

The influence of sustainable supply chain management practices on financial sustainability of food processing SMEs

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Abstract

Purpose – The importance of sustainable supply chain management practices (SSCMPs) in the financial performance of firms is increasing significantly. However, the influence of SSCMPs on financial performance can vary across sectors and contexts. This research aims to provide a comprehensive understanding of the influence of SSCMPs on the financial sustainability of small and medium-sized enterprises (SMEs) in the food processing industry. For this, the influence of sustainable environment practices, customer and supplier relationships, social SCMPs and lean supply chain on the financial sustainability of food processing SMEs is studied.

Design/methodology/approach – A questionnaire survey was conducted to collect data from 56 food processing SMEs in Mbeya, Tanzania. The study employed a cross-sectional research design and a census approach to capture data from all eligible SMEs in the target population. Exploratory factor analysis (EFA) and multiple linear regression (MLR) were utilized as the primary data analysis techniques.

Findings – The findings of the study revealed a positive and significant influence of various SSCMPs on the financial sustainability of food processing SMEs. Specifically, sustainable environment management practices ($\beta = 0.147, p = 0.000$), supplier relationship management (SRM) ($\beta = 0.715, p = 0.001$), customer relationship management (CRM) ($\beta = 0.894, p = 0.016$), social SCMP ($\beta = 0.901, p = 0.005$) and lean supply chain practices ($\beta = 0.675, p = 0.003$) were all found to have a significant effect on the financial sustainability of the surveyed food processing SMEs.

Practical implications – The study recommends the need to plan and integrate SSCMPs in firms' operation processes, promote collaboration and networking and offer capacity-building initiatives that equip food processing SMEs with the necessary skills and knowledge to implement SSCMPs effectively. These will nurture effective adoption of SSCMP, leading to improved operations, environmental performance, financial sustainability and long-term viability of the sector.

Originality/value – While SSCMPs have gained attention in the literature, the specific focus on its impact on financial sustainability in the context of food processing SMEs adds originality to this research. Industry stakeholders and policymakers can utilize the findings of this study to develop supportive policies and programs that promote sustainable supply chain practices and enhance financial sustainability in the food processing sector.

Keywords Supply chain, SSCMPs, Food processing SMEs, Financial sustainability

Paper type Research paper



1. Introduction

From an economic perspective, the role of food processing small and medium-sized enterprises (SMEs) has garnered significant attention from policymakers, economists and scholars. This sector makes a substantial contribution to the food crop supply chain and the socio-economic transformation of many countries. Food processing SMEs serve as innovation hubs, providing stimulus for employment, value creation and economic growth (Gurria, 2020; Juma, Zimon, & Ikram, 2021). Specifically, in Tanzania, food processing SMEs represent approximately 39% of all formal SMEs and employ around 7.1% of the country's workforce. Additionally, the sector contributes about 8% to the country's GDP (UN, 2020; World Bank, 2020; NBS, 2020). Besides that, food processing SMEs generate value utility throughout the supply chain by converting raw materials into useable states through various systems, practices and processes. Statistics indicate that food processing SMEs account for approximately 50% to 60% of the value of food crops along the supply chains (World Bank, 2020; Gurria, 2020).

The 2003 Tanzania SMEs development policy classifies SMEs into three categories based on the amount of capital invested and the number of employees in a firm. Micro-enterprises are those with working capital of Tsh. 5 million or less and less than 5 employees. Small enterprises are characterized by working capital ranging from Tsh. 5 million to Tsh. 200 million and 5-49 employees. Medium-sized enterprises fall within the range of Tsh. 200 million to Tsh. 800 million and have 50-99 employees. Large firms, on the other hand, have working capital exceeding Tsh. 800 million and employ over 100 employees. Despite their recognized roles, food processing SMEs have yet to fully exploit their potential. These SMEs face various challenges and complexities that hinder their operational and financial performance. The majority of food processing SMEs struggle to enhance their financial sustainability, survival and growth. Experience shows that only 40% of food processing SMEs are capable of meeting their financial obligations, while the remaining 60% experience decline within six months of the establishment (World Bank, 2020; Kweka & Sooi, 2020). Additionally, a mere 20% of food processing SMEs are successful in attracting and retaining customers (World Bank, 2020).

Studies conducted by Mangla, Luthra, and Mishra (2018) and Mann and Kaur (2020) have linked the challenges and shortcomings faced by food processing SMEs in achieving sustainable performance to factors such as low competitive advantages, limited market access, low productivity and financial constraints. Additionally, Hong, Zhang, and Ding (2018) and Israel (2022b) have highlighted intensive competition among supply chains, lengthy marketing and distribution channels and a lack of innovation culture as barriers to the effective operations and financial sustainability of food processing SMEs. Scholars have proposed various methods, approaches and strategies to enhance the operational and financial sustainability, growth and development of food processing SMEs. These recommendations include the adoption of strategic partnerships, collaborations, networking and joint ventures (Das, 2018; Kweka & Sooi, 2020). Despite the existence of these recommended practices, food processing SMEs continue to face the aforementioned challenges and complexities. This raises the important question: what is the best approach to enhance SMEs' financial sustainability? In response to this question, the authors present and assess the suitability of sustainable supply chain management practices (SSCMPs) in enhancing the financial sustainability of food processing SMEs.

According to Dai, Xie and Chu (2021), Hong *et al.* (2018) and Zayed and Yaseen (2020), SSCMPs refer to optimized processes, structures and operations within a business firm aimed at enhancing the timely delivery of the right quantity and quality of goods and services in a cost-effective manner while ensuring customer satisfaction. These practices encompass a wide range of activities, including streamlined green procurement and supply chain practices, ethical procurement practices, the adoption of computer-based systems,

lean and agile supply chain management practices and coordinated collaborations among supply chain actors (Doganay & Ergun, 2017; Kahkonen, Lintukangas, & Hallikas, 2020). Additionally, strong interaction and relationships between firms, suppliers, customers and staff are integral components of SSCMPs. The role of SSCMPs in enhancing the financial and operational performance of businesses has attracted significant attention from supply chain managers, practitioners and scholars across various sectors of the economy. However, in emerging economies, the adoption of SCMPs across different sectors is hindered by various factors.

