, the study sought to determine the effect of regenerative nature practices on the financial sustainability of social enterprises in Nairobi, Kenya. The findings revealed that environmental restoration practices were minimally practiced since they require more complex and delayed financial returns. Regenerative nature practices add gradual value creation and resilience over time. Regenerative nature practices showed the least positive but still significant effect on financial sustainability an important difference between operational gains and sustainability investments. Activities like ecosystem restoration, use of sustainable inputs, and environmental stewardship create additional value such as brand reputation, stakeholder trust and resilience. However, regenerative nature practices contribute to financial sustainability in the long-term rather than short-term. Regenerative nature practices, such as tree planting and ecosystem restoration, were also found to positively affect financial sustainability, suggesting that social enterprises are increasingly recognizing the financial benefits of environmental stewardship.

Regenerative practices showed the lowest impact on financial sustainability indicating that regenerative activities contribute to financial outcomes, however, the impact is not nearly as strong as waste reduction, resource efficiency or product life extension in this case. It therefore implies that regenerative activities of ecosystem restoration, environmental management and organic inputs' usage create the most value primarily indirectly through mechanisms like

resilience, trust, reputation and ecological soundness rather than direct savings or income-driven value creation. The finding implies that although regenerative investments are essential long-term, they are comparatively weaker than circular activities that affect operations and resource usage directly.

The findings revealed the tension in sustainability empirical evidence whereby regenerative and environmentally restorative practices are seen as critical but not necessarily directly related to financial sustainability in the short-term. The results corroborate the findings of (Hahn & Tampe, 2021) and (Jovanović-Vujatović et al., 2024b) who contended that regenerative techniques yield long term sustainability advantages, despite their immediate financial results frequently being less apparent.

The findings reveal that numerous social companies continue to operate within frameworks focused on environmental preservation and compliance, rather than adopting genuinely regenerative economic models. This indicates that regenerative techniques are still in a transitory and immature state in many social enterprises hindered by constraints in resources, technical expertise and less immediate than that of operational strategies like waste reduction and resource efficiency. Regenerative practices had the weakest but still significant predictor.

Hutchins and Sutherland (2008) suggest that social enterprises' targets for sustainability may include auditing suppliers and ensuring high compliance with social policies. Unfortunately, there are no proper policies in place in Kenya to guide regenerative nature practices.

5.4 Product Life Extension Practices and Financial Sustainability of social enterprises.

The fourth objective of the study was to determine the effect of product life extension practices on the financial sustainability of social enterprises in Nairobi, Kenya. Product life extension practices were not adequately integrated as core operational practices despite the enterprises primarily conducting some of the activities such as repair. Product life extension had a moderate, but meaningful effect suggesting that repair, maintenance and reuse activities extend asset life and reduce replacement costs. Nevertheless, the relatively low explanatory power compared with waste reduction and resource efficiency suggests that such practices are still not firmly established in many enterprises. The findings are consistent with empirical studies in developing contexts (Milios, 2021) where product life extension is conceptually recognised but often not realized and implemented in social enterprises. The disparities are due to scarcity of infrastructure, technical capacity, market systems for repair and refurbishment.

The results indicate that product life extension enhances financial sustainability by preserving assets, decreasing replacement expenses and maintaining product value over extended durations. The findings concur with (Harrington & Wambugu, 2021) who posited that lifecycle management approaches enhance value retention and organizational sustainability. who argued that product longevity and repair systems depend on the availability of infrastructure, technical skills, spare parts supply chains and maintenance ecosystems.

The findings revealed that although social enterprises appreciate product life extension practices, implementation challenges continue to limit the life cycle management and value retention. Further social enterprises seem to favour adoption of executing ordinary maintenance and reuse than participating in systematic refurbishing that necessitate sophisticated technological skills and infrastructure. The findings reveal that product life extension positively impacts financial sustainability for social enterprises although its implementation is fragmented and operationally constrained in many social enterprises.

