Order management practices and small-scale grape processing firms' performance: the moderating effect of logistics capabilities

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Abstract

This study examines the moderating effect of logistics capabilities on the relationship between order management practices and the performance of small-scale grapes processing firms. A resource dependency theory guided the study based on the key variables including order fulfilment management, information flow management, and multichannel order management. Data were collected through a survey questionnaire distributed to 202 owners of small-scale grape processing firms in Dodoma, Tanzania. The study used a cross-sectional survey design. Data were then analysed through descriptive and covariance-based structural equation modelling. The findings indicated that information flow and order fulfilment management had a positive and significant influence on firm performance. No statistically significant evidence, however, was found on the direct effect of multichannel order management on firm performance. Furthermore, the findings indicated that logistics capabilities play a significant moderating role in the relationship between order management practices and firm performance. These findings imply that logistics capabilities strengthen the effects of order fulfilment management, information flow management, and multichannel order management on firm performance. Thus, the study suggests that optimising logistics capabilities improves timely and accurate delivery, enhances coordination and communication, and broadens customer reach, thereby improving overall firm performance.

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1. Introduction

Globally, small-scale grapes processing (SSGP) firms play a significant role in socio-economic development by enhancing value addition and contributing significantly to the nation's gross domestic product (GDP) (Mang'ana et al., 2023; URT, 2017). According to the Food and Agriculture Organization's Statistics (FAOSTAT), small-scale processing firms generate about 40% of total employment and contribute roughly one-third of the national GDP (FAO, 2023). Moreover, in Asia, particularly in China, SSGP firms play a vital role in the wine sector, as their growth aligns with the rising consumer preference for locally made wines (Sevara & Kazuo, 2018). Similarly, in Europe, around 99% of businesses involved in the wine supply chain are micro, small, and medium-sized enterprises, contributing to around 0.8% of the European Union's GDP (Pomarici et al., 2021). In the African context, South Africa stands out as a leader in grape processing, where SSGP firms make up about 80% of the country's wine cellars, highlighting their substantial role in the industry (Basson, 2024; Vinpro, 2022).

Tanzania ranks as the second-largest grape producer in Africa and has a long-standing history of productive viticulture (Kalimang'asi et al., 2021). However, smallholder farmers faced challenges in accessing reliable markets. For example, between 2021 and 2022, statistics showed that only 59.7% of harvested grapes were processed, while the remainder either perished in the fields or were sold at a loss (URT, 2022). To address this challenge, the government, in collaboration with development agencies, implemented a number of supportive interventions. These include offering technical support and capacity-building initiatives to boost productivity and market reach, improving access to affordable financing, reinforcing the role of the Tanzania Investment Centre, and facilitating the supply of affordable grape processing equipment (URT, 2022). Following the government's initiatives, SSGP firms were encouraged to enter the industry, which consequently provided a more reliable market for grapes produced by smallholder farmers.

SSGP firms play a critical role in the grape value chain by converting grapes into raisins, jam, vinegar, and wine, which can also be concentrated and extracted for industrial uses (Nalyoto & Ngaruko, 2022; Alston & Sambucci, 2019). These firms serve as essential connectors among key stakeholders, including grape producers, final consumers and

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service providers (Lubawa & Osabuohien, 2023; Mahenge, 2022; Kulwijila et al., 2018). Furthermore, small-scale processors are more embedded in local economies and operate closer to farming communities and local markets, thus making them crucial for economic development. Therefore, SSGP firms played a pivotal role in enhancing the grape sector, contributing to a 25% market growth by effectively addressing the challenges that had previously hindered its development (URT, 2024).

Considering the potential contribution of SSGP firms to the community, one might ask what factors are responsible for enabling these firms to perform well and continue delivering services effectively. Among other factors, order management practices are crucial because they represent a critical component of logistics operations and act as a backbone of customer satisfaction and business success (Sunol, 2024). These practices involve activities such as order fulfilment management, information flow management, and multichannel order management (Samani, 2024; Gebisa, 2023). Studies by Mpuon et al. (2024) and Omoush (2022) revealed that order management practices enhance firms to efficiently handle customer orders from the point of placement through to final delivery, ensuring both timely service and consistent product quality. Thus, understanding these practices and their impact on SSGP firms' performance is essential.

Despite the earlier-mentioned government interventions, the long-term sustainability of SSGP firms remains inadequate (Lubawa & Osabuohien, 2023; Mahenge, 2022; Seme & Maziku, 2021; Mushi et al., 2021). Studies by Mang'ana et al. (2023), Rajah (2022), Njiku (2019), Dube et al. (2018), and Tisimia (2014) revealed that 75% of small-scale firms have a life span shorter than a decade. The poor performance resulted in the failure and inability of the majority of SSGP firms to deliver the expected services to their customers. As a consequence, researchers have investigated logistics management practices such as supplier relationship management (Kisinga et al., 2024a), warehouse management (Mohring et al., 2024: Kisinga et al., 2024b), and physical distribution management (Jaqueta et al., 2020). Yet, the effect of order management practices on SSGP firm's performance has received inadequate attention in previous studies. Furthermore, the link between order management practices and performance has been well-documented in larger processing firms, including those in the food sector such as sugar (Mena & Chuma, 2020), flour milling (Ajoke et al., 2019), and cashew nut processing (Daniel et al., 2020). However, this relationship remains underexplored within the context of SSGP firms. In light of these inconsistencies and the scarcity of supporting evidence, there is an increasing need to investigate the impact of order management practices on the performance of SSGP firms.

On the other hand, studies by Agbandzo et al. (2024) and Baía and Ferreira (2024) indicate that the impact of order management practices on firm performance can vary depending on how efficient and effective a firm's logistics capabilities are. Logistics capabilities encompass the knowledge, skills, experience, education, and resources possessed by a firm to effectively manage the workflow of customer orders from acquisition to delivery to the final consumer (Saragih et al., 2020). These capabilities ensure the maintenance of product quality, expedited order fulfilment, enhanced communication, and cost efficiency throughout the process (Rehman et al., 2019). Earlier research (i.e., Agbandzo et al., 2024; Rehman et al., 2019) has demonstrated the connection between logistics capabilities and performance within manufacturing sectors, specifically in Ghana's cement industry and Pakistan's textile industry. Although the significance of logistics capabilities for processing firms is well acknowledged, nonetheless the moderating influence of logistics capabilities on the relationship between order management practices and firm performance in a small-scale processing firm's context has received minimal attention (Duah et al., 2024; George & Kerai 2024; Irwin et al., 2022; Meressa, 2020). To bridge this gap, the present study seeks to investigate how logistics capabilities influence this relationship within the context of SSGP firms. Therefore, it is essential to examine the moderating effect of logistics capabilities on the connection between order management practices and the performance of small-scale processing firms in emerging economies like Tanzania.

The remainder of this paper is structured as follows: Section 2 outlines the theoretical framework and hypothesis development, Section 3 details the research methodology employed, Section 4 presents the study's findings and discussion, and Section 5 offers the study's implications, limitations and direction for future studies.

