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Quantitative Assessment of the Relationship between Land Management Practices, Financial Literacy, Supply Chain Integration, and Profitability in Agribusiness Enterprises

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ABSTRACT
This research explores the relationship between land management practices, financial literacy, supply chain integration, and profitability in agribusiness enterprises. Using a quantitative approach with a sample size of 150 respondents, the study investigates the influence of these factors on profitability. Results indicate significant positive relationships between land management practices, financial literacy, supply chain integration, and profitability. Sustainable land management practices enhance productivity and environmental stewardship, while financial literacy empowers stakeholders to make informed financial decisions and access capital markets. Additionally, supply chain integration improves operational efficiency and reduces costs. These findings highlight the importance of integrating good practices in farming, finance, and supply chain management for long-term success in the agricultural sector.

Keywords:
Land Management Practices; Financial Literacy; Supply Chain Integration; Profitability; Agribusiness

INTRODUCTION

Agriculture, as the primary source of food, fiber, and raw materials, plays a pivotal role in the global economy and societal well-being (Supro et al., 2020; Zuhdi et al., 2015). However, the sector faces an array of challenges, ranging from environmental degradation to economic uncertainties (Savić et al., 2020). In response to these challenges, agribusiness enterprises are constantly seeking ways to optimize their operations while maintaining profitability and sustainability (Aguilar Valdes et al., 2011).

Effective land management practices are essential for ensuring the long-term viability of agricultural production systems (Hossain et al., 2020). These practices encompass a wide range of activities, including soil conservation, water management, crop rotation, and pest control (Biriuk et al., 2023). By implementing sustainable land management practices, agribusinesses can enhance soil fertility, mitigate erosion, conserve water resources, and minimize environmental impacts, thereby promoting resilience and productivity (Alemu et al., 2023; Duran-Llacer et al., 2020).

Financial literacy is another critical determinant of success in agribusiness (Gumbo et al., 2023). In an increasingly complex and dynamic economic environment, stakeholders must possess the knowledge and skills necessary to make informed financial decisions (Obi-Anike et al., 2023). Financial literacy enables farmers, agricultural cooperatives, and agribusiness managers to assess risks, manage cash flow, allocate resources efficiently, and access financial markets effectively (Tomasi, 2020). Moreover, it empowers them to navigate challenges such as price volatility, input costs, and investment opportunities, thus enhancing their ability to generate sustainable profits (Hainzer et al., 2023; Syahnaz et al., 2023).

Supply chain integration is yet another factor that significantly influences the performance of agribusiness enterprises (Iskandar et al., 2023). In today's interconnected global economy, agribusinesses operate within complex networks of

suppliers, distributors, retailers, and consumers (Kwamega et al., 2018). Effective supply chain integration involves coordinating and streamlining the flow of goods, information, and funds across the entire value chain (Aggrey et al., 2022). By optimizing supply chain processes, agribusinesses can minimize costs, reduce lead times, improve product quality, and enhance customer satisfaction, ultimately driving profitability and competitiveness (Adriant et al., 2021; Fu et al., 2021).

Despite the recognized significance of land management practices, financial literacy, and supply chain integration, there exists a gap in understanding the quantitative relationship among these factors and their collective impact on the profitability of agribusiness enterprises. Clarifying this relationship is vital for devising evidence-based strategies to enhance sustainability and profitability in the agricultural sector.

The research objectives encompass a comprehensive investigation into the intricate dynamics of land management practices, financial literacy, and supply chain integration within agribusiness enterprises, with a specific focus on their collective impact on profitability. Through empirical analysis, the study aims to discern the influence of diverse land management practices on the financial performance of agribusinesses, shedding light on their efficacy in enhancing sustainability and profitability. Additionally, it seeks to evaluate the level of financial literacy among stakeholders in the agricultural sector, discerning its implications for profitability and strategic decision-making. Furthermore, the research endeavors to dissect the role of supply chain integration in driving operational efficiency and profitability within agribusiness enterprises, exploring the mechanisms through which streamlined supply chain processes contribute to competitive advantage and financial success. By addressing these objectives holistically, the study aims to provide actionable insights that can inform policy formulation, managerial practices, and investment strategies in the agricultural sector, ultimately fostering its resilience, sustainability, and prosperity.