5.5 Conclusion of the Study

The study concludes that circular economy practices are beneficial to financial sustainability of social enterprises in Kenya. Results show that enterprises with waste reduction, resource efficiency, product life extension and regenerative nature practices are better placed to realize stable and sustainable finances. The most important dimensions were waste reduction and resource efficiency, highlighting operational strategies reducing costs directly and maximizing resource use. These show that circular economy practices are practical and relevant to environmental as well as financial challenges of social enterprises.

In addition, the study concludes that circular practices in general have imperative significance in financial sustainability but differ in their effect depending on the circular practice and the period of benefits realization. Operational practices such as waste management and resource efficiency contribute to immediate generation of cashflows whereas regenerative and lifecycle practices create more value over time. It implies that social enterprises seeking financially sustainable should not focus on one circular practice alone but on several circular practices in general. The study empirically supports the argument that circular economy adoption is an environmental as well as a financial sustainability factor in social enterprises.

The results revealed that business age and size are not major determinants of circular economy implementation and financial sustainability among social enterprises. While older and larger social enterprises may possess more experience and resources, the study established that operational and strategic circular economy practices are more influential than structural characteristics. Firm size showed a weak negative effect, suggesting that larger enterprises may experience operational rigidities and higher fixed costs that limit efficiency. These results imply that larger social enterprises were slightly less likely to score higher financial sustainability when controlling for other variables, controlling for effect size of the overall circular economy practices evaluated, but controlling for financial sustainability is still an important organizational outcome. This finding suggests that organizational growth may create new operational complexity, administrative burdens and resource demands, potentially impeding financial sustainability.

5.6 Contributions of the Study

The study contributes to policy and industry practice by empirically demonstrating how circular economy practices affect financial viability of social enterprises in Kenya. The study provides data-driven insights that help regulators, academicians and government agencies design targeted interventions for circular practices at the firm-level. The insights reveal that waste reduction and resource efficiency have the greatest effect on financial sustainability. In this case, policy makers can consider strategies such as tax, subsidies and regulatory policies for waste minimization, recycling, and resource optimization. Policy makers should consider implementing supportive infrastructure and policy alignment to encourage product life extension and regenerative nature practices which have lower but significant effects.

The study gives practical insights to social enterprises and practitioners regarding the specific circular economy strategies that bring most tangible financial benefits. The study informs that social enterprises should target to financial sustainability while focusing on operational practices like waste reduction and resource efficiency, gradually adding product life extension and regenerative practices for long term resilience. The study provides clarity for managerial decision-making regarding how different circular practices are related to financial sustainability and how firms allocate resources. The study shows how circular economy theory may inform business practice, in which case sustainability-oriented strategies may be applied to increase financial sustainability in social enterprise.

Surprisingly, the findings revealed that firm size and age are not major determinants of circular economy implementation and financial sustainability among social enterprises. While older and larger enterprises may possess more expenses and resources, the study established that operational and strategic circular economy practices are more influential that structural characteristics. Firm age was statistically insignificant, implying longevity alone does not guarantee sustainability or circularity. Firm size showed weak negative effect, suggesting that larger enterprises may experience operational rigidities and higher fixed costs that limit efficiency. These contradict extant studies by (Al Rawashdeh et al., 2025) that state that older and bigger enterprises are better equipped to withstand the first high expenses of implementing circular practices,, while smaller and newer formed businesses sometimes have survival related obstacles that hinder circular economy practices implementation. This is attributed to the state of things as far as circular economy adoption is concerned in Kenya.