2. Theoretical underpinnings and hypotheses

2.1 The resource dependency theory

This study is grounded in the resource dependency theory (RDT), originally proposed by Pfeffer and Salancik (1978) and later expanded by Reitz et al. (1979), which posits that organisations are not self-sufficient but must rely on external actors to access critical resources. The core proposition of RDT is that organisational survival and success depend on how well firms manage dependencies and uncertainty arising from their external environment (Pfeffer & Salancik, 2003). Firms facing high interdependence are, therefore, driven to adopt strategies that reduce vulnerability and increase

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control over essential external resources. This makes the theory particularly relevant in the context of SSGP firms, which rely on external parties, such as farmers, distributors, and transportation networks, for raw materials, order fulfilment, and market access. In line with the assumptions of RDT, this study conceptualises order management practices as activities influenced by external resource conditions and logistics capabilities as a moderating internal resource that helps firms navigate these dependencies and improve performance outcomes (Çeltekligil et al., 2019).

While RDT provides a strong basis for analysing external dependencies, it tends to underemphasise the role of internal capabilities in managing those dependencies (Casciaro & Piskorski, 2005). This limitation is addressed in the current study by integrating logistics capabilities as a firm's internal resources comprising knowledge, skills, education and other related resources to moderate the effect of order management practices on firm performance. In doing so, the theory not only guided the identification of relevant variables but also helped shape the central research problem: understanding when logistics capabilities moderate the relationship between order management practices (which are heavily shaped by external dependencies) and firm performance. By applying RDT in this way, the study conceptualises a problem rooted in the need for SSGP firms to manage external resource pressures effectively while leveraging internal strengths, an issue particularly relevant in developing economies where both constraints and interdependencies are significant (Kisinga et al., 2024a; Kimario & Kira, 2023; Kulwijila et al., 2018).

2.2 Hypotheses

2.2.1 Order fulfilment management and firm performance

Order fulfilment management is a fundamental component of supply chain operations that involves the systematic handling of customer orders from receipt through to final delivery. It ensures that goods are delivered accurately and on time, which is essential for maintaining customer satisfaction and repeat business (Schwarz, 2023). In a dynamic and competitive business environment, effective order fulfilment enhances a firm's ability to protect its brand reputation, reduce logistical inefficiencies, and increase profitability, thereby contributing significantly to business growth (Robertson, 2021). From the perspective of RDT, firms seek to reduce uncertainty and gain operational control by minimising reliance on external partners. The optimisation of order fulfilment processes enables firms to internalise key supply chain activities, thus decreasing their dependency on external actors and enhancing their responsiveness to market demands (Bretherton & Chaston, 2018). This internal control is particularly vital for firms operating with limited resources, such as small-scale processors.

Despite the theoretical importance of order fulfilment, empirical evidence remains inconclusive. Some studies, such as those by Mori (2024) and Anon (2023), report a positive association between order fulfilment practices and firm performance. Conversely, Hopstack (2024) presents findings indicating an insignificant relationship. Moreover, existing studies have predominantly focused on large-scale processing firms (Kimario & Mwagike, 2024), disposable product industries (Heydari et al., 2020), or the optimisation of warehouse performance (Mohring et al., 2024), with limited attention paid to the unique context of SSGP firms. This gap necessitates further investigation tailored to the realities of SSGP operations. In response to these theoretical and empirical gaps, the present study investigates the relationship between order fulfilment management practices and performance among SSGP firms in Tanzania. Accordingly, the following hypothesis was proposed:

H1: Order fulfilment management has a positive and significant effect on firm performance

2.2.2 Information flow management and firm performance

Information flow has become an essential component for successful firm performance in today's competitive environment (Ajoke et al., 2019). It serves as the foundation for coordination and collaboration across order management and logistics operations (Baihaqi & Sohal, 2013). Efficient information flow supports operational visibility and enables informed decision-making throughout the order lifecycle, which is vital for maintaining customer satisfaction and achieving performance gains (Sunol, 2024). Drawing on RDT, effective information flow reduces uncertainty by improving access to timely and accurate data across the supply chain. For SSGP firms, the ability to coordinate procurement, production, and delivery through real-time information sharing enhances their responsiveness to market demands and strengthens their overall order management capabilities (Bretherton & Chaston, 2018; Bretherton & Chaston, 2005).

Despite its theoretical significance, empirical findings on the effect of information flow on firm performance remain mixed. Some studies (Mori, 2024; Gebisa, 2023; Nthiwa & Wanjiru, 2017) report a positive and significant impact, while others, such as Badenhorst et al. (2013), suggest a negative relationship, particularly for firms with limited technological capacity. Moreover, much of the existing research has focused on large firms such as flour mills (Ajoke et al., 2019) and bottle manufacturing industries (Nyaberi et al., 2014) with little consideration of small-scale processing environments.

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Given this gap, the present study aims to examine the effect of information flow management practices on the performance of SSGP firms in Tanzania. Understanding how information flow influences performance within this specific context was expected to guide targeted interventions aimed at enhancing operational efficiency and improving the competitiveness of these firms. Accordingly, the following hypothesis was proposed:

H2: Information flow management has a positive and significant effect on firm performance

2.2.3 Multichannel order management and firm performance

Multichannel order management has become essential for modern business operations, as it enables firms to optimise sales, improve customer experience, and enhance market reach across diverse platforms (Gallino & Rooderkerk, 2020). It refers to a coordinated approach to handling customer orders across multiple sales channels, including direct sales, e-commerce platforms, and local distributors (Samani, 2024). Through the integration of order processing, inventory control, and fulfilment systems, multichannel order management practices ensure consistent and efficient delivery of products, regardless of the channel through which an order is placed. Informed by RDT, multichannel order management can reduce uncertainty by enabling firms to manage their dependencies on various external channels through improved coordination and visibility (Çeltekligil et al., 2019). By consolidating order data from physical shops, online platforms, and third-party retailers into a unified system, firms can track, process, and fulfil orders more effectively, thereby increasing operational control and strategic responsiveness (Bressolles & Lang, 2020).

Previous studies on the impact of multichannel order management on firm performance are inconclusive, with studies reporting varying results. For instance, studies by Bressolles and Lang (2020) highlight its positive contribution to customer satisfaction and firm performance. In contrast, Le (2023) reports a negative relationship, particularly among small firms that lack the technological infrastructure and resources to manage multiple channels effectively. Furthermore, existing literature largely focuses on retail and service-based industries, leaving a knowledge gap regarding how multichannel order practices function within small-scale processing firms. To address this gap, the present study investigates the effect of multichannel order management practices on the performance of SSGP firms in Tanzania. Accordingly, the following hypothesis was proposed:

H3: Multichannel order management has a positive and significant effect on firm performance

2.2.4 The moderating effect of logistics capabilities

The concept of capability is a core element of RDT, representing internal strengths, such as skills, knowledge, experience, and education, that enable firms to effectively leverage external resources and navigate environmental uncertainties (Sazzadur & Khan, 2019). Logistics capabilities, in particular, refer to a firm's ability to manage the flow of goods, services, and information in a way that reduces dependency on external actors, improves control, and enhances performance (Agbandzo et al., 2024). For SSGP firms, these capabilities are essential for maintaining operational efficiency and competitive positioning. Logistics capabilities in small scale processing firms encompass a wide range of competencies, including proficiency in order management systems, product knowledge, market awareness, and technical expertise in process optimisation, communication, and distribution management (Poku, 2022; Bretherton & Chaston, 2018). These capabilities support timely decision-making, enhance supply chain coordination, and ensure effective responses to market demands, which is particularly vital in firms handling perishable products like grapes.

