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ANALYZING THE CHOICES OF MARKETING CHANNELS AMONG PINEAPPLE FARMERS IN LUWERO DISTRICT

BY

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A RESEARCH REPORT SUBMITTED TO MAKERERE UNIVERSITY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN AGRIBUSINESS MANAGEMENT OF MAKERERE UNIVERSITY

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DECLARATION

I, Nakiranda Faridah, declare that this research report is my original work and has not been submitted to this or any other university or institution of higher learning for an academic award.

Signed.....Faridah..... Date: 29th September 2026

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APPROVAL

I hereby confirm that this research report titled "ANALYZING THE CHOICES OF MARKETING CHANNELS AMONG PINEAPPLE FARMERS IN LUWERO DISTRICT" has been under my supervision and is submitted to Makerere University for assessment with my approval.

Signed..... Date:
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ABSTRACT

This study examined the marketing channels used by pineapple farmers in Luwero District, the challenges experienced within each channel and the factors associated with their main marketing channel. A cross-sectional survey was conducted among 119 pineapple farmers. Data were analyzed in Stata using descriptive statistics and a multinomial logistic regression model. Farm-gate buyers were the most frequently reported main channel, accounting for 42.0 percent of respondents. Wholesalers and retailers accounted for 28.6 percent, local markets for 21.0 percent, and processors and exporters for 8.4 percent. Most farmers used more than one marketing channel at least occasionally, while easy access was the most frequently reported reason for preferring the main channel. Access to transport increased the predicted probability of selling through wholesalers or retailers by 13.4 percentage points and through processors or exporters by 9.0 percentage points. Tertiary education increased the predicted probability of using wholesalers or retailers by 36.9 percentage points. An additional 1,000 pineapples sold increased the predicted probability of using processors or exporters by 0.5 percentage points. Access to credit and an additional year of farming experience reduced the predicted probability of using local markets by 17.7 and 1.0 percentage points, respectively. Farm-gate sellers mainly reported low prices and weak bargaining power. Local-market and wholesaler or retailer users mainly reported transport difficulties, while processor or exporter users mainly reported strict quality requirements. The study concludes that transport access, education, quantity sold, credit access, and farming experience were associated with farmers' main marketing channels. It recommends shared transport arrangements, collective marketing, produce bulking, and training on buyer quality requirements.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Pineapple (Ananas comosus) is a tropical fruit consumed fresh and processed into products such as juice, dried fruit, canned pineapple, jam, and other value-added products (Hasan et al., 2024). Its production and marketing involve farmers, input suppliers, traders, transporters, processors, retailers, and exporters, linking the crop to wider agricultural and food-market systems (Tröger et al., 2020). Global production has expanded alongside rising demand for fresh and processed tropical fruits, with output concentrated mainly in tropical and subtropical regions (Hasan et al., 2024).

In Uganda, pineapple is grown for fresh consumption, processing, and sale in domestic and export markets, supporting income-generating activities in production, harvesting, transportation, trading, processing, and retailing (Kyomugisha et al., 2017). Uganda produced approximately 8,830 metric tonnes of pineapples in 2024, compared with about 12,500 metric tonnes in 2020 (FAOSTAT, 2024), figures that show production has varied across years rather than followed a steady trend. Government investment in pineapple and multi-fruit processing facilities, including plants in Kayunga and Kapeeka, further reflects the crop's role in Uganda's fruit value-addition strategy (MAAIF, 2023).

Commercial pineapple production is concentrated mainly in Central Uganda, where both conventional and organic production systems are practiced (Kyomugisha et al., 2017; Nalubwama et al., 2024). Pineapples produced in this region are supplied to local traders, urban markets, processors, organic produce companies, and exporters (Kyomugisha et al., 2019). These arrangements connect pineapple farmers to domestic, processing, regional, and international markets, each operating under different purchasing and quality conditions (Arinloye et al., 2015).

Pineapple reaches consumers through different marketing channels, including farm-gate buyers, local markets, wholesalers, retailers, processors, and exporters, which differ in purchasing volumes, prices, transport arrangements, payment terms, and quality requirements (Arinloye et al., 2015; Campita et al., 2022). Farmers may rely on

a single outlet or combine several channels depending on the quantity available, buyer demand, and the intended destination of the fruit (Kyomugisha et al., 2019).

The choice of marketing channel is associated with farmer characteristics and market-access conditions (Sigei, 2014). Education, farming experience, farm size, quantity sold, and farmer-group membership may shape farmers' participation in different outlets (Geoffrey, 2015). Market distance, access to transport, credit, market information, contracts, trust, and payment arrangements may also influence the channel used (Geoffrey, 2015; Sigei, 2014).