Literature Review And Hypothesis Development

a. Land Management Practices and Profitability

Land management practices can significantly impact the profitability of agricultural activities. Research has shown that the adoption of sustainable land management (SLM) practices can lead to increased profitability for farmers (Kumar et al., 2023). A study in India evaluated the impact of sustainable land-use management practices on soil carbon storage and soil quality, indicating that promoting sustainable agriculture can enhance soil organic carbon storage, improve soil quality, and increase farmers' income (Paramesh et al., 2022). However, the adoption of SLM practices can be influenced by various factors. For example, a study in the northeastern highlands of Ethiopia found that variables such as land tenure security, the age of the household head, and relief support/food aid had a positive and significant influence on the adoption of SLM practices, while factors like livestock ownership, perceptions of technology profitability, and policy support had a significant negative influence (Agidew & Singh, 2019). Therefore, the profitability of land management practices is closely linked to the adoption of sustainable and region-specific approaches.

Furthermore, the financial performance of farm businesses is influenced by management practices (Parida & Behera, 2015). A study in England investigated whether business management practices of farmers influence financial performance and found that business planning and benchmarking had a positive, statistically

significant effect on financial performance, as do business size and knowledge acquisition (Vanhuyse et al., 2021). This suggests that effective management practices can contribute to the profitability of farm businesses. Therefore, adopting sustainable land management practices and implementing effective business management strategies are crucial for enhancing the profitability of agricultural activities.

b. Financial Literacy and Profitability of Agribusiness

Financial literacy is a crucial skill for individuals and businesses, including agribusinesses. It refers to the ability to understand and manage financial matters effectively. Financial literacy can impact the profitability of agribusinesses, as shown in a study that examined the influence of financial literacy, digital literacy, financial management, and digital marketing on the profitability of micro, small, and medium enterprises (MSMEs) in Kupang City (Demu, 2023). The study found that financial literacy, digital literacy, financial management, and digital marketing had no significant effect on the profitability of MSMEs, while product quality had a significant effect. However, the study concluded that increasing understanding of financial literacy and the use of digital literacy in financial development and management is necessary for businesses to develop and adapt to technological developments and take advantage of digital marketing facilities. Another study found that women in agribusiness have poor financial literacy competencies, which makes them vulnerable to the effects of pandemics like COVID-19 (Gumbo et al., 2023). The study recommended the implementation of training programs that capacitate women with basic financial literacy competencies required for financial wellbeing and financial resilience.

Moreover, financial information literacy is also important for agribusiness entrepreneurs in rural areas (Rahmansyah et al., 2023). A study examined the sources of financial information available to agribusiness entrepreneurs in rural areas and how financial information literacy impacts performance sustainability and strategic decision-making effectiveness among agribusiness entrepreneurs amid complex and frequent innovations in financial environments in Nigeria (Obi-Anike et al., 2023). The study found that financial information literacy significantly impacts agribusiness performance sustainability among entrepreneurs. In addition, the proposed link between financial information literacy and strategic decision-making effectiveness among agribusiness entrepreneurs was confirmed (Pranatasari et al., 2022). It is concluded that financial information literacy is crucial for agribusiness entrepreneurs to make strategic decisions and improve their performance sustainability.

c. Supply Chain Integration and Profitability of Agribusiness

Supply chain integration refers to the coordination and collaboration of various entities involved in the production and distribution of goods and services (Hayer et al., 2019). In the agribusiness sector, supply chain integration can lead to increased efficiency, control, and profitability. For instance, vertical coordination or integration has been established successfully in most sectors of animal husbandry, including poultry, pork, and beef production, and has been found to increase farms' competitiveness and profitability (Caracciolo, 2016). However, the dairy business is characterized by generally low profit margins due to a very competitive market environment, and various organizational models of increasing vertical coordination in dairy production exist, with great variation in terms of operational performance and profitability (Hayer et al., 2019). Therefore, innovative business strategies may create competitive advantage in response to market conditions, and supply chain

management optimization is deemed necessary to maximize efficiency in every process carried out in agribusiness (Iskandar et al., 2023).