Within this study's conceptual model, logistics capabilities are posited to moderate the relationship between order management practices and firm performance. According to Agbandzo et al. (2024), logistics capabilities determine how effectively a firm can execute order fulfilment, manage information flows, and coordinate across multiple sales channels. A firm with strong logistics capabilities is better positioned to maximise the benefits of order management practices. For example, the ability to respond quickly to order changes, streamline communication, or track deliveries in real time amplifies the positive effect of order management practices on performance. Empirical studies present mixed findings regarding the role of logistics capabilities in enhancing performance. In contrast, some scholars report a positive influence (Kisinga et al., 2024a; Bag et al., 2020), while others, such as Sazzadur and Khan (2019) and Joong-Kun Cho et al. (2008), have found either insignificant effects, especially in contexts where firms lack the infrastructure to fully utilise such capabilities. These inconsistencies highlight the need for further investigation, particularly within small-scale processing firms where resource constraints may limit the effective application of logistics capabilities. Given the limited evidence on how logistics capabilities influence the effectiveness of order management practices in small-scale processing environments, this study introduces logistics capabilities as a moderating variable. It examines how these capabilities condition the relationship between each dimension of order management practices and firm performance. Accordingly, the following hypotheses were proposed (See Figure 1):

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H4: Logistics capabilities positively and significantly moderate the relationship between order fulfilment management and firm performance

H5: Logistics capabilities positively and significantly moderate the relationship between information flow management and firm performance

H6: Logistics capabilities positively and significantly moderate the relationship between multichannel order management and firm performance

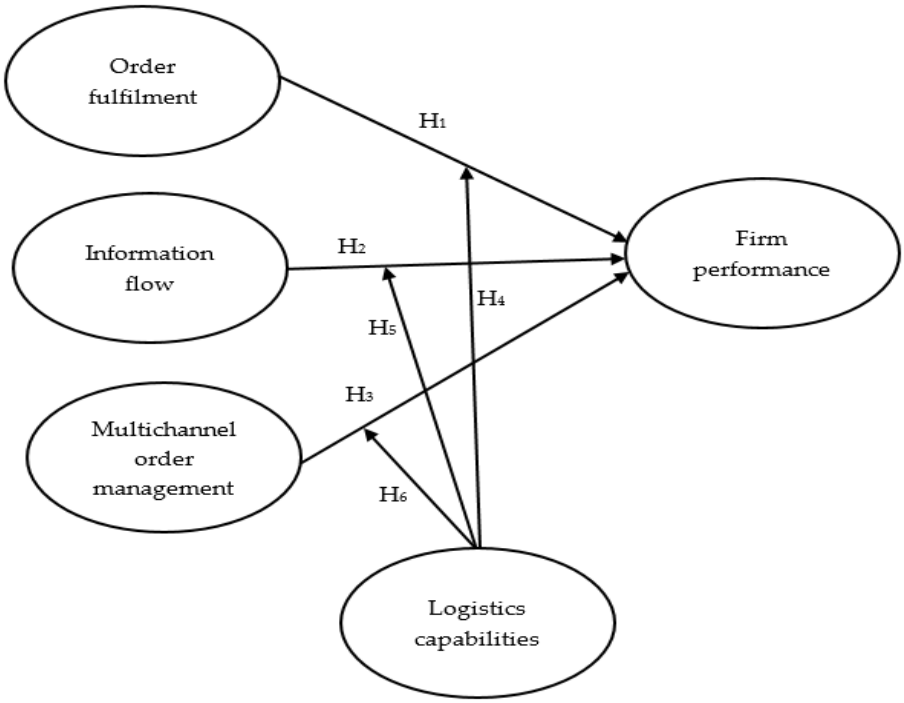

Figure 1. The Conceptual framework
Source: Figure by authors

3. Methodology

3.1 Research design and study area

This study adopted a cross-sectional survey design, as data were collected at a single point in time without the need to monitor temporal changes (Jongbo, 2014). This design provides a scientifically robust framework for examining relationships among multiple variables within a defined population, making it appropriate for the study's objectives. Given the objective of the study, to examine the moderating effect of logistics capabilities on the relationship between order management practices and performance of SSGP firms, this design was particularly suitable for establishing a snapshot without the need for longitudinal tracking (Bryman, 2016).

In the context of small-scale, resource-constrained firms such as SSGPs in Tanzania, longitudinal or experimental designs are often infeasible due to financial, operational, and accessibility limitations. Therefore, cross-sectional surveys offer a methodologically credible alternative that still allows for valid explanatory inferences (Creswell & Creswell, 2018). This approach is widely accepted in organisational and supply chain research for studying behavioural, operational, and relational dynamics across firms at a given moment (Saunders et al., 2019). Moreover, similar studies in agro-processing and small-scale manufacturing contexts have successfully used cross-sectional designs to explore inter-variable linkages in developing economies (Bag et al., 2020). Thus, the selection of this design enhances both the relevance and methodological credibility of the findings within the SSGP settings.

The study was conducted in Dodoma City, one of the seven administrative districts within the Dodoma Region, which also includes Chamwino, Kongwa, Mpwapwa, Bahi, Chemba, and Kondoa. The decision to select Dodoma City was driven by its strategic role as the epicentre of grape cultivation and wine production in Tanzania (Kalimang`as et al., 2021). Empirical data show that Dodoma Urban contributes nearly 70% of the region's total grape output, highlighting its significance as both a production and processing hub (Nalyoto & Ngaruko, 2022). Furthermore, the majority of SSGP firms in Tanzania are concentrated in Dodoma City, primarily due to its central location within the country's grape farming corridor and its proximity to grape producers (Kisinga et al., 2024b; URT, 2022). These firms

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serve as a vital market for local grape farmers and represent a critical yet under-explored component of Tanzania's agricultural value chain. Therefore, selecting Dodoma City as the study area ensures practical relevance, given the high density of operational SSGP firms and their direct linkage to regional grape production.

3.2 Sampling and data collection

A census approach was employed in this study to ensure comprehensive coverage of the target population, which consisted of 202 active SSGP firms registered by the Small Industries Development Organization (SIDO) (URT, 2022). Given the relatively small and accessible population size, full enumeration was deemed feasible and methodologically sound. Census is particularly appropriate when studying a manageable population, as it eliminates sampling error, enhances data reliability, and ensures that findings reflect the entire population rather than a subset (Saunders et al., 2019; Taherdoost, 2016). Furthermore, in empirical research involving specialised industries such as agro-processing or small-scale manufacturing, census approaches are commonly adopted to improve validity and avoid the potential distortions introduced by sampling variability (Mwakyeja & Kimario, 2024). The decision to use census approach was therefore aligned with both the study context and established methodological recommendations for small population. Moreover, purposive sampling was employed to select 202 firm owners as units of observation. Firm owners were chosen as respondents because they are high-ranking informants and are believed to offer more reliable information than lower-ranking employees (Li et al., 2006).