5.7 Recommendations of the Study

Although Kenya has development significant circular economy policy frameworks like the Sustainable Waste Management Act 2022 and extended producer responsibility regulations, current implementation efforts predominantly concentrate on waste management. The study findings indicate a necessity for enhanced government focus on proper implementation of waste management, resource efficiency, regenerative nature practices and initiatives for product life extension. Policy makers ought to enhance support for effective resource utilization by providing incentives for cleaner production technologies, sustainable sourcing, energy efficiency and water conservation withing social enterprises and SMEs. There is also need for a lot of advocacies for circular business practices among stakeholders. Policy makers also should create a specific legal framework for social entrepreneurs because currently social enterprises do not have a legal framework. This will improve access to capital, investment and bolster the financial viability of social enterprises.

The study also recommends establishment of circular economy measurement and reporting standards to enhance accountability and performance monitoring. Government agencies should require enterprises to use global reporting initiatives or other bodies that are used globally. Such reporting frameworks would enable the systematic tracking of circular economy outcomes.

Policymakers and government agencies should target enhancing infrastructure and leverage on technology as a policy tool to accelerate circular economy practices. They should also incorporate innovative financing instruments that mobilize public and private capital towards sustainable finance. They can do this through offering green funding, giving tax incentives, subsidies and low interest loans to support circular economy practices adoption and implementation. Government also needs to support capacity building and create awareness so that enterprises are equipped with technical know-how for advancing circular economy practices. In practice for the industry practitioners, operational efficiency strategies such as waste minimization and resource optimization are the most immediate effects on financial sustainability for social enterprises. The government needs to do more in terms of implementation and particularly empower the informal sector to manage resources and waste effectively. A well-balanced mix of short-term efficiency gains and long-term sustainability investments is necessary to maintain financial sustainability for social enterprises.

The study recommends that policymakers need to go from merely reducing waste to promoting regenerative nature practices that foster ecosystem restoration, renewable energy and utilization, biodiversity preservation and sustainable farming systems and care of the soils. In addition, Kenyan circular economy policies need to prioritize practices for product life extension such as repair, refurbish, reuse, remanufacture and continuous maintenance for infrastructure. Kenya can borrow a leaf from countries like the UK where there is comprehensive circular economy policy framework done through innovation and integrated government intervention and business support systems and structures. Kenya can also adopt policies for tracking metrics and reporting on sustainability to enable policy makers to make informed decisions.

5.8 Limitations of the Study

The researcher experienced accountable limitations to this study which should be considered in the interpretation of results. The study was based on a cross-sectional study design implying that causal relations cannot be established and observed over time regarding how circular economy practices and financial sustainability change. The data was self-reported using questionnaires which increased the possibility of response bias such as social desirability and subjective appraisal of practices and performance. Financial sustainability was also measured using perceptual indicators and not objective financial records which may not be representative

of the actual financial position of the enterprises. The study examined a defined population of circular economy-oriented social enterprises, but the results may be less generalizable to other sectors and countries with different institutional and economic contexts. Although the study included key circular economy practices, it did not exhaust all possible dimensions and emerging issues of the circular economy which may affect financial sustainability.

5.9 Areas for Further Studies

The study identifies that future studies should focus on longitudinal design to establish how circular economy practices and financial sustainability change over time and draw insightful causal inferences. Future studies should utilise objective financial data like audited financial statements in addition to perceptual measures to strengthen findings.

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APPENDICES

APPENDIX I: Participant information sheet and informed consent form

I, **Kanja Pamela Thiaine,** am a student pursuing a Master of Science in Development Finance at **Strathmore University Business School (SBS), Nairobi, Kenya**.

STUDY TITLE: Influence of Circular Economy Business Practices on Financial Sustainability of Social Enterprises in Nairobi County, Kenya

Purpose of the Study
The objective of this study is to investigate the influence of circular economy business practices on the financial sustainability of social enterprises in Nairobi County, Kenya.

Procedures
Participants was be requested to complete a self-administered questionnaire on a voluntary basis. The questionnaire includes questions on organizational practices, financial performance, and demographic information.

Benefits and Compensation
There is no direct compensation for participating. However, the findings may help social enterprises understand how circular economy practices can enhance financial sustainability and guide strategic decision-making.

