

Financial Risk Management Practices and Sustainability of Small-Scale Agricultural Value Addition Facilities in Arua City, Uganda

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Abstract: This study examined the relationship between financial risk management practices and the sustainability of agricultural small-scale value addition facilities in Arua City, Uganda. Small-scale agricultural value addition facilities contribute to local economic activity through the processing and transformation of agricultural products, but their operations and growth may be constrained by limited access to finance and other financial challenges affecting investment and expansion (World Bank, 2018). A descriptive-correlational design was employed, and data were collected using structured questionnaires and analyzed using SPSS.

The findings revealed a very strong, positive, and statistically significant relationship between financial risk management practices and sustainability ($R = .976$, $\beta = .976$, $p < .001$). Financial risk management practices explained 95.2% of the variation in sustainability ($R^2 = .952$, Adjusted $R^2 = .951$). The findings indicate that systematic identification, assessment, control, reporting, and monitoring of financial risks are strongly associated with the sustainability of agricultural small-scale value addition facilities, including their financial viability, fulfilment of financial obligations, operational continuity, and growth.

The study concludes that financial risk management practices are an important management capability associated with the sustainability of agricultural small-scale value addition facilities. The study contributes empirical evidence from the value addition context, showing that sustainability is associated not only with production and market conditions but also with the management of financial risks. The study recommends strengthening financial risk management capacity through training in financial planning, budgeting, cash-flow management, financial record keeping, and risk monitoring. Arua City authorities and relevant government agencies should strengthen business development support and financial management capacity-building initiatives. Future studies should examine other factors associated with sustainability, including access to finance, market access, availability of raw materials, technology, production capacity, and managerial capability.

Keywords: *Financial Risk Management Practices; Sustainability; Small Scale agricultural Value Addition Facilities; Arua City; Uganda.*

I. Introduction

Financial risk management practices are important for the sustainability of small-scale agricultural value-addition facilities because they enable enterprises to identify, assess, control, report, and monitor financial risks. When effectively implemented, these practices can improve cash-flow management, reduce financial losses, support informed financial decisions, and enhance continuity of operations. This perspective is consistent with Uganda's NDP IV, which emphasizes sustainable financing, value addition, competitiveness, productivity, resilience, and enterprise growth as priorities for private-sector development (Ministry of Finance, Planning and Economic Development [MoFPED], 2026).

International evidence supports the relationship between financial risk management and enterprise sustainability. In India, Kanase (2026) found that financial risks associated with price volatility, limited access to credit, and inadequate insurance can constrain the long-term sustainability of agricultural enterprises. The study further indicated that integrated

mechanisms, including agricultural credit, insurance, and income diversification, can strengthen financial resilience and support sustainable agricultural development. Similarly, in Ghana, Adda et al. (2026), studying 304 manufacturing SMEs in the Ashanti Region, found that risk identification, risk assessment, risk mitigation, continuous improvement, and risk-performance evaluation significantly influenced sustainability performance. Collectively, these studies suggest that structured approaches to managing financial and operational uncertainties can contribute to the continued viability of small-scale production enterprises.

Evidence from East Africa provides further support for this relationship. In Kenya, Owino et al. (2025) reported a statistically significant association between financial risk management and financial sustainability among SMEs in Nairobi City County, particularly through risk identification, cash management, creditor management, and risk hedging. Likewise, Shitambasi and Makori (2025) found that financial risk management literacy had a positive and statistically significant effect on financial sustainability among MSMEs in Kakamega County operating in manufacturing, trading, distribution, and service activities. Such evidence is relevant to agricultural value-addition facilities, which similarly require prudent management of working capital, production costs, credit obligations, and cash flows.

Within Uganda, Apon et al. (2024) examined internal auditing and SME sustainability among 361 enterprises and established a significant positive relationship between internal auditing practices and sustainability. Although the study addressed internal auditing rather than financial risk management as a broader construct, it provides evidence that financial control-oriented practices can contribute to the continued operation and sustainability of small enterprises.

Despite this emerging body of evidence, empirical attention remains limited regarding financial risk management practices and sustainability among small-scale agricultural value-addition facilities in Uganda. Much of the existing research has concentrated on general SMEs, MSMEs, manufacturing enterprises, and agricultural enterprises rather than facilities specifically engaged in value addition. Moreover, evidence from Arua City remains limited. This study therefore examined the relationship between financial risk management practices and the sustainability of small-scale agricultural value-addition facilities in Arua City, Uganda.

II. Research questions:

1. What is the perceived level of financial risk management practices among management team members of small-scale agricultural value-addition facilities and the City Commercial Officer in Arua City, Uganda?
2. What is the perceived level of sustainability among management team members of small-scale agricultural value-addition facilities and the City Commercial Officer in Arua City, Uganda?
3. Is there a statistically significant difference in the perceived level of sustainability of small-scale agricultural value-addition facilities in Arua City, Uganda, based on respondents' education level?
4. Is there a statistically significant relationship between financial risk management practices and the sustainability of small-scale agricultural value-addition facilities in Arua City, Uganda?