During the data collection phase, respondent engagement was facilitated through an introductory letter accompanying the survey. This letter outlined the purpose of the study and clearly stated that the data was being collected solely for academic purposes. All participants were literate and thus provided written informed consent by voluntarily signing the consent form presented by the researcher. Participation was entirely voluntary, and respondents were free to express their views through the questionnaire without any form of coercion (Creswell & Creswell, 2018). A survey questionnaire was employed as the primary data collection instrument due to its ability to facilitate the efficient collection of standardised data from a large number of respondents within a relatively short period. This method is well-suited for explanatory research, particularly when the objective is to examine relationships among variables across a defined population (Creswell & Creswell, 2018). The drop-and-pick method was used to distribute and collect the questionnaires, enabling respondents to complete them at their convenience while allowing researchers to follow up in person to improve the response rate.

Prior to the main data collection, the questionnaire was pre-tested on a sample of 30 SSGP firms located in Bahi, Chemba, Kondoa, and Chamwino districts, which are not located in the area of this study. This sample represented approximately 15% of the total study population of 202 firms. Such a proportion falls within the range recommended by methodological literature, which suggests that 10% to 20% of the population is appropriate for pilot testing in survey-based research (Presser et al., 2004). The pre-test aimed to evaluate the clarity, relevance, and internal consistency of the instrument, enabling refinement of the wording, structure, and translation prior to full-scale deployment. Conducting the pre-test outside the main study area minimised the risk of response bias while still obtaining feedback from firms with similar characteristics. In addition, research assistants were trained to ensure uniform interpretation of the questionnaire.

3.3 Measurements

3.3.1 Dependent variable

This study used firm performance as the dependent variable, measured through a combination of financial indicators and non-financial indicators, including sales growth, profit growth, asset, and market share growth (Kisinga et al., 2024a; Razzak et al., 2021). These measures are widely acknowledged in existing literature as appropriate indicators for evaluating performance in small enterprises (Kiyabo & Isaga, 2020; Forth & Bryson, 2019). The indicators were assessed on a five-point Likert scale, with 1 representing "not at all" and 5 indicating "to a very great extent." To assess firm performance, this study employed a five-point Likert scale, a measurement approach that has been empirically validated as both reliable and strongly correlated with objective performance outcomes (Ramírez-Solis et al., 2022; Rajala & Tidström, 2022; Wall et al., 2004; Gregory & Richard, 1984). The Likert scale was particularly appropriate for this context because they are well-suited for measuring subjective constructs (Ramírez-Solis et al., 2022; Rajala & Tidström, 2022).

The study utilised four (4) validated subjective items derived from previous empirical research (Lubawa & Osabuohien, 2023; Lubawa & Raphael, 2023; Razzak et al., 2021; Kellermanns et al., 2012; Zulkifflia & Perera, 2011). The use of subjective performance measures was especially relevant in small scale firms, where access to audited financial records is often difficult due to informal business practices and inconsistent record-keeping (Addo et al., 2024; Lubawa & Raphael, 2023; Sorama & Joensuu-Salo, 2023; Mashavira et al., 2022; Zulkifflia & Perera, 2011). In such settings, subjective assessments offer a reliable and valid alternative to objective financial metrics. Moreover, subjective

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indicators capture critical non-financial aspects of performance that are particularly relevant for small-scale firms. For instance, small-scale firms, which are typically family-owned, often assess performance in relation to firm-specific objectives and aspirations established by the owning family, for which subjective performance measures are more appropriately suited (Razzak et al., 2021).

3.3.2 Independent variable

The study operationalised and measured order management practices among SSGP firms by adapting constructs from established empirical and theoretical literature, thereby enhancing the reliability and validity of the variables employed. The independent variables comprised three (3) key dimensions: (i) order fulfilment management, adapted from Heydari et al. (2020) and Davis & Roberge (2023), which assessed the firm's ability to receive, process, and deliver customer orders, measured through six (6) indicators; (ii) information flow management, drawn from Ajoke et al. (2019) and Mwangangi (2016), which evaluated the firm's capacity to share timely and relevant information to support the smooth flow of materials and customer orders, also measured by six (6) indicators; and (iii) multichannel order management, based on the works of Le (2023) and Bressolles & Lang (2020), which captured the firm's ability to manage multiple sales and distribution channels for marketing, selling, and product delivery, measured using five (5) indicators. All constructs were assessed using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

3.3.3 Moderating variable

In this study, Firm Logistics Capabilities (FLCs) were examined as a moderating variable and measured using five (5) validated statements adapted from Agbandzo et al. (2024), George & Kerai (2024), Tukamuhabwa et al. (2021), Pham & Hoang (2019). The items captured key dimensions of logistics capacity, including knowledge, skills, experience, education, and resource availability. A five-point Likert scale was employed, ranging from 1 ("to no extent") to 5 ("to a very large extent"), to assess respondents' perceptions of their firm's logistics competencies.

The definition and measurement of variables are presented in Table 1. This explains the meaning of the variable used, as well as operational definitions.

Table 1. Definition and measurements of variables

Variables	Acronym	Operational definition
Dependent variable		
Firm performance	FP	A firm's capacity to successfully and efficiently meet its objectives and targets.
Independent variables		
Order fulfilment management	OFM	Firm's ability to receive, process, and deliver customer orders at the right time, right quantity, right quality, and right place.
Information flow management	IFM	Firm's capability to share relevant information promptly, ensuring efficient and reliable flows of materials and customer orders.
Multichannel order management	MOM	Firm's ability to manage multiple sales and distribution channels for marketing, selling and delivering products to customers.
Moderating variable		
Firm's Logistics capabilities	FLCs	The capacity of SSGP firm to manage customer orders and execute its internal tasks and responsibilities related to order management.

Source: Table by the authors

3.4 Reliability and validity

To assess construct validity and reliability, Composite Reliability (CR) was employed alongside measures of convergent and discriminant validity, in alignment with prior studies (Said et al., 2011). A CR value of 0.70 or above indicates satisfactory internal consistency of the constructs. Convergent validity is considered established when the average variance extracted (AVE) reaches 0.50 or higher and is less than the CR, reflecting that the construct explains more variance than is attributed to measurement error and cross-loadings. Discriminant validity is confirmed if the AVE exceeds the maximum shared variance (MSV), ensuring distinctiveness among constructs. The establishment of construct validity and reliability thus provides a sound foundation for assessing the overall model fit using multiple goodness-of-fit indices. Various indices were used to evaluate the overall fit of both the proposed and alternative models: (1) the chi-square to degrees of freedom ratio (χ^2/df), where values below 5 indicate an acceptable fit; (2) the

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Goodness of Fit Index (GFI); (3) the Comparative Fit Index (CFI), with values of 0.90 or above signifying an acceptable fit; and (4) the Root Mean Square Error of Approximation (RMSEA), with values under 0.05 indicating a good fit.