Marketing-channel choice therefore matters because the selected outlet determines the type of buyer involved, the conditions under which produce is sold, and the marketing requirements farmers must meet.

1.2 Problem statement

Pineapple farmers depend on marketing channels to connect their produce to buyers, but these channels differ in prices, transport requirements, payment arrangements, quantities demanded, and quality standards (Arinloye et al., 2015; Campita et al., 2022). Because pineapple is perishable, farmers have limited time to search for buyers and may choose nearby outlets when transport is costly or market information is limited (Nahar et al., 2020). Farm-gate selling can reduce transport and selling costs, but it may also weaken farmers' bargaining position and result in lower prices where alternative buyers are limited (Arinaitwe et al., 2017).

Farmers may not have equal access to the available marketing channels because they differ in education, quantity sold, farming experience, market distance, access to transport, credit, market information, and buyer relationships (Geoffrey, 2015; Sigei, 2014). The existence of several outlets therefore does not mean that all farmers can use them under the same conditions. Some may depend on one easily accessible buyer, while others may combine several channels according to prices, quantities accepted, payment arrangements, and seasonal market conditions.

Studies on pineapple marketing in Uganda have mainly examined organic, conventional, and export markets rather than the full range of channels used by farmers. Arinaitwe et al. (2017), for example, analyzed factors influencing market-outlet choice

among pineapple farmers but did not fully compare farm-gate buyers, local markets, wholesalers, retailers, processors, and exporters. Kyomugisha et al. (2017) examined whether organic pineapple farmers sold through organic markets alone or combined organic and conventional outlets, while Kyomugisha et al. (2019) focused on how seasonal supply, prices, and the purchasing capacity of export companies influenced the use of these broad market categories. Although these studies provide useful evidence on market participation and outlet choice, they give limited attention to the wider range of marketing channels and the specific challenges experienced within each channel.

It therefore remains unclear which marketing channels pineapple farmers rely on most, which farmer and market-access factors are associated with the choice of each channel, and whether transport, bargaining, buyer-access, payment, and quality challenges differ across the channels used. Without this information, interventions may treat pineapple farmers as one group even though their marketing needs and constraints vary according to the channel used. . This study therefore asks: among the options the farmers already know, which outlet they actually use as their main channel, why is that channel favorable (or the only realistic choice for them), and what challenges do they face once they are in that channel.

1.3 Objectives of the study

1.3.1 General objective

To analyze marketing-channel choices among pineapple farmers in Luwero District

1.3.2 Specific objectives

i. To examine pineapple farmers' marketing channel choices and patterns of use,
ii. To identify the challenges faced in marketing of pineapples by farmers in Luwero District.
iii. To examine the factors influencing the choice of pineapple marketing channel among farmers in Luwero.

1.3.3 Hypotheses

i. Most pineapple farmers in Luwero primarily sell their produce to middlemen at the farm gate rather than directly to urban wholesalers or retailers
ii. Farmers with better access to transport and larger production volumes are more likely to bypass local traders and sell to more profitable urban markets
iii. High transportation costs and lack of reliable market information are the biggest barriers preventing farmers from choosing better paying channels

1.4 Research questions

i. What are the primary market channels utilized by pineapple farmers in Luwero District?
ii. What challenges limit pineapple farmers' choice of marketing channels in Luwero District?
iii. What factors influence the choice of pineapple marketing channels among farmers in Luwero District?

1.5 Conceptual Framework

The conceptual framework illustrates the factors influencing pineapple farmers' choice of marketing channel in Luwero District, matching the variables analyzed in the multinomial logistic regression in Chapter Four. The framework groups these variables into three categories, namely socioeconomic characteristics, production characteristics, and location and market-access factors, each of which is expected to influence which of the four marketing-channel groups a farmer uses.

Socioeconomic characteristics capture the farmer's personal attributes, namely gender, age, and education. Production characteristics capture farming experience and the number of pineapples sold during the most recent completed marketing season. Location and market-access factors capture distance to the nearest market, access to transport, access to credit, and access to market information. These three groups of factors are expected to jointly determine the marketing channel a farmer uses, namely

farm-gate, local market, wholesalers/retailers, or processors/exporters. Marketing channels and the challenges farmers face are not treated as determinants of channel choice in this framework: rather, the challenges a farmer experiences (analyzed separately under Objective Three) are a consequence of the channel already being used, not a cause of choosing it.