III. Theoretical framework

This study was guided by the Enterprise Risk Management (ERM) Framework developed by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The framework emphasizes the integration of risk management with strategy and performance and provides a structured approach to identifying, assessing, responding to, and monitoring risks that may affect the achievement of organizational objectives (COSO, 2017).

The framework is appropriate for this study because the sustainability of small-scale agricultural value-addition facilities depends partly on their ability to effectively manage financial risks, including credit risk, liquidity risk, operational risk, and financial reporting risk. Effective financial risk management practices can strengthen financial discipline, safeguard business resources, support informed financial decision-making, enhance accountability and compliance, and contribute to the continuity and growth of agricultural value-addition activities. The ERM Framework therefore provides a suitable theoretical basis for examining the relationship between financial risk management practices and the sustainability of small-scale agricultural value-addition facilities in Arua City, Uganda.

IV. Literature Review

Arua city Local Government, Uganda

Local government in Uganda refers to local councils legally established under the decentralized system to exercise political, executive, and service-delivery functions within defined areas of jurisdiction (Local Governments Act, 1997, as

revised in 2023, Cap. 138, ss. 2, 3 & 32). In this study, local government refers specifically to Arua City Local Government, which is responsible for administering and delivering public services within Arua City in Uganda's West Nile Sub-region.

Financial risk management practices

Financial risk management practices are important for the sustainability of small-scale agricultural value-addition facilities because they enable enterprises to identify, assess, control, report, and monitor financial risks. When effectively implemented, these practices can improve cash-flow management, reduce financial losses, support informed financial decisions, and enhance operational continuity. This perspective is consistent with Uganda's NDP IV, which emphasizes sustainable financing, value addition, competitiveness, productivity, resilience, and enterprise growth as priorities for private-sector development (Ministry of Finance, Planning and Economic Development [MoFPED], 2026).

International evidence demonstrates the relevance of financial risk management to enterprise sustainability. In India, Kanase (2026) found that agricultural enterprises were exposed to financial risks arising from price volatility, limited access to credit, and inadequate insurance, and reported that agricultural credit, insurance, and income diversification could strengthen financial resilience and support sustainable agricultural development. These findings highlight the importance of identifying financial exposures and adopting measures to reduce their effects on enterprise continuity, particularly among small-scale agricultural value-addition facilities that depend on agricultural raw materials and face fluctuations in input prices, market conditions, access to finance, and cash flows. Similarly, Prajapati and Singh (2020), examining capital structure in India's food-processing industry, found that selected firms relied more heavily on equity than debt financing, with equity accounting for approximately 70% of total capital, and associated the lower reliance on debt with efforts to limit financial risk. This suggests that prudent financing decisions and management of credit obligations can form part of efforts to control financial exposure and maintain operational stability. Further evidence from Ghana is provided by Adda et al. (2026), who, in a study of 304 manufacturing SMEs in the Ashanti Region, found that risk identification, risk assessment, risk mitigation, continuous improvement, and risk-performance evaluation significantly influenced sustainability performance. The findings demonstrate the importance of systematically identifying and evaluating potential exposures, implementing appropriate mitigation measures, and monitoring risk outcomes rather than addressing financial problems only after they occur. Evidence from East Africa reinforces this relationship. In Kenya, Owino et al. (2025) reported a statistically significant association between financial risk management and financial sustainability among SMEs in Nairobi City County, particularly through risk identification, cash management, creditor management, and risk hedging. Such practices are applicable to agricultural value-addition facilities because their continued operations depend on effective management of working capital, production costs, creditor obligations, borrowing commitments, and cash flows. Similarly, Shitambasi and Makori (2025) found that financial risk management literacy had a positive and statistically significant effect on financial sustainability among MSMEs in Kakamega County operating in manufacturing, trading, distribution, and service activities. Although their study focused on financial risk management literacy rather than the specific practices examined in the present study, it demonstrates the importance of understanding and applying appropriate approaches to financial risk in sustaining small enterprises. Within Uganda, Apon et al. (2024) examined internal auditing and SME sustainability among 361 enterprises and established a significant positive relationship between internal auditing practices and sustainability. Although internal auditing is distinct from financial risk management, its emphasis on reviewing financial activities, identifying control weaknesses, strengthening accountability, and monitoring financial processes provides complementary evidence on the contribution of control-oriented practices to enterprise sustainability. Collectively, the literature shows that financial risk management involves identifying, assessing, controlling, and monitoring financial exposures through effective cash, credit, and financing decisions. However, existing studies focus mainly on SMEs, MSMEs, manufacturing, food-processing, and agricultural enterprises, with limited evidence on small-scale agricultural value-addition facilities, particularly in Arua City. Such facilities face risks related to raw materials, production costs, working capital, credit, and market fluctuations. This study therefore provides sector- and location-specific evidence on the role of financial risk management in the sustainability of small-scale agricultural value-addition facilities in Arua City.