Empirical evidence has identified a lack of awareness regarding the perceived benefits of SSCMPs, financial constraints in supporting SSCMPs, a lack of trust and poor coordination and support from top management as key barriers to the effective adoption of SSCMPs, especially in low- and middle-income countries (Mangla *et al.*, 2018; Mkwabi, 2019). Türk and Çelik (2019) suggest that proper planning, top management support and commitment, a sound financial position and an innovative culture are necessary to overcome these barriers and promote the adoption of SSCMPs by SMEs. The effective adoption of SSCMPs ultimately leads to increased sales, market share and profitability. For example, streamlined green supply chain practices help SMEs minimise operational costs by avoiding fines and penalties while attracting and retaining customers (Juma *et al.*, 2021; Mann & Kauri, 2020). As part of the perceived benefits of SSCMPs, studies by Dai *et al.* (2021) and Doganay and Ergun (2017) revealed significant improvements in the financial performance of Chinese SMEs due to streamlined collaboration among supply chain actors, strategic partnerships, customization and supplier development.

Similarly, the adoption of Electronic Data Interchange (EDI) and Enterprise Resource Planning (ERP) systems has shown a significant and positive impact on the financial performance and efficiency of SMEs in Turkey and the United Kingdom (Türk & Çelik, 2019). This has been achieved through the reduction of transactional costs and order processing time. Additionally, social SSCMPs, such as compliance with human rights, staff welfare and environmental management, have demonstrated a positive impact on manufacturing firms in India and Jordan (Das, 2018; Alzubi and Akkerman, 2022). However, there is limited knowledge regarding the influence of SSCMPs on the financial sustainability of food processing SMEs, particularly in the context of Tanzania. Previous literature has provided insights into the importance of SSCMPs and the barriers to their implementation for operational performance in non-food processing SMEs, with less consideration given to financial sustainability issues (Mkwabi, 2019; Nassor, 2020). This knowledge gap highlights the need for further understanding among scholars and supply chain practitioners. Building upon this background, this study aims to contribute to the existing literature by examining the relationships between SSCMPs and financial sustainability using food processing SMEs in Mbeya City, Tanzania, as a case study.

2. Literature review and hypotheses development

2.1 *The institutional theory*

Financial sustainability represents a firm's ability to generate revenue or obtain returns on investments that cover all expenses and generate profits (Bekhet, Alhyari, & Yusoff, 2020; Mann & Kauri, 2020). Scholars recognize SSCMPs as crucial factors influencing a firm's profitability and financial sustainability (Juma *et al.*, 2021; Mann & Kauri, 2020). However, the specific role of SSCMPs in enhancing the financial sustainability of food processing SMEs remains inadequately established. To address this research gap, this study applies institutional theory to examine the influence of SSCMPs on the financial sustainability of food processing SMEs in Tanzania. Institutional theory, developed by Meyer and Rowan in the 1970s, explains how various practices, norms, beliefs and laws are created and diffused

within different organizations over time. According to this theory, for an organization or firm to perform better, survive and sustain itself, it must conform and comply with the societal, national and regional laws, practices, beliefs and norms of the specific environments in which it operates (Scott, 2015). In this study, institutional theory provides a comprehensive framework for understanding the role of SSCMPs on a firm's legitimacy, survival and attaining financial sustainability.

From the perspective of institutional theory, it is hypothesized that the financial sustainability of food processing SMEs is influenced by their ability to adopt and embrace the best supply chain practices. Previous studies indicate that SSCMPs play a significant role in minimizing firms' operational costs, risks and uncertainty, leading to improved profitability and financial sustainability (Dai *et al.*, 2021; Zayed & Yaseen, 2020). To test this hypothesis, the current study focuses on five forms of SSCMPs: environmental management practices, supplier and customer relationship management (CRM), lean supply chain and social supply chain practices. These forms of SSCMPs are integral to legal requirements, norms, beliefs, ethical practices and the social structure, all of which are believed to have a significant impact on a firm's financial and operational performance (Dai *et al.*, 2021; Abdallah & Al-ghwayeen, 2020; Baliga, Raut, & Kamble, 2019; Das, 2018). Taking this perspective into account, the study applies institutional theory to examine how food processing SMEs adopt and diffuse SSCMPs and assesses their influence on financial sustainability.

2.2 Adoption of SSCMPs in SMEs

A traditional objective of firms throughout the supply chain is to achieve financial success, which is typically measured in terms of profit or return on investment (Das, 2018; Yassine, 2022). Additionally, traditional supply chain goals encompass timely delivery of high-quality goods to end customers at a reasonable cost, while maintaining flexibility and providing excellent customer service. In contrast, the performance of a sustainable supply chain is evaluated by considering not only financial success but also the social and economic impact of supply chain activities on the environment (Mann & Kaur, 2020; Abdallah & Al-ghwayeen, 2020). An important aspect of a sustainable supply chain is the achievement of economic goals while minimizing social, natural and environmental impacts (Baliga *et al.*, 2019; Das, 2018). Several studies (Wu, Zhang, & Lu, 2018; Dai *et al.*, 2021; Allam, Elseify, Youssef, & Khoureshed, 2021; Das, 2018) advocate for the adoption of SSCMPs by businesses as a crucial driver for improved financial success, social performance and environmental responsibility. SSCMPs encompass a range of environmentally, socially and economically friendly practices, systems and strategies employed in firms' operational and supply chain activities.