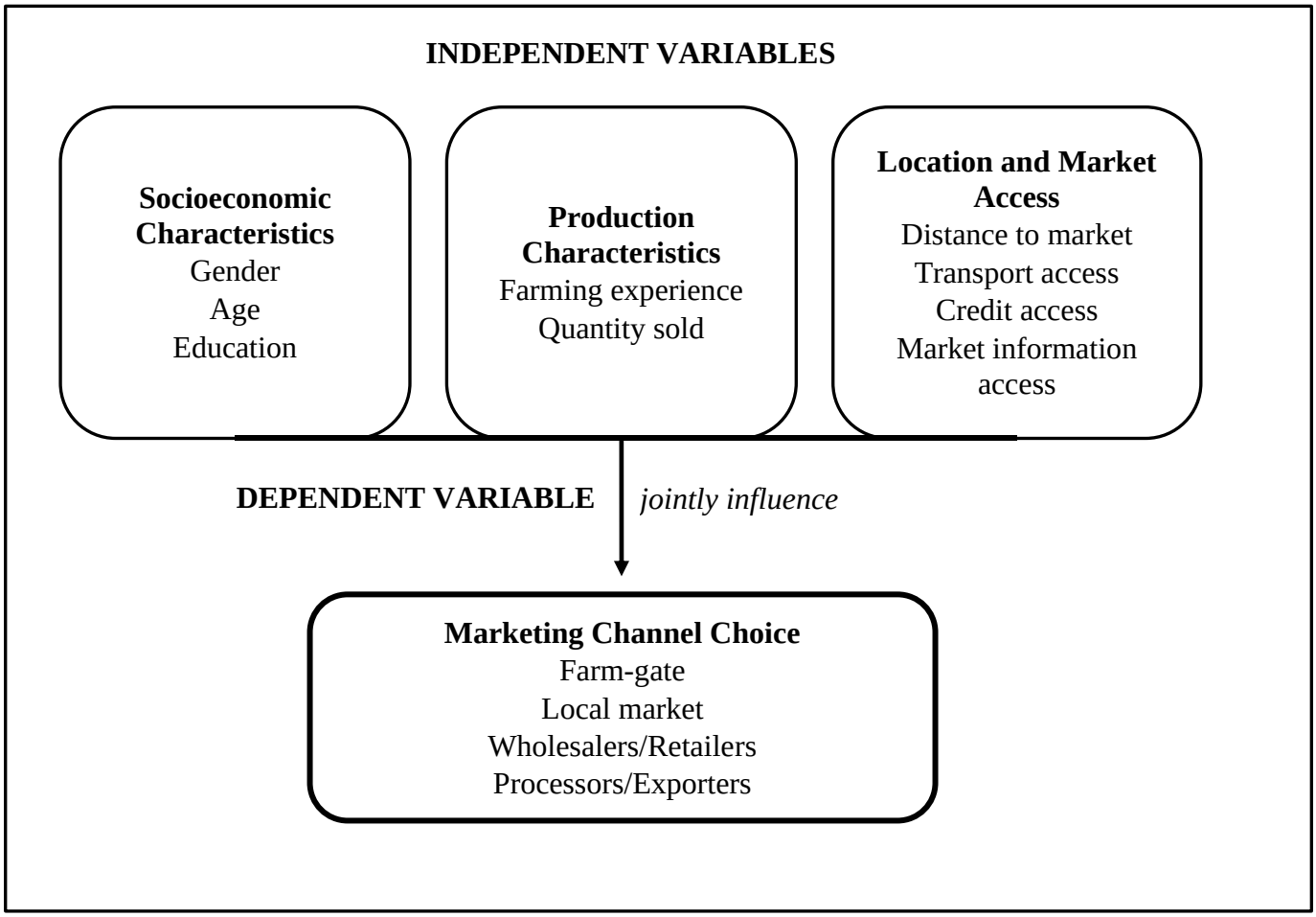


Figure 1: Conceptual framework

1.6 Significance of the Study

The study will provide pineapple farmers in Luwero District with information about the marketing channels used and the conditions associated with participation in each channel. By identifying the factors associated with channel choice and the challenges experienced, the findings may support decisions concerning transport arrangements, collective marketing, buyer requirements, and access to market information. The results

may also encourage farmers to collaborate through cooperatives and strengthen their bargaining position when selling pineapples.