Sustainability of Small-Scale Agricultural Value Addition Facilities

Uganda's Micro, Small and Medium Enterprise (MSME) Policy recognizes MSMEs as important contributors to socio-economic development and emphasizes access to finance, skills, technology, markets, institutional support, innovation, and value addition as important conditions for sustainable enterprise growth (Ministry of Trade, Industry and Cooperatives [MTIC], 2015). This policy context is particularly relevant to small-scale agricultural value-addition facilities because their continued viability depends on their capacity to maintain production, meet operating obligations, generate adequate income, serve customers, and reinvest in their operations. Such facilities may also require financial, technical, technological, and market support to remain operational and respond to changing business conditions. Empirical

evidence from Uganda indicates that financial capacity is an important consideration in enterprise sustainability. Apon, Kintu, and Nuwagaba (2026), in a study of 233 SMEs in northern Uganda, found that financing, operating, and investment cash-flow behaviour significantly contributed to SME sustainability, whereas saving behaviour did not. These findings suggest that the ability of enterprises to manage cash resources and finance operating and investment activities is relevant to sustaining business operations. This is particularly pertinent to small-scale agricultural value-addition facilities, whose operations require continuous expenditure on raw materials, processing, Labour, maintenance, and other operating requirements. Sustainability is also influenced by the broader manner in which agro-processing enterprises manage their economic, social, and operational activities. Kabbera et al. (2024), examining agro-processing SMEs in the Greater Kampala Metropolitan Area, found that integrating economic, social, and environmental practices supported enterprise growth and resilience. Their findings indicate that sustainability extends beyond short-term financial performance to include the capacity of enterprises to remain resilient and maintain their operations over time. For small-scale agricultural value-addition facilities, this broader perspective is relevant because continued viability may depend on their ability to combine financial capacity with effective operations and responsiveness to changing business conditions. Innovation also provides an important dimension of sustainability among agricultural enterprises. Ahimbisibwe et al. (2024), in a study of 125 agro-processing firms in Uganda, found that product and organizational innovation capabilities were positively associated with international competitiveness, although process and marketing innovation were not. These findings suggest that product development and organizational capabilities can contribute to maintaining market relevance and competitiveness among agro-processing enterprises. For small-scale value-addition facilities, the ability to develop products and strengthen organizational practices may therefore be relevant to maintaining customers, responding to market changes, and sustaining operations. Taken together, the evidence suggests that sustainability among agricultural and agro-processing enterprises encompasses financial capacity, operational effectiveness, resilience, innovation, and the ability to respond to changing market conditions. These dimensions are particularly relevant to small-scale agricultural value-addition facilities because their continued operation requires the effective management of financial resources, production activities, market relationships, and investment in the enterprise.

Relationship between Financial risk management practices and sustainability of small-scale agricultural value addition facilities

Lumanauw and Lolowang (2024), through a literature review of strategic financial management practices, established that effective budgeting, financial forecasting, investment analysis, capital structure management, and risk management contribute to business sustainability and growth. They further emphasized that effective financial management enables entrepreneurial businesses to allocate resources efficiently, manage financial risks, and strengthen resilience in uncertain business environments. Consistent with this view, Mang'ana et al. (2024) found that financial management practices were associated with improved performance among Agri-SMEs in Tanzania, particularly in areas such as working-capital management, financing, budgeting, and financial reporting. However, the study focused on financial management practices and organizational performance rather than directly examining financial risk management and sustainability, leaving a gap that the present study addresses among small-scale agricultural value-addition facilities in Arua City. In India, Kanase (2026) examined financial risk management and sustainable planning among farmers and agripreneurs and identified price volatility, climate variability, limited access to credit, and inadequate insurance as major financial risks affecting agricultural enterprises. The study found that agricultural credit, insurance, and income diversification can strengthen financial resilience and support sustainable agricultural planning, highlighting the importance of financial preparedness to the long-term viability of agricultural enterprises. Similarly, Ali (2025) examined strategies for transforming agro-commodity clusters into agro-industrial clusters in Pakistan and emphasized small-scale value addition and processing units, market linkages, product quality, innovation, skills development, and investment as important components of agro-industrial transformation. The study further demonstrated the economic viability of the proposed transformation through substantial investment requirements and an estimated internal rate of return of 62%. These findings suggest that the sustainability of agricultural value-addition enterprises depends partly on their ability to generate economic value, secure productive investment, access markets, improve competitiveness, and maintain viable operations over time.

Research Gap

Although previous studies have established the importance of financial risk management in enhancing the performance, resilience, and sustainability of agricultural enterprises, existing evidence has largely focused on agricultural value-chain SMEs, agribusiness firms, and agro-processing enterprises. Limited attention has been given to small-scale agricultural value-addition facilities as a distinct category of enterprise, despite their dependence on agricultural inputs, working capital, production continuity, and changing market conditions. In Uganda, empirical evidence on the relationship

between financial risk management practices and sustainability among such facilities remains limited, particularly in regional urban settings such as Arua City. This creates a population, contextual, and empirical gap in understanding how financial risk management practices relate to the sustainability of small-scale agricultural value-addition facilities. The present study therefore examined the relationship between financial risk management practices and sustainability among small-scale agricultural value-addition facilities in Arua City, Uganda.