3.5 Data analysis

Covariance-based structural equation modelling (CB-SEM) was employed to examine the relationship between order management practices and firm performance moderated by the firm's logistics capabilities. CB-SEM is a second-generation multivariate analysis technique employed due to its robustness in theory testing and its ability to assess complex causal relationships involving multiple latent constructs simultaneously. Unlike other models, CB-SEM allows for the estimation of measurement error and the evaluation of model fit indices, thereby enhancing the reliability and validity of the results (Hair et al., 2010). Furthermore, CB-SEM is particularly suited for confirmatory research where the theoretical model is well-established, as it tests how well the proposed model fits the observed data based on covariance structures. Given that this study aimed to validate a theory-driven model involving latent constructs such as order management practices, firm performance, and logistics capabilities, CB-SEM was the most appropriate analytical technique (Edeh et al., 2023; Nasution et al., 2020).

As described by Nu'man et al. (2020), CB-SEM comprises two main components: confirmatory factor analysis (CFA) and the structural model. CFA helps identify the relationships between observed variables and the latent constructs in the proposed model and plays a crucial role in validating and ensuring the reliability of the measurement tools (Hernandez, 2010). Numerous studies, such as those by Jung et al. (2010), have utilised CFA to assess measurement validity and reliability. In this study, CFA was utilised to confirm the reliability and validity of the constructs associated with order management practices, firm performance, and logistics capabilities.

The structural model demonstrates the interconnections among latent variables, detailing how specific unobserved variables directly or indirectly influence other latent variables within the model. In this study, a structural model was applied to assess the influence of order management practices on firm performance, moderated by the firm's logistics capabilities. Analysis was performed using IBM AMOS software version 21, with a significance level of 5%.

4. Findings and discussion

4.1 Characteristics of respondents and firms

The study's findings reveal that the majority of participants were male, with 172 (85.1%) men and 30 (14.9%) women. A significant number of respondents, 88 (43.6%), were aged between 36 and 50, followed by 64 (31.7%) who were under 35. The remaining 50 (24.7%) respondents were 50 years or older. Regarding education, 30 (15.0%) held certificates or diplomas, 26 (13.0%) had completed secondary education, while the majority, 92 (46.0%), had only primary education, and 52 (26.0%) held bachelor's degrees. Additionally, a considerable proportion of SSGP firms, 106 (52.5%), had been operating for three to four years, with 57 (28.2%) in business for five to six years. The remaining 39 (19.3%) firms had been established for over seven years. Table 2 depicts the results on characteristics of respondents and firms.

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Table 2. Characteristics of respondents and firms

Variable	Frequency	Percent
Gender		
Male	172	85.1
Female	30	14.9
Total	**202**	**100.0**
Years of the business		
3-4	106	52.5
5-6	57	28.2
7+	39	19.3
Total	**202**	**100.0**
Number of employees		
1-5	128	63.4
6-7	57	28.2
8-30	17	8.4
Total	**202**	**100.0**
Number of technical employees		
One	158	78.2
Two	32	15.8
Three	10	5.0
Ten	2	1.0
Total	**202**	**100.0**
The education level of the owner		
Primary	92	46.0
Secondary	26	13.0
Certificate or Diploma	30	15.0
Bachelor	52	26.0
Total	**202**	**100.0**
Age of the respondents		
35 and below	64	31.7
36-50	88	43.6
51 and above	50	24.7
Total	**202**	**100.0**

Source: Table by the authors

4.2 Common method bias

This study employed a self-administered structured questionnaire for data collection, which is often associated with the risk of response bias. To assess the presence of common method bias, Harman's single-factor test was conducted. The results showed that a single factor accounted for approximately 31.2% of the total variance. Since this value falls below the recommended threshold of 50% (Findley et al., 2021; Podsakoff et al., 2003), it was concluded that common method bias did not pose a significant concern in this study.

4.3 CFA results

It was explained in the methodological section that CFA was used to test the reliability and validity. The fit statistics of the proposed model are presented in Table 3. As seen in the table, the proposed model had fit values near those used as cut-off points. For instance, the X^2/df index of the proposed model is 3.730, which is less than 5, indicating that the proposed model better fits the data than the alternative models. On the other hand, the obtained value of the GFI (0.954) and CFI (0. 916) indexes were greater than the recommended value of 0.9. Similarly, the value of RMSEA (0.041) is less than 0.05, which is the recommended threshold (Said et al., 2011). Therefore, the fit statistics of the proposed CFA model were better compared to other alternative models; the proposed CFA model presented in Figure 2 for order management practices and firm performance better fit the data.

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Table 3. CFA model fit indices

Fit statistic	Recommended	Obtained
X^2	-	1450.789
Df	-	389
X^2/df	< 5	3.730
GFI	> 0.90	0.910
CFI	> 0.90	0.955
RMSEA	< 0.05	0.041

Source: Table by the authors

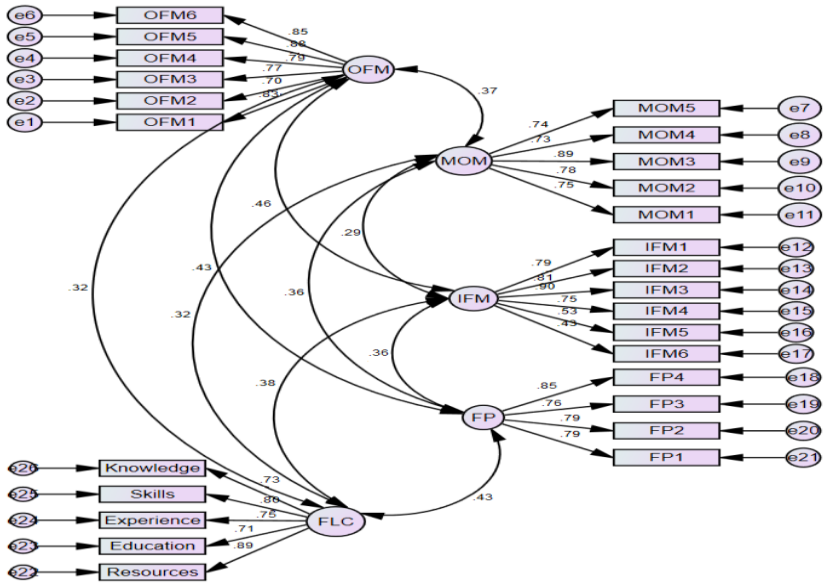

Figure 2. The CFA model (standardised estimates)

Source: Figure by authors

As indicated before, three indicators, composite reliability (CR), convergent, and discriminant validity, were used to assess construct validity and reliability from the proposed mode. Table 4 presents the reliability, convergent, and discriminant validity. For reliability, the proposed model had the following reliability indices: OFM (CR = 0.91), IFM (CR = 0.904), MOM (CR = 0.886), firm performance (CR = 0.923), and FLC (CR=0.850). The values of the Composite Reliability index for all constructs of order management practices, firm performance, and logistics capabilities (FLC) were greater than 0.7, which indicates good reliability for all constructs (Findley et al., 2021). Concerning convergent validity, the results showed that the AVE of the constructs ranged from 0.532 to 0.752. For convergent validity, AVE should be greater or equal to 0.50 and lower than CR (Said et al., 2011). This finding provides good evidence of the presence of convergent validity. This means that much variance of the construct indicators is explained by the construct rather than the measurement error.