Firms adopt and embrace SSCMPs for three main reasons: (1) the need to comply with legal requirements (reactive), (2) the desire to enhance financial and operational performance (proactive) and (3) the need to gain competitive advantages within supply chains. For instance, environmental management practices which include waste and pollution management, the use of clean energy, recycling and the use of eco-friendly materials are adopted by firms to ensure legal compliance (Abdallah & Al-ghwayeen, 2020; Allam *et al.*, 2021). Additionally, studies by Juma *et al.* (2021) and Sodhi and Tang (2018) highlight that firms embrace social supply chain practices, such as observing human rights, implementing safety measures, promoting staff welfare, ensuring equality and following a code of conduct in the workplace as a part of legal compliance. Firms along the supply chain are mandated to establish internal environmental and social practices that protect the environment from pollution and uphold human rights and social welfare. Moreover, the adoption of computer-based systems such as ERP and EDI are integral parts of SSCMPs. ERP and EDI are primarily implemented to enhance firms' competitive advantage and improve their financial and operational performance (Israel, 2022a; Uribe, Sarache, & Gutiérrez, 2019).

Studies conducted by Kahkonen *et al.* (2020) and Uribe *et al.* (2019) highlight the significance of customer and supplier relationship management (SRM) as an essential component of SSCMPs. Adopting improved relationships between customers and suppliers along the supply chain facilitates joint problem-solving, effective product design and development and timely delivery of materials at cost-effective prices. Furthermore, some authors have identified cross-docking as the most effective sustainable distribution strategy for ensuring timely delivery of customer requirements while minimizing storage costs (Juma *et al.*, 2021; Kuswanto, Sundari, Harmadi, & Hariyanti, 2019). Other forms of SSCMPs include outsourcing and offshoring of requirements and fostering streamlined collaboration and coordination among supply chain actors (Türk & Çelik, 2019; Alzubi and Akkerman, 2022). Outsourcing and offshoring involve procuring requirements from external skilled personnel when it is cost-effective to do so. Collaboration and coordination, on the other hand, lead to improved relationships through effective information sharing and joint problem-solving. Moreover, Sodhi and Tang (2018) emphasize lean supply chain management as a crucial aspect of SSCMPs. Lean supply chain management practices aim to enhance supply chain performance and gain competitive advantages by eliminating non-value adding activities throughout the supply chain.

2.3 Hypotheses development

2.3.1 Sustainable environmental management practices. Supply chain practitioners consider sustainable environmental management practices (SEMPs) as a feasible tool for improving businesses' financial and operational performance throughout the supply chain. Firms develop internal operational strategies that support the implementation of SEMPs and help them maintain their competitive advantages. Studies indicate that firms embracing SEMPs are more likely to outperform their competitors and achieve financial and operational sustainability (Abid, Ikram, Wu, & Ferasso, 2021; Juma *et al.*, 2021). Conversely, ineffective adoption of SEMPs leads to financial and operational distress due to increased fines and penalties. Studies by Allam *et al.* (2021) and Abdallah and Al-ghwayeen (2020) revealed a significant increase in sales revenue, market share and profitability for businesses that effectively adopt SEMPs. Implementing SEMPs, such as proper waste management, the use of recycling materials and environmentally friendly raw materials, help firms minimize negative environmental impacts. Consequently, these practices attract customers and protect firms from financial loss by avoiding fines and penalties associated with environmental pollution (Yassine, 2022; Wu *et al.*, 2018). As a result, operational expenses decrease, while sales and profitability increase, which are the primary indicators of a firm's financial sustainability. Thus, we present the hypothesis that: -

H1. SEMPs significantly influence firms' financial sustainability.

2.3.2 Suppliers and customers relationships management. Apart from SEMPs, the literature recognizes improved SRM and CRM as important drivers that influence the financial and operational performance of business firms. Studies conducted by Kahkonen *et al.* (2020) and Hong *et al.* (2018) revealed a significant improvement in the financial performance of manufacturing SMEs through the effective integration of customers and suppliers in their supply chain. Strategic partnerships, customization of requirements, supplier development and long-term relationships with customers and suppliers are important forms of CRM and SRM that have revealed a positive impact on firms' operational and financial performance (Doganay & Ergun, 2017; Kahkonen *et al.*, 2020). Firms that interact and share information with suppliers and customers foster a sense of joint problem-solving, networking and collaboration. When effectively enforced, CRM and SRM lead to a positive impact on firms' performance. Practices such as early buyer and supplier involvement in product development

help firms minimize product costs and shorten the time required for product design and development (Mkwabi, 2019; Uribe *et al.*, 2019). Furthermore, improved relationships along the supply chain result in the timely delivery of better-quality materials at a cost-effective, which are the primary drivers of firms' profitability and financial sustainability. Therefore, we propose the hypotheses that: -

H2. SRM significantly influences firms' financial sustainability.

H3. CRM significantly influences firms' financial sustainability.

2.3.3 Social supply chain management practices. A firm's financial sustainability greatly relies on its ability to embrace and adopt effective social supply chain management practices (SCMP). Social SCMP encompasses various factors, including the implementation of robust safety policies, improvements in staff welfare, the establishment of better incentive schemes and motivation programs, as well as adherence to human rights and ethical practices (Hong *et al.*, 2018; Sodhi & Tang, 2018). Firms that embrace social SCMP have a higher likelihood of enhancing their operational and financial performance. By prioritizing human rights, offering attractive incentive schemes and maintaining ethical practices, firms can attract and retain skilled personnel and customers. Effective implementation of streamlined social SCMP helps firms not only attract and retain talented staff and potential customers but also results in increased productivity, market share, sales and profits (Das, 2018; Alzubi and Akkerman, 2022). Additionally, social SCMPs contribute to staff motivation while mitigating the risks and costs associated with employee and customer turnover. Based on these perspectives, the study hypothesized that: -

H4. Social SCMPs significantly influence firms' financial sustainability.