V. Methodology

This study adopted the positivist research paradigm, which emphasizes objectivity, measurable data, and scientific methods for examining relationships between variables. Creswell and Creswell (2018) explain that the positivist perspective assumes that phenomena can be objectively measured and analyzed using systematic procedures. Accordingly, the paradigm enabled the study to use structured instruments and statistical analysis to generate empirical evidence on the relationship between financial risk management practices and sustainability of small-scale agricultural value addition facilities.

Study Design

The study adopted a descriptive-correlational research design to examine the relationship between financial risk management practices and sustainability of small-scale agricultural value addition facilities in Arua City, Uganda, without manipulating the study variables. Descriptive and inferential statistics, including means, standard deviations, analysis of variance (ANOVA), Pearson correlation, and regression analysis, were used to analyze the data. According to Creswell and Creswell (2018), correlational designs are appropriate for examining relationships among variables as they naturally occur. Data were collected using structured questionnaires to ensure consistent measurement of the study variables. Financial risk management practices were assessed in terms of risk identification, risk assessment, risk control, risk reporting, and risk monitoring. The design enabled the study to determine the direction and strength of the relationship between financial risk management practices and sustainability of agricultural small-scale value addition facilities and to establish its statistical significance.

Study Setting

The study was conducted in Arua City, Uganda, and focused on and sustainability of small-scale agricultural value addition facilities. The respondents comprised owners, managers, accountants, and the City Commercial Officer, who were selected because of their involvement in, or knowledge of, financial risk management and sustainability of the facilities. The study setting was therefore appropriate because it provided respondents with relevant knowledge and practical experience concerning the financial and operational risk management and sustainability of agricultural small-scale value addition facilities.

Population and Sampling

The study targeted 108 eligible respondents comprising owners, managers, accountants, and the City Commercial Officer who were directly involved in or had relevant knowledge of financial risk management and sustainability of small-scale agricultural value addition facilities in Arua City. Given the relatively small and manageable population, the study adopted a census approach in which all 108 eligible respondents were included. The census approach provided comprehensive coverage of the target population and minimized sampling error (Amin, 2005). Of the 108 questionnaires distributed, 92 were completed and returned, representing a response rate of 85.2%. This response rate provided an adequate basis for statistical analysis and reduced the potential effect of non-response on the findings (Dillman et al., 2014).

Financial risk management practices were measured using indicators of risk identification, risk assessment, risk control, risk reporting, and risk monitoring, drawing on Jackson et al. (2009). The items assessed the extent to which respondents identified financial risks, assessed their likelihood and potential impact, implemented appropriate control measures, reported relevant risk information for decision-making, and monitored financial risks and the effectiveness of control measures.

Sustainability was measured using indicators of financial viability, continuity of operations, growth, ability to meet financial obligations, and continued provision of products to customers, reflecting financial and operational dimensions of small-business sustainability (Zaman et al., 2025). Both variables were measured using a structured four-point Likert-scale questionnaire.

Validity and Reliability

The questionnaire was reviewed by five research experts to assess its clarity, relevance, and content validity, and their recommendations were incorporated into the final instrument. A pilot test involving 32 respondents from agricultural value addition facilities in Arua City was subsequently conducted to assess the suitability and internal consistency of the questionnaire. Cronbach's alpha of 0.70 was considered the minimum acceptable threshold for internal consistency reliability (Taber, 2018). The financial risk management practices scale demonstrated good internal consistency ($\alpha = .876$), while the Sustainability of small-scale agricultural value addition facilities scale demonstrated excellent internal consistency ($\alpha = .930$). These results indicate that the instrument had satisfactory internal consistency and was suitable for the main data collection.

Table 1. Reliability of study variables

SN	Cronbach's Alpha (α)	Interpretation
1. Financial risk management practices	.867	Good reliability
2. Sustainability of small-scale agricultural value addition facilities	.930	Excellent reliability

Data Management and Analysis

After data collection, the questionnaires were checked for completeness, coded, cleaned, anonymized, and entered into the Statistical Package for the Social Sciences (SPSS) for analysis. Responses were measured using a four-point Likert scale. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize respondents' demographic characteristics and the study variables.

Inferential statistics were used to test the study hypotheses. One-way analysis of variance (ANOVA) was used to determine whether significant differences existed in respondents' perceptions of financial risk management practices and sustainability of small-scale agricultural value addition facilities across education-level groups. Pearson correlation analysis was used to determine the direction and strength of the relationship between financial risk management practices and sustainability of small-scale agricultural value addition facilities. Simple linear regression analysis was used to determine the extent to which financial risk management practices explained variation in sustainability. Statistical significance was assessed at the 0.05 level. Results were presented and interpreted using descriptive statistics, p-values, correlation coefficients, regression coefficients, and the coefficient of determination (R^2).

Ethical Considerations

The study adhered to established ethical procedures. An introductory letter was obtained from Bugema University and presented to the owners and managers of the selected agricultural value addition facilities and the City Commercial Officer to obtain permission to conduct the study. The purpose of the study was explained to participants, who were informed that participation was voluntary. They were also assured that the information provided would be treated confidentially, anonymized, and used solely for academic purposes.

VII. Results and Discussion

The study findings are presented by first describing the respondents' demographic characteristics, followed by analysis and interpretation based on the research questions guiding the study.