Regarding the discriminant validity, the low correlations among the four constructs, ranging from 0.29 to 0.46 (Figure 2), is an indication of discriminant validity (Ab Hamid et al., 2017). Given the evidence for multiple factors that are at least somewhat separable, we conducted more stringent discriminant validity tests via maximum shared squared variance (MSV). The results showed that, for each construct, the MSV was less than the AVE, which is an indication of discriminant validity (Findley et al., 2021). Table 4 depicts these results.

Table 4. Reliability, convergent and discriminant validity

Domain	CR	AVE	MSV
OFM	0.931	0.693	0.210
IFM	0.904	0.612	0.213
MOM	0.886	0.609	0.152
FP	0.923	0.752	0.213
FLC	0.850	0.532	0.147

Note(s): *OFM = Order fulfilment Management, IFM = Information flow management, MOM= Multichannel order management, FP = Firm performance, FLC = Firm's logistics capabilities*

Source: Table by the authors

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4.4 Structural model and hypothesis testing

The fit indices for the structural model fell within the recommended thresholds, indicating an acceptable model fit. Path analysis was conducted to examine the relationships among order fulfilment management, information flow management, and multichannel order management.

4.4.1 The direct influence of order management practices on firm performance

Also, as presented in the methodological section, the structural equation model used to assess the influence of order management practices on firm performance. Generally, the findings reveal that order management practices positively influence firm performance, as indicated in the standardised estimates in Figure 3.

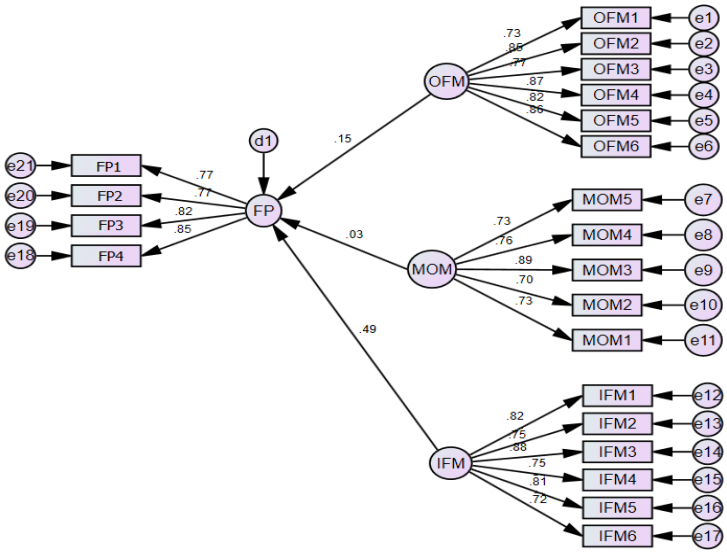

Figure 3. The structural model (standardised estimates) for the direct effects
Source: Figure by authors

These results are more detailed in Table 5. They show the parameter estimates, standard error, and the associated p-value of the fitted SEM for the influence of order management practices on firm performance without the effect of logistics capabilities as a moderation factor. Thus, the results can be interpreted as follows:

4.4.1.1 Order fulfilment management and firm performance

The SEM results in Table 5 revealed that order fulfilment management, as one of the components of order management practices, was significantly positively related to firm performance ($\beta = 0.579$, $p = 0.041$). Therefore, H1 was confirmed. This finding implies that a unit increase in order fulfilment practice score was associated with an increase in firm performance score by 0.579 units. The reason for this significant relationship is due to the fact that, since grapes are a seasonal product, through order fulfilment practices, SSGP firm has been able to forecast their demand by placing their orders early to grapes farmers, leading to optimisation of inventory levels based on their storage capacity, thus, reducing the risks of stockouts or excess inventory leading to meeting market demand (Kulwijila et al., 2018).

Furthermore, effective order fulfilment provides SSGP firms with real-time tracking and visibility of orders, which is essential when dealing with perishable produce like grapes. This practice allows SSGP firms to monitor the status of raw material deliveries and respond swiftly to any delays or issues, thus satisfying their customers. Additionally, the management of order fulfilment facilitates the efficient handling of picking and packing activities, which is crucial for maintaining the integrity of the grapes throughout the process. On the other hand, order fulfilment ensures grapes products are delivered to customers on time and in the right quantity while maintaining product quality, enhancing to minimise loss or damage of products. Further, by ensuring all orders are fulfilled on time and in the right quantity, the SSGP firm can be able to maintain proper inventory levels, thus improving firm performance.

The findings of this study aligned with Mori (2024) and Sugiarto (2016), who found that effective order fulfilment is important in contributing to business growth as it ensures firms exceed customer expectations by delivering on time while maintaining product quality, enhancing a firm's ability to differentiate itself from competitors. Further, Gebisa (2023) insists that by managing the order fulfilment process, a firm can establish clear and open communication channels with suppliers of raw materials to ensure timely delivery. The findings are theoretically consistent with RDT, which highlights that effectively managing external resource dependencies enhances a firm's performance.

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4.4.1.2 Information flow management and firm performance

Also, Table 5 shows that information flow practice was also significantly associated with firm performance (β = 0.848, p < 0.001). Therefore, H2 was confirmed. The results suggest that an increase in information flow management by one unit increased the firm performance score by 0.848 units. The explanation for this relationship lies in the fact that effective information flow management enhances the responsiveness and efficiency of SSGP firms by improving inventory tracking, reducing waste through more accurate demand forecasting, and enabling quicker adjustments to production and distribution. These improvements collectively contribute to enhanced operational performance and increased customer satisfaction, as firms are better equipped to meet market demands while minimising inefficiencies. A clear and concise information flow acts as a link to ensure a smooth flow of raw materials and finished goods along the grapes supply, thus minimising supply chain disruption, leading to improved firm performance. These findings match with the study done by Mushi et al. (2021) who revealed that information flow is considered an asset since efficient and reliable material flows are not possible without it. Likewise, Nthiwa and Wanjiru (2017) found that the flow of accurate, real-time information in logistics was considered vital to the flow of materials and finished goods. Furthermore, the findings are linked with RDT which highlights the critical role of optimising information exchange to manage relationships with suppliers and customers and reduce external resource pressures.