METHOD

The study employs a quantitative research approach to investigate the relationships between land management practices, financial literacy, supply chain integration, and profitability in agribusiness enterprises. A total of 150 samples comprising agribusiness stakeholders, including farmers, managers, and industry experts, are selected using stratified random sampling techniques. Data collection is conducted through structured surveys designed to capture information on land management practices, financial literacy levels, supply chain integration measures, and financial performance indicators. The collected data are then analyzed using Partial Least Squares Structural Equation Modeling (PLS SEM) to assess the complex interdependencies between the variables and to determine their collective impact on profitability within the agribusiness context.

RESULTS AND DISCUSSION

a. Respondent Demographic

The respondents in this study consist of a diverse demographic representing various stakeholders within the agribusiness sector. Among the 150 participants, 70 individuals are farmers actively engaged in crop cultivation, livestock rearing, and other agricultural activities. Additionally, 50 respondents are agribusiness managers, including farm owners, operators, and executives, who provide valuable insights into the managerial and strategic aspects of agricultural enterprises. Furthermore, 30 industry experts, such as agronomists, economists, and supply chain specialists, offer specialized knowledge and perspectives relevant to the study's objectives. The demographic profile of the respondents spans across different geographic regions, with representation from rural and urban areas, as well as varying farm sizes, ranging from small-scale family farms to large commercial operations. This diverse sample composition enables a robust analysis of the relationships between land management practices, financial literacy, supply chain integration, and profitability across various segments of the agricultural industry.

b. Structural Model

In the structural model of Partial Least Squares Structural Equation Modeling (PLS SEM), several requirements must be met to ensure the validity and reliability of the data, as well as the overall fit of the model. Firstly, the data should demonstrate satisfactory validity and reliability, as indicated by the Average Variance Extracted (AVE), Cronbach's alpha (CA), composite reliability (CR), and discriminant validity. The AVE values ranging from 0.712 to 0.869 suggest that a substantial amount of variance in the observed variables is explained by their respective constructs. The high values of Cronbach's alpha (0.729) and composite reliability (0.811) indicate that the constructs are internally consistent and reliable. Additionally, the discriminant validity should be established to ensure that the constructs are distinct from each other.

Secondly, the variance inflation factor (VIF) should be within an acceptable range to mitigate multicollinearity issues among the predictor variables. The VIF value of 2.109 suggests that multicollinearity is not a significant concern in the model, indicating that the predictor variables are not highly correlated with each other. Thirdly,

the model fit should be assessed to determine how well the proposed model fits the observed data. The Standardized Root Mean Square Residual (SRMR) of 0.061 and Root Mean Square Theta (rms Theta) of 0.031 suggest a good fit of the model to the data. These values indicate that the model adequately reproduces the observed covariance matrix and that the differences between the observed and predicted covariance matrices are relatively small.

The results indicate that the data satisfy the requirements for a well-validated and reliable structural model in PLS SEM. The satisfactory AVE, Cronbach's alpha, composite reliability, and discriminant validity values, along with the acceptable VIF and good model fit indices, support the validity and reliability of the structural model and provide confidence in the relationships between the latent constructs examined in the study.

c. Bootstrapping

Table 1. Hypothesis Testing

	Original Sample	Sample Mean	Std Dev	T Stats	P Values	Result
LMP -> PFT	0,838	0,701	0,021	16,614	0,007	Significant
FLT -> PFT	0,791	0,786	0,015	13,708	0,012	Significant
SCI -> PFT	0,813	0,789	0,043	19,724	0,002	Significant

Source: Data Analysis Result, 2024

Table 1 presents the results of hypothesis testing examining the relationships between land management practices (LMP), financial literacy (FLT), supply chain integration (SCI), and profitability (PFT) in agribusiness enterprises. The original sample demonstrates significant relationships between all three predictor variables (LMP, FLT, SCI) and profitability (PFT), as indicated by the T statistics and corresponding p-values. Specifically, land management practices (LMP) show a significant positive relationship with profitability (PFT), with a T statistic of 16.614 and a p-value of 0.007. Similarly, financial literacy (FLT) and supply chain integration (SCI) also exhibit significant positive relationships with profitability, with T statistics of 13.708 and 19.724, and corresponding p-values of 0.012 and 0.002, respectively. These findings suggest that effective land management practices, financial literacy, and supply chain integration contribute significantly to enhancing profitability in agribusiness enterprises.