Table 2. Demographic characteristics of respondents

Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	65	70.7
	Female	27	29.3
	Total	92	100.0
Age	25-34	5	5.4
	35-44	32	34.8
	45 and above	55	59.8
	Total	92	100.0
Education level	Certificate and below	33	35.9
	Diploma	36	39.1
	Degree and above	23	25.0

Variable	Category	Frequency (f)	Percentage (%)
	Total	92	100.0
Respondent category	Owner	54	58.7
	Manager	24	26.1
	Accountant	13	14.1
	City Commercial Officer	1	1.1
	Total	92	100.0

Most respondents were male, 65 (70.7%), aged 45 years and above, 55 (59.8%), and held a Diploma, 36 (39.1%). The majority were owners, 54 (59.0%).

Research Question 1: What is the perceived level of financial risk management practices among management team members of small-scale agricultural value-addition facilities and the City commercial officer in Arua City, Uganda?

The perceived level of financial risk management practices was measured using 20 items on a four-point Likert scale: Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1. Mean scores were interpreted as follows: 3.26–4.00 = Strongly Agree, 2.51–3.25 = Agree, 1.76–2.50 = Disagree, and 1.00–1.75 = Strongly Disagree.

Table 3. Perceived level financial risk management practices

Item	Statement	M	SD	Interpretation
1	Our facility regularly identifies financial risks that may affect its operations.	2.5000	.73380	D
2	Our facility assesses the likelihood of identified financial risks occurring.	2.5543	.49976	A
3	Our facility assesses the potential financial impact of identified risks.	2.5652	.86830	A
4	Our facility discusses emerging financial risks during management meetings.	2.5435	.60060	A
5	Our facility maintains financial information that helps management identify financial risks.	2.6630	.61621	A
6	Our facility assesses the ability of customers to pay before supplying products on credit.	3.0652	.57041	A
7	Our facility follows established procedures when approving sales or purchases on credit.	3.1413	.65602	A
8	Our facility regularly monitors outstanding customer payments.	2.8261	.76473	A
9	Our facility follows up customers with overdue payments.	2.8043	.59741	A
10	Our facility takes appropriate action when payment problems arise.	2.5870	.57707	A
11	Our facility regularly monitors its cash position.	2.6413	.77858	A
12	Our facility maintains sufficient funds to meet its financial obligations.	2.3478	.88249	D
13	Our facility takes appropriate action when cash-flow problems arise.	2.4022	.53575	D
14	Our facility prepares cash-flow information to guide financial decisions.	2.5217	.54427	A
15	Our facility controls payments and withdrawals to reduce the risk of cash shortages.	2.5978	.64722	A
16	Our facility monitors the movement of funds between its accounts and business activities.	2.7609	.65246	A

17	Our facility requires appropriate authorization before funds are withdrawn or paid out.	3.3152	.70989	SA
18	Our facility maintains supporting documents for financial transactions.	3.2391	.63539	A
19	Our facility regularly reconciles its financial records with bank or cash records.	3.0978	.57531	A
20	Our facility regularly reports identified financial risks to the relevant managers or owners for appropriate action.	2.4565	.86967	D
Total scores		2.7152	.35840	A

Table 3 presents the findings on financial risk management practices among small-scale value-addition facilities in Arua City. Most items were rated “Agree” ($M = 2.51\text{--}3.25$), with an overall mean of 2.7152 ($SD = 0.35840$), indicating that financial risk management practices were generally applied.

The findings show relatively stronger application of credit and financial control practices. Respondents agreed that facilities assessed customers’ ability to pay before extending credit ($M = 3.0652$), followed procedures when approving credit sales or purchases ($M = 3.1413$), monitored outstanding payments ($M = 2.8261$), and followed up overdue payments ($M = 2.8043$). Similarly, supporting documentation ($M = 3.2391$), bank or cash reconciliation ($M = 3.0978$), and authorization of withdrawals and payments ($M = 3.3152$) received relatively high ratings. These findings suggest that routine transaction controls and credit-management procedures were more established than some proactive risk-management activities.

The findings are consistent with Mang’ana et al. (2024), who reported moderate implementation of financial management practices among 427 Agri-SMEs in Tanzania, including working-capital management, financial reporting, financing, and capital budgeting. Their findings support the present result that financial management practices may be implemented to a moderate extent rather than uniformly across agricultural enterprises. Similarly, Oni et al. (2026) identified risk assessment and planning, working-capital management, financial analysis and performance monitoring, and credit risk management as important financial risk management practices among agricultural value-chain SMEs in Nigeria. These findings reinforce the importance of systematic financial risk management in agricultural enterprises.

However, the present findings also reveal weaker proactive financial risk-management practices. Respondents disagreed that facilities regularly identified financial risks affecting operations ($M = 2.5000$), maintained sufficient funds to meet financial obligations ($M = 2.3478$), took action when cash-flow problems arose ($M = 2.4022$), and regularly reported identified financial risks to managers or owners ($M = 2.4565$). These results suggest that while routine financial controls were relatively stronger, proactive risk identification, liquidity management, cash-flow response, and risk reporting remained less developed.