2.3.4 Lean supply chain management practices. In a modern and world-class economy, firms and customers are attracted to lean supply chain management practices (LSMPs) that prioritize the elimination of non-value adding activities. Literature reveals a positive correlation between LSMPs and a firm's operational and financial performance. A study by Hong *et al.* (2018) reported significant improvements in the financial and operational performance of Chinese manufacturers who effectively adopted LSMPs such as vendor-managed inventory (VMI), total productive maintenance (TPM), total quality management (TQM) and just-in-time (JIT). LSMPs assist firms in minimizing inventory storage costs and provide cost-effective tools for efficient transactions while ensuring continuous availability of supplies (Baliga *et al.*, 2019; Bravo, Caniato, & Caridi, 2021). Furthermore, enhanced quality control and quality assurance systems, along with a firm's adaptability to ever-changing market forces, help deliver better-quality services, maintain competitive advantages and meet customers' requirements on time (Dai *et al.*, 2021; Juma *et al.*, 2021). These practices are believed to positively influence a firm's operational and financial sustainability. Therefore, we hypothesize that: -

H5. LSMPs significantly influence firms' financial sustainability.

2.4 Research gap

Understanding the role of SSCMPs in influencing the financial and operational performance across different sectors of the economy is essential for sustainable economic development and inclusive growth. However, based on the reviewed literature, there are limited empirical studies that address the relationship between SSCMPs and financial sustainability in food processing SMEs, particularly in the context of Tanzania. Therefore, the importance of conducting this study becomes even more pronounced, considering the significant role that food processing SMEs play in economies. Existing studies on SSCMPs primarily focus on

customer retention, operational performance and financial performance in non-food processing SMEs (Kuswanto *et al.*, 2019; Mann & KaurI, 2020; Sodhi & Tang, 2018; Israel, 2022a), as well as the barriers and enablers to the effective adoption of SSCMPs (Mkwabi, 2019; Nassor, 2020; Vishwakarma *et al.*, 2022; Zayed & Yaseen, 2020). To bridge this gap, the present study conducts a comprehensive empirical study to examine the influence of SSCMPs on the financial sustainability of food processing SMEs in the context of Tanzania.

2.5 The conceptual framework

Figure 1 presents a conceptual framework for the empirical study conducted. The study explores the relationship between inter-disciplinary concepts of SSCMPs and the financial sustainability of food processing SMEs, employing an institutional theory lens in the context of Tanzania. Since previous studies on SSCMPs in the field of food processing SMEs are limited, we derived the study constructs and items from relevant literature and related fields. The proposed model illustrates the hypothesized relationships among the study variables.

3. Materials and methods

3.1 Research design, sampling and study area

This study utilized a cross-sectional research design and a quantitative research approach to test the five hypotheses. The cross-sectional research design enabled the authors to collect, analyse and describe the relationship between SSCMPs and financial sustainability in Tanzanian food processing SMEs at a specific period in time. The population of interest for this study consisted of owners of food processing SMEs located in Mbeya City, Tanzania. According to the database of Mbeya city council as of December 2022, there were a total of 56 active registered food processing SMEs (United Republic of Tanzania (URT), 2022). Due to the manageable size of the target population, a census approach was employed, whereby all eligible food processing SMEs in the study area were included in the research sample. The census approach is considered suitable when dealing with populations of less than 200 units (Israel, 1992). The units of observation in this study were the owners of food processing SMEs, who were purposively selected based on their rational role in planning and approving the adoption and implementation of SSCMPs within their respective enterprises.

3.2 Data collection and sample size

The authors collected primary quantitative data from respondents using a questionnaire survey to examine the relevance and implications of institutional theory. Institutional theory emphasizes the importance of improving firms' operational and financial performance and achieving financial sustainability by adopting and adhering to the best practices, laws, norms and beliefs of the environments in which they operate. In this study, institutional theory served as a framework to assess the extent to which food processing SMEs adopt SSCMPs

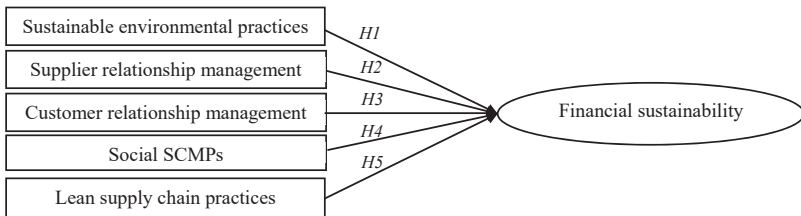


Figure 1.
Conceptual framework

Source(s): Author's compilation (2023)

and the subsequent impact on financial sustainability. A five-point Likert-scale questionnaire was used to measure the respondents' perspectives. Initially, structured questionnaires containing a set of closed-ended questions were distributed to 56 owners of food processing SMEs using a self-administered approach. However, the final number of respondents who successfully completed the questionnaire was 51, representing a response rate of 91.1% of the target population.

3.3 Measurements, reliability and validity

The research questionnaire for this study was designed with five constructs of SSCMPs derived from relevant literature (Dai *et al.*, 2021; Abdallah & Al-ghwayeen, 2020; Allam *et al.*, 2021; Israel, 2022b). The questionnaire aimed to gather information regarding the extent to which food processing SMEs adopt different forms of SSCMPs and their potential impact on the firms' financial sustainability. Each item was measured using a 5-point Likert scale, ranging from "1 = not at all" to "5 = very great extent." To measure financial sustainability among food processing SMEs, we used profit margin (profitability) as a proxy (Mwenda, Ndiege, & Pastory, 2021a; Bekhet *et al.*, 2020). Before the actual data collection, the questionnaire was pre-tested on 15 randomly selected food processing SMEs that were not part of the study population to evaluate its content validity. The findings from the pre-test were used to enhance the questionnaire.