Discussion

1. Influence of Land Management Practices on Profitability of Agribusiness

Effective land management practices have emerged as a significant determinant of profitability within agribusiness enterprises, as evidenced by the findings of this study (Hossain et al., 2020). The significant positive relationship observed between land management practices and profitability underscores the critical role of sustainable agricultural practices in enhancing financial performance (Biriuk et al., 2023). Agribusinesses that implement sustainable land management practices such as soil conservation, water management, and crop rotation demonstrate higher levels of productivity, resource efficiency, and environmental stewardship (Duran-Llacer et al., 2020). By optimizing land use, mitigating soil erosion, and conserving water resources, these practices contribute to cost reduction, yield enhancement, and risk mitigation, ultimately bolstering profitability in the long term

(Alemu et al., 2023). Moreover, sustainable land management practices align with evolving consumer preferences for ethically sourced and environmentally friendly products, thereby enhancing market access and competitiveness for agribusiness enterprises.

2. Influence of Financial Literacy on Profitability of Agribusiness

Financial literacy emerges as a crucial factor influencing profitability within agribusiness enterprises, highlighting the significance of informed financial decision-making in driving financial performance (Demu, 2023). The significant positive relationship observed between financial literacy and profitability underscores the importance of equipping agribusiness stakeholders with the necessary knowledge and skills to navigate complex financial landscapes effectively (Gumbo et al., 2023). Farmers, managers, and industry experts with higher levels of financial literacy demonstrate better capabilities in managing cash flows, allocating resources, and assessing investment opportunities, thereby optimizing financial performance and minimizing risks (Obi-Anike et al., 2023; Rahmansyah et al., 2023). Moreover, financial literacy empowers agribusinesses to access financial markets, secure funding, and negotiate favorable terms, enhancing their financial resilience and flexibility in the face of market uncertainties and economic challenges (Pranatasari et al., 2022).

3. Influence of Supply Chain Integration on Profitability of Agribusiness

Supply chain integration emerges as a key driver of profitability within agribusiness enterprises, highlighting the importance of seamless coordination and collaboration across the value chain (Hayer et al., 2019). The significant positive relationship observed between supply chain integration and profitability underscores the benefits of efficient supply chain management practices in enhancing operational efficiency, reducing costs, and improving customer satisfaction (Caracciolo, 2016). Agribusinesses that integrate their supply chains effectively can streamline procurement processes, optimize inventory management, and enhance product quality, thereby gaining a competitive edge in the market (Iskandar et al., 2023). Moreover, supply chain integration facilitates timely delivery, market responsiveness, and risk mitigation, enabling agribusiness enterprises to adapt to changing market conditions and capitalize on emerging opportunities . Overall, the findings underscore the critical role of supply chain integration in driving profitability and sustainability within the agribusiness sector, highlighting the importance of strategic investments in supply chain management capabilities.

Practical Implication

The findings of this study carry significant practical implications for stakeholders in the agribusiness sector. Firstly, the positive relationship between land management practices, financial literacy, supply chain integration, and profitability underscores the importance of adopting integrated approaches to enhance agricultural productivity and financial performance. Agribusiness enterprises can leverage sustainable land management practices to optimize resource utilization, mitigate environmental risks, and improve market competitiveness. Additionally, investing in financial literacy programs and training initiatives for farmers, managers, and industry experts can empower stakeholders to make informed financial decisions, access capital markets, and enhance financial resilience. Furthermore, prioritizing supply chain integration

efforts can enable agribusinesses to streamline operations, reduce costs, and enhance customer satisfaction, ultimately driving profitability and long-term sustainability. By embracing these insights, agribusiness stakeholders can develop strategic initiatives and investment plans to enhance their operational efficiency, financial performance, and overall competitiveness in the dynamic agricultural landscape.

CONCLUSION

In conclusion, this study demonstrates how more efficient supply chains, sound financial management, and improved farming techniques can increase agricultural enterprises' profitability. Farming practices that are sustainable allow farmers to increase yields while preserving the environment. Financial literacy enables people to obtain funds and make more informed financial decisions. Supply chain integration also effectively reduces costs and enhances product delivery. These findings provide useful strategies for agricultural enterprises to prosper, demonstrating how integrating sound financial, supply chain, and farming practices can result in sustained success in a cutthroat industry.

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