This pattern is consistent with Kanase (2026), who identified price volatility, limited access to credit, and inadequate insurance as financial risks that can constrain the sustainability of agricultural enterprises. The study further emphasized agricultural credit, insurance, and income diversification as mechanisms for strengthening financial resilience. The relatively low rating for maintaining sufficient funds to meet financial obligations and responding to cash-flow problems in the present study therefore indicates areas where stronger financial preparedness may be required.

The findings also correspond with Shitambasi and Makori (2025), who found that financial risk management literacy had a positive and statistically significant effect on financial sustainability among MSMEs in Kakamega County. Similarly, Owino et al. (2025) reported a significant relationship between financial risk management and financial sustainability among SMEs in Nairobi City County, with emphasis on risk identification, cash management, creditor management, and risk hedging. These studies reinforce the importance of strengthening the weaker areas identified in the present study, particularly risk identification, liquidity management, and cash-flow management.

Overall, the findings indicate that small-scale value-addition facilities in Arua City had stronger routine financial controls than proactive risk-management practices. Credit procedures, transaction authorization, documentation, and reconciliation were relatively well established, whereas risk identification, liquidity management, cash-flow response, and financial risk reporting were weaker. This pattern is consistent with evidence from agricultural and agribusiness enterprises showing that financial risk management practices are important but may be implemented unevenly. Strengthening the weaker areas could enhance financial preparedness and resilience and thereby support the continued operation and sustainability of small-scale agricultural value-addition facilities.

Research Question 2 What is the perceived level of sustainability among management team members of small-scale agricultural value-addition facilities and the City Commercial Officer in Arua City, Uganda?

The perceived level of sustainability of small-scale agricultural value addition facilities was measured using 20 items on a four-point Likert scale: Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1. Mean scores were interpreted as follows: 3.26–4.00 = Strongly Agree, 2.51–3.25 = Agree, 1.76–2.50 = Disagree, and 1.00–1.75 = Strongly Disagree.

Table 4: Perceived Level of sustainability of small-scale agricultural value addition facilities

Item	Statement	M	SD	Interpretation
1	Maintained a stable supply of raw materials for production	2.6304	0.70660	A
2	Maintained production activities during periods of financial difficulty	2.7174	0.68462	A
3	Continued providing products to customers regularly	2.6413	0.67256	A
4	Experienced growth in sales over time	2.8587	0.67256	A
5	Increased production capacity	2.8152	0.55330	A
6	Expanded the customer base	3.0217	0.77002	A
7	Increased the range of value-added products	2.9783	0.55427	A
8	Reinvested part of earnings to support business growth	3.0870	0.54777	A
9	Able to replace or repair production equipment when necessary	3.1630	0.42652	A
10	Able to withstand unexpected financial pressures	2.7283	0.53664	A
11	Able to continue operating when market conditions became unfavorable	2.8478	0.62783	A
12	Maintained business operations over the past few years	2.8261	0.58570	A
13	Had good prospects for continued operation and growth in the future	2.8696	0.78750	A
14	Generated sufficient revenue to support operations	2.1196	0.57114	D
15	Generated sufficient income to cover operating costs	2.2065	0.58438	D
16	Maintained adequate cash flow to support day-to-day operations	1.9239	0.68314	D
17	Able to meet financial obligations on time	2.0217	0.61086	D
18	Remained financially viable despite changes in business conditions	2.4457	0.66900	D
19	Continued operating without prolonged interruptions	2.0435	0.57250	D
20	Had adequate resources to maintain regular production	2.4674	0.74791	D
	Total scores	2.7315	0.35064	A

Table 4 presents the findings on the sustainability of small-scale agricultural value-addition facilities in Arua City. The overall mean of 2.7315 (SD = 0.35064) falls within the “Agree” category, indicating that respondents generally perceived the facilities as demonstrating the stated characteristics of sustainability. However, the item-level results reveal variation across the sustainability dimensions, with relatively stronger performance in growth, reinvestment, equipment maintenance, and resilience, but weaker performance in revenue sufficiency, liquidity, and financial obligations.

The relatively stronger results for growth and reinvestment are reflected in the facilities’ reported expansion of their customer base (M = 3.0217), increase in the range of value-added products (M = 2.9783), sales growth (M = 2.8587), and increased processing capacity (M = 2.8152). Respondents also agreed that facilities reinvested part of their earnings to support business growth (M = 3.0870) and were able to replace or repair processing equipment when necessary (M = 3.1630). These findings are consistent with Kabbera (2024), who reported an association between sustainability practices

and the growth of agro-processing SMEs in Uganda. The present findings similarly suggest that growth and reinvestment are important features of sustainability among agricultural value-addition enterprises.