The study will provide useful information to policy makers and local government authorities about the factors and constraints affecting pineapple marketing in Luwero District. This information will help them design appropriate agricultural and marketing policies, improve rural infrastructure such as roads, and support programs that enhance market access for smallholder farmers. It may also guide the development of interventions aimed at improving agricultural value chains.

Extension officers will benefit from the study by gaining insights into the marketing challenges faced by pineapple farmers. The findings will help them design training programs that equip farmers with better marketing skills, market information, and knowledge about available marketing opportunities.

The study will contribute to existing literature on agricultural marketing and smallholder farmer participation in markets. It will also serve as a reference for future researchers interested in studying agricultural value chains, marketing channels, and rural development in Uganda and other similar contexts.

1.7 Scope of the Study

The study focused on marketing-channel choices among pineapple farmers, specifically examining the primary marketing channels used, the factors associated with farmers' choice of these channels, and the challenges experienced within the channels. The study concentrated on the marketing stage of pineapple production rather than production practices. Geographically, the study was conducted in Luwero District in Central Uganda. In terms of time, the study was based on a cross-sectional survey of pineapple farmers' marketing experiences conducted in 2026.

CHAPTER TWO

LITERATURE REVIEW

2.1 Pineapple Production and Marketing

Pineapple is an important tropical fruit grown for fresh consumption and processing, and it can be sold as whole fruit or converted into products such as juice and dried fruit; these uses create several market opportunities, but farmers benefit from them only when they can supply fruit of the required quantity and quality (Arinloye et al., 2015; Hasan et al., 2024). Smallholder farmers produce a large share of the pineapples marketed in many developing countries, and their farms are usually small and depend heavily on family labor, local planting materials, and seasonal market arrangements, a production structure that affects the quantity supplied, consistency of deliveries, and the bargaining position of farmers (Campita et al., 2022; Nahar et al., 2020).

In Uganda, commercial pineapple production is concentrated mainly in central districts, including Luwero and Kayunga. The Luwero District Local Government identifies pineapple among the important crops grown in the district, particularly in its northern areas (Luwero District Local Government, 2018), and research conducted among pineapple farmers in central Uganda confirms the importance of the crop in Luwero and Kayunga and the presence of both conventional and organic production systems (Kyomugisha et al., 2017; Nalubwama et al., 2024). Production and marketing are closely connected in this setting because the fruit is perishable and quality declines after harvesting, leaving farmers limited time to search for buyers, negotiate prices, and arrange transport; where storage and processing facilities are limited, delayed sale may lead to quality loss or complete rejection of some fruits (Nahar et al., 2020; Mwinyiheria et al., 2023). Seasonal supply compounds this pressure: during periods of high supply, buyers may be unable or unwilling to purchase all the fruits offered by farmers, and Kyomugisha et al. (2019) found that some organic pineapple farmers sold through conventional markets when export companies could not absorb the full harvest during peak periods, with the relative prices offered by organic and conventional buyers also changing between peak and lean seasons.

This relationship between production and marketing means that quantity sold is an important part of market-channel choice: farmers with large harvests need buyers who can purchase in bulk, while farmers with smaller harvests may sell to nearby traders or

local consumers, and evidence from Uganda, Kenya, Benin, and Tanzania shows that harvested quantity or farm output influences the market outlet selected by farmers (Kyomugisha et al., 2017; Geoffrey, 2015; Arinloye et al., 2015; Mwinyiheria et al., 2023). Production alone, however, does not guarantee favorable returns; farmers must connect with buyers, meet market requirements, and manage the costs of harvesting, handling, and transportation, so the marketing channel used ultimately determines how production is converted into farm income (Campita et al., 2022; Magh & Ramchandra, 2023).

2.2 Marketing Channels Used by Pineapple Farmers

A marketing channel is the route through which produce moves from the farmer to the final consumer. Pineapple channels may include farm-gate buyers, local markets, wholesalers, retailers, processors, exporters, and direct consumers. Each channel involves different buyers, services, costs, prices, and quality requirements (Arinloye et al., 2015; Campita et al., 2022).

2.2.1 Farm-gate buyers

In the farm-gate channel, a trader or other buyer travels to the farm and purchases fruit directly from the producer; this arrangement reduces the farmer's need to transport produce and can provide quick payment, making it attractive to farmers who have limited transport, small quantities, urgent cash needs, or fruit that must be sold quickly (Nahar et al., 2020; Campita et al., 2022). Its main disadvantage is that the farmer may have limited bargaining power, since buyers may deduct their expected transport, handling, and resale costs when setting the farm-gate price; where farmers have little price information or few alternative buyers, they may accept a lower price to avoid the risk of losing the fruit (Arinaitwe et al., 2017; Nahar et al., 2020).