The reliability of the measurement scales was assessed through exploratory factor analysis (EFA) based on principal component analysis (PCA). According to the rule of thumb, unidimensional factor loadings should exceed the threshold of 0.5 and eigenvalues should be greater than 1 (Morgan, Barrett, Leech, & Gloeckner, 2020; Nawi, Tambi, Samat, & Mustapha, 2020). Items with factor loadings below 0.5 and eigenvalues less than 1 were excluded due to their weak contribution. Table 1 demonstrates that all items in each construct exhibited factor loadings above 0.5 and eigenvalues greater than 1, thus they were retained for inferential analysis. To assess construct reliability, Cronbach's alpha was utilized. A Cronbach's alpha value of 0.7 or higher confirms the reliability of the construct variables (Nawi *et al.*, 2020; Morgan *et al.*, 2020). As shown in Table 1, the average Cronbach's alpha values for the five constructs exceeded the recommended threshold of 0.7, indicating that the construct reliability was confirmed.

Heterotrait-monotrait (HTMT) ratio was employed to assess the discriminant validity among the construct variables. The HTMT ratio assumes a lack of discriminant validity when the correlation value between construct variables exceeds 0.85 (Sarstedt, Ringle, Smith, Reams, & Hair, 2014). Upon examining the correlation results presented in Table 2, it can be concluded that there are no concerns regarding discriminant validity among the construct variables. Furthermore, the Kaiser–Meyer–Olkin (KMO) values, which indicate sampling adequacy (Field, 2013), range from 0.7055 to 0.8195. These values confirm that the data collected for the analysis were appropriate for the study. Additionally, Bartlett's test of sphericity yielded a significant result, with a Chi-square value of 1795.445 and a degree of freedom (df) of 122 at $p = 0.003 < 0.05$. These findings further support the suitability of the data for analysis. Based on these analyses, the five adopted SSCMPs demonstrated internal consistency and reliability. Therefore, they were deemed suitable for further statistical analysis in the study.

This study employed a two-step data analysis process. Firstly, EFA was conducted individually for each construct to explore the underlying data structure and determine dimensionality. In this stage, principal component analysis (PCA) with varimax rotation and Kaiser normalization was utilized to extract factor loadings and dimensions for each item. According to Hair, Howard, and Nitzl (2020), an item with a factor loading dimension ≥ 0.5 and eigenvalue greater than 1 is considered satisfactory and suitable for further analysis. In the

Table 1.
Measures SSCMPs
based on EFA

Constructs/Items	λ	α	Eigenvalue	KMO
<i>Sustainable environment Management practices (SEMPs)</i>		0.8126	6.8919	0.7089
• Our products are designed using recyclable materials	0.7634			
• Firm strives to minimise the negative environmental impacts	0.8451			
• Firm has environmental compliance and auditing programs	0.7005			
• We practice reverse logistics along the supply chain	0.6747			
• Our business ensures reduction of waste and emissions materials	0.5980			
• Our firm uses and prefers renewable energy resources	0.6321			
• Firm mostly uses environmentally friendly raw material	0.6186			
<i>Customer relationship management (SRM)</i>		0.8027	3.9056	0.7623
• Our firm involves buyers in product design and development	0.7905			
• Our firm interacts and shares information with buyers	0.7605			
• We focus on long-term relationships with customers	0.5908			
• We seek feedback from customers regarding our services	0.8635			
<i>Supplier relationship management (CRM)</i>		0.8013	2.7894	0.7386
• Suppliers are involved in product design and development	0.6864			
• Our firm has policies and programs for supplier development	0.5672			
• Our firm has developed a long-term relationship with suppliers	0.6705			
• A firm interacts and shares information with suppliers	0.7653			
<i>Social SCMPs (SCMPs)</i>		0.8379	1.9341	0.8195
• All staff inclusively participate in organisation's decision making	0.7550			
• Our firm has safety policies and measures in place	0.6458			
• A firm has incentives schemes and staff motivation programs	0.5598			
• Our firm allocates a sufficient budget for staff welfare	0.7456			
• Our firm greatly involves in corporate social responsibilities	0.8875			
• A firm appraises and recognizes human rights	0.7654			
<i>Lean Supply chain management practices (LSMPs)</i>		0.8115	1.0875	0.7055
• Our firm embraces JIT in delivery of materials and finished goods	0.5468			
• A firm a documented program for total productive maintenance	0.7647			
• Our business embraces total quality management philosophy	0.8025			
• Our firm is agile and flexible to everchanging market forces	0.7493			
• We plan and document short-term and long-term actions	0.6636			
• We have established systems for quality assurance and control	0.6905			
• We certainly practice vendor-managed inventory (VMI)	0.7686			
• We identify and eliminate non-value adding activities	0.8745			
Source(s): Data analysis (2023)				

Table 2.
Discriminant validity
based on HTMT
criterion

Constructs	SEMPs	SRM	CRM	SCMPs	LSMPs
SEMPs	0.706				
SRM	0.725	0.295			
CRM	0.598	0.302	0.505		
SCMPs	0.765	0.305	0.376	0.285	
LSMPs	0.655	0.243	0.539	0.358	0.445
Source(s): Data analysis (2023)					

second stage, items that met the criteria of factor loadings ≥ 0.5 and eigenvalues >1 were selected for scaling out and subsequent inferential analysis. In this stage, the data was coded based on common themes and analysed using multiple linear regression (MLR) to establish

the relationship between SSCMPs and the financial sustainability of firms. MLR was chosen in this study as the analytical method to examine the relationships between variables since the dependent variable (financial sustainability which was measured in terms of profitability) was continuous in nature and was predicted against five independent dummy variables (SSCMPs) as expressed and operationalized in Equation 1 presented in Table 3.

$$Y = \beta_0 + \beta_1 x_1 + \dots + \beta_5 x_5 + e \quad (1)$$

4. Results and discussion

4.1 Demographic characteristics of respondents

Table 4 provides a summary of the demographic characteristics of the respondents included in this study. The analysis reveals that 52.94% ($n = 27$) of the surveyed food processing SMEs in Mbeya city are owned by women, while 47.06% ($n = 24$) are owned by men. This indicates that the majority of the food processing SMEs in the study area are owned by women. In terms of academic qualifications, the majority of SME owners (29.41%, $n = 15$)