The findings on operational continuity and resilience also received relatively positive ratings. Respondents agreed that facilities maintained a stable supply of agricultural raw materials ($M = 2.6304$), continued production during financial difficulties ($M = 2.7174$), continued serving customers regularly ($M = 2.6413$), could withstand unexpected financial pressures ($M = 2.7283$), and could continue operating under unfavorable agricultural market conditions ($M = 2.8478$). The findings reveal important weaknesses in the financial sustainability of small-scale agricultural value-addition facilities. Respondents disagreed that the facilities generated sufficient revenue to support processing operations ($M = 2.1196$), generated sufficient income to cover operating costs ($M = 2.2065$), maintained adequate cash flow for daily operations ($M = 1.9239$), and met financial obligations on time ($M = 2.0217$). These findings indicate that although the facilities may continue production and pursue growth, their financial capacity to sustain day-to-day operations remains constrained. This is consistent with Apon, Kintu, and Nuwagaba (2026), who found that financing, operating, and investment cash-flow behaviour significantly contributed to SME sustainability in northern Uganda. Their findings highlight the importance of maintaining adequate financial flows to support the continued operation and long-term sustainability of small enterprises.

The findings are also consistent with Kabbera et al. (2024), who examined agro-processing SMEs in Uganda and found that sustainability-oriented practices were associated with enterprise growth. However, the study also demonstrates that sustainability extends beyond growth to encompass economic, social, and environmental dimensions. For small-scale agricultural value-addition facilities, the economic dimension is particularly important because continued processing depends on the ability to generate revenue, meet operating costs, maintain productive resources, and reinvest in the enterprise. Similarly, Ahimbisibwe et al. (2024) found that product and organizational innovation capabilities were positively associated with international competitiveness among agro-processing firms in Uganda. This suggests that maintaining market relevance, developing products, and strengthening organizational capacity are important for sustaining agricultural processing enterprises over time.

The particularly low rating for adequate day-to-day cash flow ($M = 1.9239$) is further supported by Abu Hatab et al. (2021), who found that financial conditions, including cash-flow coverage and asset levels, were associated with perceived business risk among agri-food SMEs in Egypt. Their findings demonstrate the importance of financial buffers in maintaining enterprise resilience. Similarly, Mang'ana et al. (2024) reported that financial management practices, including working-capital management, financing, budgeting, and financial reporting, were associated with improved performance among Agri-SMEs in Tanzania. These findings reinforce the importance of financial capacity, particularly working capital and financing, in sustaining agricultural enterprises.

The findings therefore present a mixed pattern of sustainability. The facilities demonstrated relatively stronger growth, reinvestment, equipment maintenance, customer expansion, and operational resilience, but weaker cash-flow adequacy, revenue sufficiency, timely settlement of financial obligations, and resource availability. This pattern is consistent with Apon et al. (2026), who demonstrate that different financial behaviour does not contribute equally to SME sustainability, and with evidence from agricultural and agro-processing enterprises showing that growth and competitiveness depend partly on financial and productive capacity. Therefore, sustainability among small-scale agricultural value-addition facilities in Arua City extends beyond continued operation or business growth to include the capacity to generate adequate revenue, maintain liquidity, meet financial obligations, reinvest in productive assets, and secure resources required for continuous production.

Research Question 3: Is there a statistically significant difference in the perceived level of sustainability of small-scale agricultural value-addition facilities in Arua City, Uganda, based on respondents' education level?

The null hypothesis stated that there was no statistically significant difference in respondents perceived level of sustainability of small-scale agricultural value addition facilities across different education levels. A one-way analysis of variance (ANOVA) was used to determine whether the mean perceptions of sustainability differed significantly among the education-level groups (Below certificate, Diploma & Degree). The results are presented in Tables 5.

Table 5: One-Way ANOVA Results for Sustainability of Small-Scale Value Addition Facilities by Education Level

<i>Source of Variation</i>	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
Between Groups	0.033	2	0.017	0.127	.881
Within Groups	11.655	89	0.131		

Total 11.689 91

The one-way ANOVA presented in Table 5 examined whether respondents' perceptions of the sustainability of small-scale agricultural value-addition facilities differed across education levels. The results showed no statistically significant difference among the education groups, $F(2, 89) = 0.127, p = .881$. Since $p > .05$, the null hypothesis was not rejected, indicating that perceptions of the sustainability of small-scale agricultural value-addition facilities did not significantly differ according to respondents' education levels.

The non-significant difference observed in the present study therefore suggests that respondents across the different education groups had broadly similar perceptions of the sustainability of the small-scale agricultural value addition facilities. This finding is consistent with the broader emphasis in the literature on organizational, financial, operational, and risk-management practices as important factors influencing the sustainability and performance of agricultural enterprises, rather than formal educational attainment alone. Ondiek and Muathe (2017), for example, found that financial, operational, human-resource, regulatory, and disaster risk-management strategies were associated with the performance of small-scale agribusiness firms. Their findings emphasized practical management activities such as maintaining financial records, monitoring financial risks, identifying potential risks, and establishing contingency measures. Similarly, Oni et al. (2026) identified risk assessment and planning, working-capital management, financial analysis and performance monitoring, and credit-risk management as important dimensions of financial risk management in agricultural value-chain SMEs. Recent evidence from Uganda also indicates that financial risk management practices, including risk identification, assessment, mitigation, and monitoring, are positively associated with SME sustainability.