4.4.1.3 Multichannel order management and firm performance

Concerning H3, the finding in Table 5 reveals that the influence of multichannel order management on firm performance was not significant (β = 0.049, p = 0.628). Consequently, H3 was not confirmed. This result indicates that as a firm invests in managing multichannel orders, its performance does not necessarily improve. This may be attributed to a lack of knowledge and skills in effectively utilising different channels to meet customer needs, which is particularly critical for small-scale processing firms, including SSGP firms. These firms often face challenges in integrating and optimising multiple channels due to limited resources, insufficient expertise, and the complexities involved in managing diverse customer touchpoints in a coordinated manner. The findings are linked to studies conducted by Le (2023), who argues that fulfilling orders from multiple sales channels can be complex and costly as it requires a firm to manage multiple distribution carriers, packaging requirements, and delivery times. However, the findings contradict the recommendations of RDT, which emphasise the firm's ability to reduce uncertainties associated with multiple external relationships by managing its dependencies through coordinating with various external channels.

Table 5. The parameter estimates of the structural model for the direct effects

Endogenous <--- Exogenous	Estimate	S.E.	CR.	p	R square	Decision
FP <--- OFM	0.579	0.283	2.045	0.041		Accepted
FP <--- IFM	0.848	0.127	6.657	< 0.001	0.504	Accepted
FP <--- MOM	0.049	0.101	0.484	0.628		Not Accepted

Note(s): *OFM = Order fulfilment management, IFM = Information flow management, MOM = Multichannel order management, FP = Firm performance*

Source: Table by the authors

4.4.2 The moderating effect of logistics capabilities on the link between order management practices and the performance of SSGP firms

The structural equation model was again used to assess the influence of order management practices on firm performance moderated by the firm's logistics capabilities (Figure 4). This figure illustrates the way the firm's logistics capabilities (FLC) were adjusted to moderate the impact of order management practices on firm performance (FP). The results in Table 6 show the parameter estimates, standard error, and the associated p-value of the fitted SEM for the influence of order management practices on firm performance with the effect of logistics capabilities as a moderation factor. It was observed that in the presence of logistics capabilities, firm performance was significantly associated with order fulfilment (p=0.038), information flow (p < 0.001), and multichannel order management (p < 0.001) among SSGP firms in the study area.

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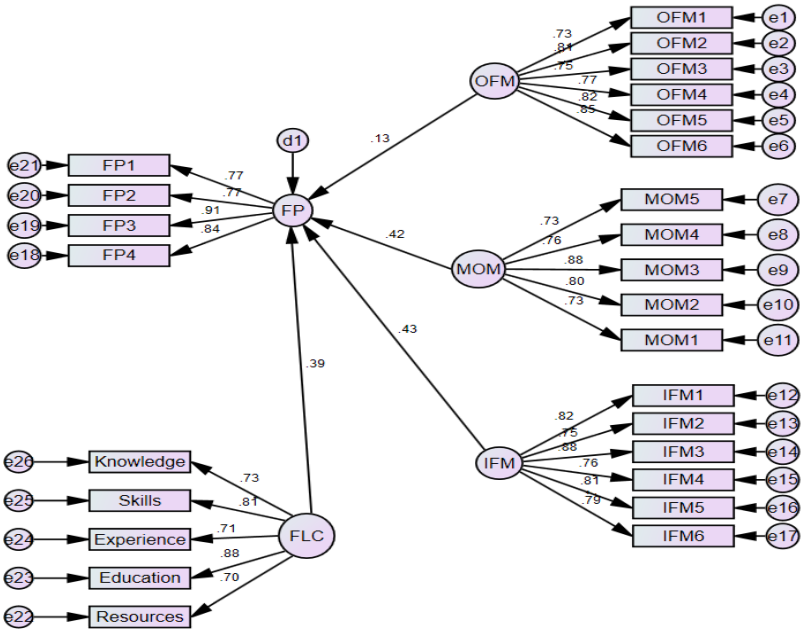

Figure 4. The structural model (standardised estimates) for the moderating effects
Source: Figure by authors

4.4.2.1 The moderating effect of logistics capabilities on the relationship between order fulfilment management and firm performance

The results presented in Table 6 indicate that logistics capabilities significantly moderated the relationship between order fulfilment management practices and firm performance. Specifically, after incorporating logistics capabilities as a moderator, a unit increase in the order fulfilment practice score led to an increase of 0.497 units in firm performance ($\beta = 0.497$, $p = 0.038$). Accordingly, Hypothesis 4 was supported. This finding suggests that when SSGP firms possess strong logistics capabilities, such as knowledge of distribution systems, inventory control, and customer communication, they are better positioned to maximise the benefits of their order fulfilment efforts. These capabilities enable firms to make prompt, informed decisions regarding inventory management, optimise distribution routes to reduce costs, and quickly respond to supply chain disruptions (Mori 2024).

Furthermore, skilled employees enhance communication with customers and suppliers, which minimises order errors, reduces the incidence of stockouts or overstocking, and ultimately lowers the costs associated with product returns and excess inventory. When integrated effectively, logistics capabilities allow SSGP firms to deliver orders on time, meet customer expectations, and preserve product quality, factors that contribute directly to improved performance (Baía & Ferreira, 2024; Joong-Kun Cho et al., 2008). These results are consistent with the work of Gebisa (2023) and Sugiarto (2016), who found that effective order fulfilment, when supported by internal capabilities, leads to reduced carrying costs and enhanced operational efficiency. The findings also align with the assumptions of RDT, which emphasises the importance of internal capabilities in managing external dependencies. In this context, logistics capabilities serve as a strategic resource that enables firms to enhance supply chain responsiveness, differentiate from competitors, and support sustainable business growth.

4.4.2.2 The moderating effect of logistics capabilities on the relationship between information flow management and firm performance

The findings in Table 6 reveal that logistics capabilities significantly moderate the relationship between information flow management and firm performance. Specifically, after accounting for the moderating effect, a unit increase in information flow management practices leads to an increase of 0.719 units in firm performance ($\beta = 0.719$, $p < 0.001$). As such, Hypothesis 5 was supported. This result highlights the critical role of logistics capabilities, such as experienced, skilled, and educated personnel, in facilitating efficient and effective information flow. Firms with strong logistics capabilities are more likely to gather, process, and communicate accurate information across departments, suppliers, and customers. This, in turn, enables the firm to better understand and respond to customer needs, ensuring that the right products are delivered in the correct quantity, to the right place, at the right time, and with the required quality.

Moreover, effective information flow minimises misunderstandings and misinterpretations in customer orders, reducing the likelihood of delays, incorrect deliveries, or lost sales. Logistics capabilities act as a connecting element across the order processing cycle, ensuring seamless coordination among departments. This internal coordination

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allows SSGP firms to manage their order processing systems more effectively and make timely decisions, particularly in adjusting production plans based on raw material availability. This is particularly important in the context of grape processing, where seasonality in grape production poses supply challenges. Firms with strong logistics capabilities and access to reliable information can better forecast demand, schedule procurement, and avoid stockouts, thereby improving performance outcomes.