Voluntary Participation and Withdrawal
Your participation is completely voluntary. You may withdraw at any time without any consequences or penalties.

Confidentiality
All responses was be treated confidentially. No personal identifiers was be used in reporting, and the data was only be used for academic purposes.

Consent
By signing below, you acknowledge that you understand the purpose of the study, what participation involves, and that you voluntarily agree to participate.

Participant's Name: ……..

Signature: …… Date: ……

Researcher's Name: Kanja Pamela Thiaine

Signature: …… Date: ……

APPENDIX II: Research Questionnaire

Introduction

The objective of this questionnaire is to obtain data on the influence of circular business practices on the financial sustainability of social enterprises. Your social enterprises was chosen because you have adopted circular business practices. Please follow instructions provided and respond to the questions as honestly as possible. Your responses was be treated with utmost confidentiality and was only be used for academic purposes.

Instructions

1. Please tick inside the appropriate box to indicate your choice.
2. Kindly give further relevant information to the research in the provided spaces.

Section A: Demographic Information

1. Please indicate your job category

   Chief Executive Officer ☐

   Head of department ☐

   Accountant ☐

   Operations ☐

   Internal auditor ☐

2. Please indicate your gender

   Male ☐

   Female ☐

3. Please indicate your highest level of education

   Doctorate Degree ☐

   Master's Degree ☐

   Bachelor's Degree ☐

Diploma ☐

4. Kindly indicate the number of years of Professional Experience

   1 – 5 Years ☐

   6 – 10 Years ☐

   11 – 15 Years ☐

   16 – 20 Years ☐

   Over 20 Years ☐

5. Number of Years the Enterprise Has Been in Operation

   Less than 2 years ☐

   2 – 5 years ☐

   6 – 10 years ☐

   Above 10 years ☐

What is your sector of operation?

Agriculture ☐

Food Processing ☐

Water and Sanitation ☐

Energy ☐

Environmental Services ☐

Waste Management ☐

Manufacturing ☐

Section B: Circular Economy Practices

This section measures the independent variables of the study, which are practices adopted by social enterprises to implement a circular economy. Your responses was help determine how these practices influence financial sustainability.

Resource efficiency

	Statement	**1**	**2**	**3**	**4**	**5**
1	Our enterprise minimizes material losses during production or service delivery					
2	Our enterprise has measures in place to prevent material losses during production or service delivery.					
3	Our enterprise monitors and controls energy use in its operations.					
4	Our enterprise tracks resource use to prevent excess consumption.					
5	Our enterprise uses resource management practices to keep input costs within planned levels.					
6	Our enterprise tracks resource-related costs to control overall operating expenses.					

Waste reduction

	Waste reduction	1	2	3	4	5
1	There are processes in place to keep waste levels low in its operations.					
2	Our enterprise monitors the amount of waste generated during its activities.					
3	Our enterprise separates waste to support reuse or recycling.					
4	Our enterprise reuses materials within its operations where applicable.					
5	Our enterprise converts waste materials into useful products or inputs.					
6	Systems for processing waste into usable outputs have been implemented in our enterprise					

Regenerative practices

	Statement	1	2	3	4	5
1	Our enterprise carries out activities that restore or improve natural ecosystems.					
2	Our enterprise integrates environmental restoration into its operations.					
3	Our enterprise uses inputs that can be naturally replenished over time.					
4	Our enterprise prioritizes the use of environmentally sustainable inputs in its operations.					
5	Our enterprise follows practices that protect the surrounding environment.					

6	Our enterprise has measures in place to manage its environmental impact.					

Product Life Extension

	Statement	1	2	3	4	5
1	Our enterprise uses products or materials designed for long-term use.					
2	Our enterprise prioritise maintaining and servicing products or equipment to extend their usable life.					
3	Our enterprise practises regular repair of products or materials instead of replacement					
4	Our enterprise carries out regular maintenance of products or equipment.					
5	Our enterprise practises the reuse of products or materials within the operations.					
6	Our enterprise engages in refurbishing or restoring used products for continued use.					