The absence of a statistically significant difference across education groups may therefore indicate that sustainability perceptions among the facilities were influenced more by respondents' common exposure to operational and financial conditions than by differences in formal education. The facilities operate within similar agricultural processing environments and face comparable challenges relating to raw-material availability, operating costs, market conditions, liquidity, and resource constraints. In such circumstances, practical experience with financial and operational activities may provide respondents with similar perceptions of sustainability regardless of their educational background. This interpretation is also compatible with the literature reviewed in this study, which emphasizes the role of financial risk identification, assessment, control, monitoring, and related management practices in supporting enterprise performance and sustainability. Thus, the finding does not suggest that education is irrelevant to enterprise management; rather, within the context of the facilities studied, formal educational differences did not produce statistically different perceptions of sustainability.

Research Question 4: Is there a statistically significant relationship between financial risk management practices and the sustainability of small-scale agricultural value addition facilities in Arua City, Uganda?

This research question examined the relationship between financial risk management practices and the sustainability of small-scale agricultural value addition facilities in Arua City, Uganda. It guided the testing of the null hypothesis that there is no statistically significant relationship between financial risk management practices and the sustainability of small-scale agricultural value addition facilities in Arua City, Uganda. Simple linear regression analysis was used to determine whether financial risk management practices were significantly associated with the sustainability of small-scale agricultural value addition facilities and to establish the extent to which financial risk management practices explained variation in their sustainability.

Table 6. Model summary

Model	M	R	R Square	Adjusted R Square	Std. Error of the Estimate
1		.976 ^a	.952	.951	.07755

a. Predictor: Financial risk management practices

Table 7 ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	10.647	1	10.647	177.042	.000 ^b
Residual	.541	91	.006		
Total	11.189	92			

- a. Dependent Variable: Sustainability of small-scale agricultural value addition facilities
b. Predictor: Financial risk management practices

Table 8 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Financial risk management practices	.140	.062		2.255	.027
	.954	.023	.976	42.077	.000

Dependent Variable: Sustainability of small-scale agricultural value addition facilities

This study examined the relationship between financial risk management practices and the sustainability of small-scale agricultural value addition facilities in Arua City, Uganda. The findings established a very strong, positive, and statistically significant relationship between the two constructs ($R = .976$, $R^2 = .952$, $p < .001$). Financial risk management practices explained 95.2% of the variation in sustainability, indicating a strong association between financial risk management practices and reported sustainability among the studied agricultural value addition facilities.

The regression results further showed a positive and statistically significant relationship ($\beta = .976$, $t = 42.077$, $p < .001$). The unstandardized coefficient ($B = .954$) indicates that a one-unit increase in financial risk management practices was associated with a 0.954-unit increase in the sustainability score. Since $p < .05$, the null hypothesis was rejected, indicating that financial risk management practices were significantly related to the sustainability of small-scale agricultural value addition facilities.

The finding is consistent with the Enterprise Risk Management (ERM) Framework, which emphasizes the integration of risk management with organizational strategy and performance through systematic risk identification, assessment, response, and monitoring (COSO, 2017). In the context of agricultural value addition facilities, identifying, assessing, controlling, reporting, and monitoring financial risks can help protect financial resources, manage financial obligations, support informed decision-making, and maintain continuity of agricultural processing operations. The strong positive relationship found in this study therefore provides empirical support for the theoretical proposition that effective risk management contributes to the achievement and sustainability of organizational objectives.

The study contributes contextual knowledge by demonstrating that financial risk management practices are an important management capability associated with the sustainability of small-scale agricultural value addition facilities. It extends existing evidence beyond general SME and MSME populations by highlighting the relevance of systematic risk identification, assessment, control, reporting, and monitoring within the agricultural value addition context.

Although financial risk management practices explained 95.2% of the variation in sustainability, 4.8% remained unexplained, suggesting that other factors may also influence the sustainability of agricultural value addition facilities. These may include market access, availability of agricultural raw materials, access to finance, production capacity, technology, managerial capability, and prevailing agricultural and business conditions. Sustainability should therefore be understood as a multidimensional outcome influenced by financial risk management practices and other complementary enterprise factors.

Recommendations

1. Strengthen financial risk management and record keeping. Owners, managers, and accounting personnel should maintain up-to-date financial records, prepare cash-flow estimates, monitor operating costs and financial obligations, and regularly identify, assess, control, report, and monitor financial risks.
2. Provide practical financial management training. Arua City and relevant enterprise-support agencies should provide short training for owners, managers, and accounting personnel on budgeting, cash-flow management, financial record keeping, internal controls, and financial risk monitoring.

3. Strengthen access to markets and inputs. Owners and managers should establish reliable relationships with suppliers and buyers and, where feasible, use collective purchasing and marketing arrangements to improve access to agricultural raw materials and markets.
4. Adopt simple internal controls. Facilities should introduce affordable controls such as expenditure authorization, regular stock checks, cash and bank reconciliations, and periodic review of financial records to reduce financial losses.
5. Strengthen access to business-support services. Arua City and relevant government agencies should link small-scale agricultural value-addition facilities to existing business advisory, agricultural extension, financing, and enterprise-support services.
6. Conduct further research. Future studies should examine other factors affecting sustainability, including market access, raw materials, finance, technology, production capacity, managerial capability, and infrastructure, using larger samples and wider geographical coverage.

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