Dependent variable: Firm's financial sustainability: Measured in terms of profit (PRFT) level earned by SMEs
Independent variables: Sustainable supply chain management practices (SSCMPs)

x_1	Sustainable environment management practices (1 = streamlined, 0 = otherwise)
x_2	Supplier relationship management (1 = enhanced SRM, 0 = otherwise)
x_3	Customer relationship management (1 = enhanced CRM, 0 = No)
x_4	Social SCMPs (1 = embraces social SCMPs, 0 = otherwise)
x_5	Lean SCMPs (1 = embrace lean SCM, 0 = otherwise)

Source(s): Author's compilation (2023)

Table 3.
Definitions and
operationalisation of
variables

Attributes	Frequency [$n = 51$]	Percent [%]
<i>Gender SME Owners</i>		
Female	27	52.94
Male	24	47.06
<i>Education level of SME owners</i>		
Secondary education	13	25.49
Diploma	11	21.57
First degree	15	29.41
Postgraduate	12	23.53
<i>Operational experience</i>		
Less than 6 months	7	13.73
More than 6 months – 1 year	12	23.53
More than 1 year – 2 years	13	25.49
More than 2 years – 5 years	10	19.61
Above 5 years	9	17.65
<i>Number of employees</i>		
1 – 4 employees	18	35.29
5 – 49 employees	16	31.37
50 – 99 employees	17	33.33

Source(s): Data analysis (2023)

Table 4.
Characteristics of
sampled food
processing SMEs

have obtained at least a first degree, followed by 25.49% ($n = 13$) with secondary school education and 23.53% ($n = 12$) with postgraduate qualifications. These findings demonstrate the educational diversity among SME owners. Examining the duration of operation, the results indicate that 25.49% ($n = 13$) of the sampled food processing SMEs have been operating for an average of two years since their establishment, while 17.65% ($n = 9$) have been in operation for more than five years. This suggests that the sampled SMEs have gained sufficient experience to evaluate their adoption of best SCMPs and their impact on financial sustainability.

Furthermore, the analysis shows that the majority of the sampled food processing SMEs (35.29%, $n = 18$) are micro-enterprises, followed by 31.37% ($n = 16$) classified as small enterprises and 33.33% ($n = 17$) classified as medium-sized enterprises. These findings indicate that the characteristics of the sampled food processing SMEs align with the classification thresholds for SMEs, making them suitable for the focus and scope of this study. In summary, the demographic characteristics of the sampled food processing SMEs, including academic qualifications, operational duration and enterprise size, provide important context for evaluating the adoption of SCMPs and their impact on financial sustainability.

4.2 Measures of the adoption of SSCMPs in food processing SMEs

Table 5 presents the results of the descriptive analysis conducted to examine the mean scores and standard deviations regarding the extent to which food processing SMEs adopt and embrace SSCMPs. Upon reviewing Table 5, the results indicate that food processing SMEs adopt and embrace SSCMPs to a moderate extent. The minimum mean score across the five construct variables is 2.895, while the maximum mean score is 3.125. Each construct variable exhibits a standard deviation of less than 1. With standard deviations below 1, the results indicate a consensus in responses among respondents, suggesting that food processing SMEs adopt and embrace SSCMPs to a moderate extent. These findings align with previous studies conducted by Mangla et al. (2018) and Mkwabi (2019), who also reported moderate adoption of SSCMPs in SMEs. The authors link this limited adoption of SSCMPs in SMEs to factors such as limited awareness of the perceived benefits of SSCMPs, financial constraints and inadequate commitment from top managers in supporting SSCMPs (Mangla et al., 2018; Vishwakarma, Dangayach, & Meena, 2022; Zayed & Yaseen, 2020).

4.3 Regression analysis

Table 6 presents a summary of the results from the MLR analysis conducted to explore the relationship between SSCMPs and financial sustainability in food processing SMEs. This study follows the recommendation of scholars (Mwenda, Ndiege, & Pastory, 2021b; Allam et al., 2021; Juma et al., 2021) and utilizes the firm's profit as the primary indicator of financial sustainability. Before conducting the MLR analysis, module fitting information was established through analysis of variance (ANOVA). The results of the ANOVA revealed the

Table 5.
Descriptive statistics
on the adoption of
SSCMPs

Constructs	Mean	Std. Dev
SEMPs	3.098	0.856
SRM	2.983	0.597
CRM	3.125	0.725
SCMPs	3.006	0.918
LSMPs	2.895	0.698

Source(s): Data analysis (2023)

following: the p -value for F -statistics was 0.0018, which is less than 0.05, indicating a statistically significant relationship. Additionally, the coefficient of determination (R) was found to be 0.656, with an R -squared value of 0.430 and an adjusted R -squared value of 0.468. These results indicate a positive and significant relationship between the explanatory variables and the outcome variable. The findings suggest that the adopted forms of SSCMPs account for 46.8% of the variance in the financial sustainability of food processing SMEs, while the remaining 53.2% is attributed to unaccounted variables. Furthermore, the average variance inflation (VIF) was calculated to be 1.15, indicating the absence of multicollinearity issues. Moreover, tests for normality, including the Kolmogorov-Smirnov (K-S) and Shapiro-Wilk (S-W) tests, yielded p -values of 0.112 and 0.237, respectively, suggesting that the data followed a normal distribution. These test results confirm that the necessary conditions for employing MLR were met.

4.3.1 SEMP's and firms' financial sustainability. The results of the MLR in Table 6 showed that SEMP's have a positive and significant effect on enhancing the financial sustainability of firms ($\beta = 0.147$, $t = 0.327$, $p = 0.000$). Therefore, H1 which states that "*H1: SEMP's significantly influence firms' financial sustainability*" was supported at a 5% confidence level. These results suggest that compliance with SEMP's contributes to improved financial performance in food processing SMEs. SEMP's, such as material recycling, reverse logistics, anti-pollution measures, waste reduction and the use of environmentally friendly raw materials, help organizations and business firms avoid fines and penalties. Moreover, the use of recyclable materials in product design helps food processing SMEs minimize costs for raw materials, which ultimately affects the firms' gross and net profits. These findings are consistent with the conclusions drawn by Abdallah and Al-ghwayeen (2020) and Juma *et al.* (2021), who have also suggested that organizations and businesses that embrace sustainable environmental practices have a higher likelihood of enhancing their operational and financial performance.