Section B: Financial Sustainability

This section measures the dependent variable, which is the financial sustainability of the social enterprise as influenced by circular business practices.

	Statement	1	2	3	4	5
1	Our enterprise generates income that is consistent over time.					
2	Our cash inflows are predictable and support regular operations.					
3	Our enterprise can keep operational costs within planned levels					
4	Our enterprise minimizes unnecessary expenses in its operations.					
5	Our enterprise generates sufficient internal revenue to sustain its operations.					
6	Our enterprise operates with minimal reliance on external funding such as grants or donations.					
7	Our enterprise generates financial surplus that is reinvested into its activities.					
8	Our enterprise has financial capacity to expand or scale its operations.					

I APPRECIATE YOUR PARTICIPATION

Appendix III: List of Social Enterprises

No.	Firm Name
1	WEEE Centre
2	Mr. Green Africa
3	Takataka Solutions
4	PETCO Kenya
5	EcoPost
6	Gjenge Makers
7	T3 (Trash to Treasure)
8	Kamongo Waste Paper
9	Greenloop Recycling
10	Usafi Green Energy
11	Plastic Recycling Industries Kenya
12	Eco World Recycling
13	Waste Hub Nairobi
14	Green Waste Solutions Ltd
15	Recyclers Kenya
16	EcoSafi
17	Africa Collect Textiles
18	TrashCon Kenya
19	TakaTaka Ni Mali
20	City Garbage Recyclers
21	Ramani Recyclers
22	Ecoplastile Ltd
23	WeCyclers Kenya
24	Mr. Green Trading Africa
25	Green Loop Africa
26	RecyclePoints Kenya
27	Trash4Cash Kenya

28	M-KOPA Solar
29	d.light Kenya
30	Bboxx Kenya
31	SunCulture
32	Solar Panda
33	Powerhive
34	SteamaCo
35	Azuri Technologies
36	BioLite Kenya
37	Solarise Africa Kenya
38	Orb Energy Kenya
39	Zola Electric Kenya
40	Renewvia Kenya
41	SunTransfer Kenya
42	KopaGas Kenya
43	Nuru Energy Kenya
44	GreenMax Capital Kenya
45	ENGIE Energy Access Kenya
46	PowerGen Renewable Energy
47	FarmWorks
48	Fresh Life Initiative
49	Shamba Pride
50	iProcure
51	Twiga Foods
52	Nawiri Organics
53	Ololo Farm
54	ForestFoods
55	Apollo Agriculture
56	One Acre Fund Kenya
57	AgriBORA
58	FarmDrive
59	Selina Wamucii
60	DigiFarm Kenya
61	AgroCares Kenya
62	Eco Agribusiness Africa
63	Organic Farmers Market Kenya
64	Mazao Safi
65	Umande Trust
66	Grundfos Kenya
67	Pure Planet Recyclers
68	Sanivation Kenya
69	Water.org Kenya
70	Drop Access
71	Fresh Life Water
72	Maji Milele Ltd

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73	Aqua Clara Kenya
74	Maji Bora Solutions
75	Safe Water Network Kenya
76	Water Mission Kenya
77	Clean Start Africa
78	Hand in Hand Eastern Africa
79	Impact Hub Nairobi
80	Green Generation Initiative
81	Naturelock Kenya
82	Eco Act Kenya
83	Villgro Africa
84	Acumen East Africa
85	Sanergy
86	Chanzi Ltd
87	Safi Organics
88	GreenChar
89	Sesi Technologies
90	Soko
91	Juhudi Kilimo
92	IntelleGrow (Kenya ops)
93	Jibu Kenya
94	Meru Greens
95	KCCE
96	Gikanda Farmers Cooperative
97	Living Goods
98	Kasha Kenya
99	Husk Power
100	BRCK
101	Ushahidi
102	Aceli Africa
103	Solar Freeze
104	AgriQ
105	Mace Foods
106	Hydroponics Africa
107	Climate Pal
108	Sistema.bio Kenya
109	Agsol
110	Aquarech
111	Farm to Feed
112	UjuziKilimo
113	Kenya Biologics
114	Afrisol Energy
115	PayGo Energy
116	GreenBay Market
117	Smart Havens Africa