These findings are consistent with those of Mori (2024) and Kulwijila (2021), who found that logistics capabilities enhance the positive relationship between information flow and performance. Similarly, Demski et al. (2022) reported that firms with advanced logistics capabilities are better positioned to communicate with customers and adjust orders based on feedback, leading to improvements in innovation, product quality, and customer satisfaction. The findings also align with RDT, which underscores the importance of internal capabilities in managing external dependencies and mitigating information asymmetries. By strengthening internal logistics capabilities, firms are able to control and effectively leverage external information flows, thereby achieving superior organisational outcomes.

4.4.2.3 The moderating effect of logistics capabilities on the relationship between multichannel order management and firm performance

The moderated results presented in Table 6 show a statistically significant relationship between multichannel order management and firm performance after accounting for the effect of logistics capabilities ($\beta = 0.421$, $p < 0.001$). Accordingly, Hypothesis 6 was supported. This finding suggests that logistics capabilities strengthen the positive effect of multichannel order management on firm performance among SSGP firms in Tanzania. Most of these firms have traditionally relied on face-to-face sales through nearby outlets such as local bars. However, the results indicate that when firms develop internal logistical competencies, such as skilled human capital, knowledge of sales platforms, and basic supply chain infrastructure, they are better equipped to manage sales across multiple channels, thereby expanding market reach and improving operational performance (Samani, 2024; Le, 2023).

Logistics-related capabilities play a crucial moderating role by enabling firms to diversify distribution strategies. These include partnerships with regional distributors, collaboration with distant vendors, or adoption of digital platforms. In a sector where customer bases are often geographically constrained and distribution informal, such capabilities are essential for overcoming bottlenecks, preventing service delays, and ensuring consistent delivery outcomes (Kimaro et al., 2024; Saah, 2022).

Also, the results underscore the importance of investing in business education, supply chain skills, and logistics technology. These resources enhance the firm's ability to process orders across multiple channels effectively and adjust to varying customer needs. Consequently, firms gain access to broader markets, improve delivery efficiency, and minimise losses, factors that are critical to performance in Tanzania's evolving but fragmented agri-processing sector. The findings are in line with those of Irwin et al. (2022), who found that firms with well-developed logistics capabilities can better manage multichannel operations, thus enhancing customer accessibility and overall market responsiveness. Similarly, Issah et al. (2025) demonstrate that logistics and technological capabilities are key enablers of agility in SMEs, allowing for adaptive distribution and improved market responsiveness.

From a theoretical perspective, these results reinforce the assumptions of RDT, which posits that internal capabilities enable firms to effectively manage their dependencies and uncertainties in the external environment (Pfeffer & Salancik, 2003). In this context, logistics capabilities serve as essential enablers, allowing SSGP firms to coordinate complex order and distribution flows across multiple channels, ultimately driving improved performance in resource-constrained and localised operating environments. It was noted that order management practices accounted for about 62.1% of the variability in firm performance ($R^2 = 0.621$), with logistics capabilities acting as a moderating factor (see Table 6).

Table 6. The parameter estimates of the structural model for the moderating effects

Endogenous <--- Exogenous	Estimate	S. E	CR	p	R square	Decision
FP <--- OFM	0.497	0.212	2.344	0.038	0.621	Accepted
FP <--- MOM	0.421	0.095	4.432	< 0.001		Accepted
FP <--- IFM	0.719	0.118	6.111	< 0.001		Accepted
FP <--- FLC	0.452	0.096	4.709	< 0.001		Accepted

Note(s): OFM = Order fulfilment management, IFM = Information flow management, MOM = Multichannel order management, FP = Firm performance, FLC = Firm's logistics capabilities

Source: Table by the authors

5. Study implications, limitations and direction for future studies

5.1 Theoretical Implications

This study contributes to the development of RDT by validating its applicability in the context of SSGP firms in developing economies. The findings confirm that firms with stronger logistics capabilities are more effective in implementing order management practices, which, in turn, positively influence firm performance. This study extends RDT by demonstrating the moderating role of logistics capabilities, showing that internal competencies can strengthen a firm's ability to manage external dependencies and reduce environmental uncertainties. It highlights specific order management practices dimensions, order fulfilment, information flow, and multichannel management as strategic interdependencies requiring internal capability development. These insights advance the theoretical understanding of how firms operating in resource-constrained environments strategically respond to external pressures.

5.2 Practical and Managerial Implications

The findings offer practical insights for managers of SSGP firms. First, firms should prioritise the adoption of cost-effective and user-friendly order management systems to streamline order processing, inventory tracking, and demand forecasting. Such systems enhance operational efficiency and responsiveness to market demands. Second, investing in employee training is critical, especially in areas such as logistics coordination, customer communication, and supply chain monitoring. Skilled personnel enable better execution of order management practices and reduce errors that could impact product quality or delivery timelines. Third, managers should consider developing multichannel strategies by exploring regional distribution networks or digital platforms to expand their market reach and reduce overreliance on informal and localised sales models.

5.3 Policy Implications

The study provides important implications for policy-makers and development agencies. There is a need to support SSGP firms through targeted capacity-building initiatives, including subsidised training in logistics management and digital literacy. In addition, policies should facilitate access to affordable technological infrastructure, such as digital order processing tools and supply chain analytics platforms. Development actors, including local governments and NGOs, can play a significant role in creating enabling environments through logistics hubs, access to finance for infrastructure upgrades, and supportive transport systems that enhance the competitiveness and growth of small-scale agro-processing enterprises.

5.4 Limitations of the study

This study is subject to certain limitations. Firstly, it adopted a cross-sectional design, was conducted within the specific context of Tanzania, and focused exclusively on small-scale firms engaged in grape processing. While this approach enabled a detailed and contextually grounded analysis, the findings may not be directly generalisable to firms operating in different countries or under varying environmental, economic, or industrial conditions. As such, caution should be taken when extending these results beyond the study context. Secondly, the analysis was based primarily on quantitative data, which may have limited the exploration of detailed, context-specific insights that qualitative methods could provide. Thirdly, the scope of the study focused exclusively on three dimensions of order management practices: order fulfilment, information flow, and multichannel management. Lastly, although the study was confined to Dodoma City in Tanzania, enabling a focused examination within a defined context, this geographic limitation may affect the extent to which the findings can be generalised to broader geographical or industrial settings.

5.5 Areas for further research

Future research could build on this study in several ways. Firstly, future research could consider applying alternative theoretical frameworks beyond RDT to examine the impact of order management practices on firm performance, potentially incorporating moderating variables such as technological capability, managerial competence, or firm size or age. Secondly, this study relied on subjective measures; therefore, future research could consider incorporating objective performance indicators to enhance measurement validity. Additionally, the study primarily employed a quantitative research approach. Relying on a single method may have limited the capture of deeper contextual insights. To address this, future studies are encouraged to adopt mixed-methods designs that combine both quantitative and qualitative techniques, thereby providing a more comprehensive and holistic understanding of the phenomenon. Lastly, future studies could explore additional variables, such as order tracking systems, lead time management, returns and reverse logistics and order batching and scheduling practices, as these may play a significant role in shaping the effectiveness of order management practices and firm performance in small-scale processing contexts.

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