4.3.2 SRM and firms' financial sustainability. The second hypothesis of the study states that "*H2: SRM significantly influences firms' financial sustainability*". The analysis revealed a positive and statistically significant influence of SRM on a firm's financial sustainability ($\beta = 0.715$, $t = 0.453$, $p = 0.001$), leading to the acceptance of H2. This indicates that fostering improved relationships between food processing SMEs and their suppliers contributes significantly to the firm's financial sustainability. This is attributed to the fact that building long-term relationships with reliable suppliers guarantees firms with a timely and steady supply of high-quality materials at competitive prices. Moreover, suppliers offer valuable insights into market trends, suggest product improvements, or propose cost-saving solutions, which enhance firms' profitability by minimizing procurement expenses and improving overall operational efficiency (Ho, Kumar, & Shiwakoti, 2020; Mann & Kaur, 2020). In line with

Hypotheses	Constructs	Coefficients	t - stat	p -value	VIF	Supported
-	Constant	1.562	1.355	0.004	1.14	–
H1	SEMPs $\rightarrow$ PRFT	0.147	0.327	0.000	1.16	Yes
H2	SRM $\rightarrow$ PRFT	0.715	0.453	0.001	1.12	Yes
H3	CRM $\rightarrow$ PRFT	0.894	1.306	0.016	1.15	Yes
H4	SCMPs $\rightarrow$ PRFT	0.901	0.325	0.005	1.15	Yes
H5	LSMPs $\rightarrow$ PRFT	0.675	3.016	0.003	1.18	Yes

Module fitting Indices

Note(s): $R = 0.656$, $R^2 = 0.430$, Adjusted $R^2 = 0.468$, $F = 13.115$, Prob. $> F = 0.0018$, Average Variance Inflation Factor (VIF) = 1.15, Kolmogorov-Smirnov $p = 0.112$, Shapiro-Wilk (S-W) $p = 0.237$

Source(s): Data analysis (2023)

Table 6.
Hypothesised
relationships between
SSCMPs and financial
sustainability

earlier studies, the findings of this study suggest that firms can enhance the quality and competitiveness of their offerings by leveraging these collaborative opportunities. This, in turn, leads to increased customer satisfaction, market share, profitability and ultimately financial sustainability [Bravo et al. \(2021\)](#), [Juma et al. \(2021\)](#).

4.3.3 CRM and firms' financial sustainability. Again, H3, which states that "*H3: CRM significantly influences firms' financial sustainability*", is supported at a 0.01 confidence level. The findings demonstrate a positive and significant role of CRM in enhancing the financial sustainability of food processing SMEs ($\beta = 0.894$, $t = 1.306$, $p = 0.016$). Thus, we fail to reject the alternative hypothesis for H3, indicating that implementing a robust CRM strategy contributes positively to firms' financial sustainability. These findings are supported by studies conducted by [Israel \(2022a\)](#), [Kahkonen et al. \(2020\)](#) and [Kuswanto et al. \(2019\)](#). Effectively managing customer relationships, which includes understanding customer needs, involving customers in product design and development, providing exceptional service, establishing long-term relationships, leveraging feedback and identifying cross-selling opportunities, allows firms to cultivate loyalty, increase customer retention rates and drive revenue growth. Ultimately, increased customer loyalty and retention lead to improved sales and business profits, thus contributing to the overall financial sustainability of the firm.

4.3.4 SCMPs and firms' financial sustainability. The MLR coefficient for social SCMPs is positive and statistically significant ($\beta = 0.901$, $t = 0.325$, $p = 0.005$), indicating that sustainable social SCMPs play a significant and positive role in enhancing the financial sustainability of food processing SMEs. Therefore, H4, which states that "*H4: social SCMPs significantly influence firms' financial sustainability*" is supported. Firms voluntarily adopt and embrace social SCMPs, either as a choice or to comply with regulatory requirements in the workplace. The streamlined adoption of social SCMPs, such as implementing safety measures, supporting staff welfare, implementing better staff incentive schemes, undertaking CSR initiatives and recognizing human rights, keeps employees motivated in their jobs, leading to increased productivity and sales ([Dai et al., 2021](#); [Kahkonen et al., 2020](#)). Additionally, enhanced safety measures help businesses avoid expenses related to workplace injuries, thus contributing to the firm's profitability and overall financial sustainability. These findings align with the findings of [Sodhi and Tang \(2018\)](#) and [Wu et al. \(2018\)](#), who also demonstrated the positive and significant contribution of social SCMPs to the operational and financial performance of business firms.

4.3.5 LSMPs and firms' financial sustainability. LSMPs revealed a positive and statistically significant influence on the financial sustainability of food processing SMEs ($\beta = 0.675$, $t = 3.016$, $p = 0.003$). These results imply that strategic and LSMPs are essential tools for enhancing the financial sustainability of food processing SMEs. Based on these findings, we accept the alternative hypothesis H5. Strategic and LSMPs, such as VMI and JIT help food processing SMEs minimize inventory handling costs, resulting in lower operational expenses. Furthermore, implementing Total Quality Management (TQM), quality control (QC), quality assurance (QA), agile supply chain practices and eliminating non-value adding activities contribute to better product quality for business firms. These practices attract more customers, leading to sales growth, increases in profit and overall financial sustainability ([Baliga et al., 2019](#)). These findings support the findings of [Juma et al. \(2021\)](#), [Kahkonen et al. \(2020\)](#) and [Uribe et al. \(2019\)](#), who also reported a positive and significant role of LSMPs in the financial performance and sustainability of organizations and business firms.