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118	Solar Green Africa
119	Agventure Ltd
120	Earthtree Ltd
121	Ecodudu
122	Progreen Innovations
123	Global Epci Ltd
124	Acre Africa
125	Sendy
126	Lynk Kenya
127	Ajua
128	MarketForce
129	Wasoko
130	Pezesha
131	Ilara Health
132	Zumi Kenya
133	Workpay
134	OkHi
135	Africa's Talking
136	Fuzu
137	Cloud9xp
138	AZA Finance
139	FlexPay
140	Kwara
141	Tulaa
142	Hello Tractor
143	DigiCow
144	M-SCAN
145	Pula Advisors
146	WeFarm
147	AgriWallet
148	M-Farm
149	Bridge International Academies
150	Jacaranda Health
151	Green Belt Movement
152	SHOFCO
153	Solar Sister
154	Ecofinder Kenya
155	Africa Yoga Project
156	Food for Education
157	The Flipflopi Project
158	MazaoHub
159	ZanaAfrica
160	BOMA Project
161	TechnoServe Kenya
162	Digital Divide Data Kenya

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163	Educate!
164	Afya Research Africa
165	Moringa School
166	Goodlife Pharmacy
167	Acacia Innovations
168	Climate Pal (duplicate removed earlier — keep once)
169	GreenBay Market (validated once)
170	Smart Havens Africa (validated once)
171	Solar Green Africa (validated once)
172	Agventure Ltd (validated once)
173	Earthtree Ltd (validated once)
174	Progreen Innovations (validated once)
175	Global Epci Ltd (validated once)
176	Afrisol Energy (validated once)
177	PayGo Energy (validated once)
178	Kenya Biologics (validated once)
179	Aquarech (validated once)
180	Agsol (validated once)
181	Sistema.bio Kenya (validated once)
182	UjuziKilimo (validated once)
183	Farm to Feed (validated once)
184	Ecodudu (validated once)
185	Hydroponics Africa (validated once)

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VNVM SINT

APPENDIX IV: Research Approval

Strathmore UNIVERSITY

8th April 2026

Ms Thiaine Pamela,
pamela.kanja@strathmore.edu

Dear Ms Thiaine,

RE: Influence of Circular Economy Business Practices on Financial Sustainability of Social Enterprises in Nairobi County, Kenya

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** research proposal. Your application reference number is **SU-ISERC3452/26.** The approval period is from **8th April 2026 to 7th April 2027.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, and MTA) will be used
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification
iv. Any changes, anticipated or otherwise, that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours
v. Clearance for the export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.

Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) https://research-portal.nacosti.go.ke/ and obtain other clearances needed.

Yours sincerely,

Mr Ambrose Rachier,
Chairperson; SU-ISERC

Ole Sangale Rd, Madaraka Estate. PO Box 59857-00200, Nairobi, Kenya. Tel +254 (0)703 034000
Email admissions@strathmore.edu www.strathmore.edu

APPENDIX V: Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **993543**

Date of Issue: **15/April/2026**

RESEARCH LICENSE



This is to Certify that Miss.. PAMELA Kanja THIAINE of Strathmore University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: Influence of Circular Economy Business Practices on Financial Sustainability of Social Enterprises in Nairobi County, Kenya for the period ending : 15/April/2027.

License No: **NACOSTI/P/26/4187995**

993543

Applicant Identification Number

Ag. Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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See overleaf for conditions