5. Conclusion and managerial implications

This study investigates the link between SSCMPs and the financial sustainability of food processing SMEs. Drawing from the literature, the study focuses on five forms of SSCMPs,

examines the extent of their adoption and the ultimate impact on firms' financial sustainability. The five forms of SSCMPs considered in this study are SEMP, CRM, SRM, social SSMPs and LSMPs. The findings indicate that food processing SMEs moderately adopt and embrace SSCMPs, with mean scores ranging from 2.895 to 3.125. Despite the moderate adoption, the analysis reveals a positive and significant influence of SSCMPs on the financial sustainability of food processing SMEs. The results demonstrate that SEMP ($p = 0.000$), SRM ($p = 0.001$), CRM ($p = 0.016$), SSMPs ($p = 0.005$) and LSMPs ($p = 0.003$) are positively related to the financial sustainability of food processing SMEs. Consequently, the study concludes that SSCMPs are important predictors of financial sustainability in food processing SMEs. When effectively implemented, SSCMPs reduce waste, offer cost benefits, attract and retain customers and minimize operational expenses while increasing sales and profits.

Based on the findings of this study, several managerial implications can be drawn. Firstly, to fully leverage the potential of financial sustainability among food processing SMEs, supply chain managers or SME owners should strategically plan and integrate SSCMPs into their business operations, ensuring their adoption at each node of the supply chain. Secondly, regional trade officers and oversight authorities should provide training programs and capacity-building initiatives to food processing SMEs, targeting both SME managers and staff. These programs should emphasize the perceived benefits of SSCMPs and provide guidance on how to effectively adopt and integrate them into business operations. Training can cover areas such as waste reduction, energy efficiency, sustainable sourcing and responsible packaging. Furthermore, policymakers and SME owners should establish centralized platforms or forums, such as traders' associations, cooperatives, workshops and conferences, where SMEs can come together to discuss, exchange ideas and share experiences related to the benefits and strategies of effective SSCMP adoption. These platforms will enhance awareness, promote collaboration, facilitate networking and encourage information sharing among SME owners. By raising awareness and fostering the adoption of SSCMPs, these initiatives can contribute to overall financial sustainability in food processing SMEs.

6. Contribution and theoretical implications

This study makes a valuable contribution to the existing body of literature by assessing the relationship between different forms of SSCMPs and the financial sustainability of food processing SMEs. This research domain has been relatively underexplored, particularly within the context of Tanzania. Previous studies have primarily focused on barriers and enablers to the effective adoption of SSCMPs (Mkwabi, 2019; Nassor, 2020), as well as the impact of specific forms of SSCMPs such as green supply chain practices (Abid *et al.*, 2021; Allam *et al.*, 2021; Abdallah and Al-ghwayeen, 2020) and collaborative supply chain practices (Doganay & Ergun, 2017; Ho *et al.*, 2020) on operational and financial performance in non-food processing SMEs. Within the context of Tanzania, this study is the first to examine and document the influence of SSCMPs on the financial sustainability of food processing SMEs using institutional theory. Institutional theory was employed to explain how food processing SMEs can enhance their operational and financial performance by adhering to efficient practices, norms, beliefs and laws of the environments in which they operate.

Institutional theory emphasizes the importance of complying with societal, national and regional laws, as well as best practices, beliefs and norms within the operating environment for the success, survival and sustainability of a firm or organization. Aligned with the assumptions of institutional theory, this study postulated that food processing SMEs that adopt and embrace the best supply chain practices are more likely to enhance their financial

sustainability. To assess the relevance and implications of institutional theory in influencing the financial sustainability of food processing SMEs, the study considered five forms of best SSCMPs. The analysis revealed a positive and significant relationship between SSCMPs and firms' financial sustainability, thereby supporting the assumptions of institutional theory. The effective adoption of SSCMPs enables firms to minimize operational costs, avoid fines and penalties and attract and retain customers, which are crucial drivers of a firm's profitability and financial sustainability. Therefore, food processing SMEs have the opportunity to enhance their financial sustainability by adopting and embracing the best practices throughout their supply chains.

7. Limitations and suggestions for future studies

While the authors successfully achieved the research objectives, the study acknowledges several limitations. Firstly, this study provides a comprehensive understanding of the influence of SSCMPs on the financial sustainability of food processing SMEs within the context of Tanzania, using a cross-sectional research design and quantitative approach. Therefore, the findings are specific to food processing SMEs in Tanzania and should not be generalized to other sectors or geographical locations. Additionally, the study primarily relied on a quantitative approach through a questionnaire survey and did not incorporate other data collection methods such as interviews, observations, focus group discussions, or document reviews. Furthermore, external factors that can impact the financial sustainability of food processing SMEs, such as economic downturns, regulatory changes, market conditions and competition, were not accounted for. These external factors could potentially confound the relationship between SSCMPs and financial sustainability in food processing SMEs.

Based on the aforementioned limitations, the authors recommend four domains that offer research opportunities. Firstly, studies should be conducted to assess the influence of SSCMPs on the financial sustainability of food processing SMEs using qualitative approaches. Supplementing quantitative analysis with qualitative methods, such as case studies or in-depth interviews, could provide a deeper understanding of the mechanisms through which SSCMPs impact financial sustainability. Secondly, comparative analysis studies can be undertaken to evaluate the financial sustainability of food processing SMEs that implement SSCMPs compared to those that do not. These studies could offer insights into the specific benefits and advantages of adopting SSCMPs. Thirdly, longitudinal case studies employing a mixed-methods approach can be conducted to explore the influence of SSCMPs on the financial sustainability of food processing SMEs. Longitudinal studies that track the financial sustainability of food processing SMEs over an extended period can provide more robust evidence of the long-term impact of SSCMPs. Lastly, investigating potential mediating factors that link SSCMPs and financial sustainability, such as operational efficiency, cost reduction, or brand reputation, could enhance the understanding of the underlying mechanisms at play. By pursuing these directions for further study, researchers can deepen their understanding of the influence of SSCMPs on the financial sustainability of food processing SMEs.

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