2.2.2 Local markets and direct consumers

Local markets allow farmers to sell to consumers, small traders, and retailers within or near the production area, often at a better unit price than at the farm gate because farmers perform part of the marketing function themselves, though they must incur transport, loading, market fees, and the time required to sell the fruit (Campita et al., 2022; Magh & Ramchandra, 2023). Direct selling can produce an even higher marketing margin where the farmer reaches consumers without several intermediaries: Campita et al. (2022) found that direct selling was the most profitable channel in their

study area, although many farmers still preferred wholesalers because direct selling required more capital and marketing effort, showing that the channel with the highest price or margin may not be the channel most farmers can use regularly.

2.2.3 Wholesalers and retailers

Wholesalers purchase relatively large quantities and distribute them to urban markets, retailers, processors, or other traders, while retailers purchase smaller quantities and sell directly to consumers; these channels can connect farmers to larger markets, but they normally require reliable transport, buyer contacts, and fruits that meet the expected size and quality (Geoffrey, 2015; Sigei, 2014). Farmers may prefer wholesalers because they can purchase large volumes and pay quickly: Campita et al. (2022) found that farmers selected wholesalers even where the channel generated lower profit than direct selling, indicating that certainty of sale, speed of payment, and the ability of a buyer to absorb the harvest can matter more than the unit price alone. Similar patterns have been reported outside Uganda, where Apandi et al. (2017) identified seven distinct pineapple marketing channels used by smallholders in Samarahan, Sarawak, and Mankhin et al. (2024) found that pineapple farmers in an agroforestry system in Bangladesh chose their market channel partly based on the quantity they had available to supply.

2.2.4 Processors and exporters

Processors buy pineapple for juice, drying, canning, and other forms of value addition; processing can reduce the problem of perishability and provide an outlet for larger quantities, including fruit that meets processing but not fresh-market preferences, and evidence from Tanzania shows that farmers with larger harvested quantities were more likely to use industrial processing channels (Mwinyiheria et al., 2023). Export markets may offer premium prices but usually apply stricter standards relating to variety, size, maturity, appearance, certification, traceability, and delivery schedules; Arinloye et al. (2015) found that pineapple farmers entered high-value export and processing markets when they had the knowledge and capacity required to meet quality conditions, and in Luwero, contract arrangements, trust, education, farm size, and market distance influenced participation in export markets (Arinaitwe et al., 2017). The purchasing capacity of processors and exporters may nonetheless be limited: Kyomugisha et al. (2017, 2019) found that organic farmers sometimes sold part of their harvest through conventional channels because export companies did not purchase all the fruit

produced, so farmers may retain a second channel even when they have access to a high-value buyer.

2.3 Multiple-Channel Use and Channel Preference

Farmers do not always use only one marketing channel; they may divide the harvest among buyers or change channels across the season, and multiple-channel use enables them to respond to differences in prices, quantities demanded, payment arrangements, quality requirements, and the speed at which buyers collect produce (Kyomugisha et al., 2017; Arinloye et al., 2015). In central Uganda, Kyomugisha et al. (2017) found that 68 percent of the sampled organic pineapple farmers sold through both organic and conventional channels, a choice influenced by farming experience, annual harvest quantity, conventional-market prices, and market distance; this evidence shows that farmers may have a preferred channel while still using another to dispose of fruits that the main buyer cannot purchase.

Price differences are important but do not explain channel preference on their own. During peak production, a higher-paying buyer may limit the quantity purchased, while another buyer may accept more fruit at a lower price, so farmers may compare total income, the volume accepted, speed of payment, marketing costs, and the risk of unsold fruit rather than considering the unit price alone (Kyomugisha et al., 2019; Campita et al., 2022). Quick payment is especially important where households need cash for production expenses and daily needs: Campita et al. (2022) identified quick cash as a major reason farmers preferred wholesalers despite the lower profitability of that channel, since immediate payment can reduce financial pressure even though it may also cause farmers to accept less favorable prices.

Reliable buyer relationships can also influence channel preference, since repeated transactions reduce the cost of searching for buyers and may improve trust between farmers and traders; Arinaitwe et al. (2017) found that trust and social capital were associated with pineapple market-outlet choice in Luwero District, although dependence on a small number of buyers may weaken farmers' ability to negotiate where alternative outlets are limited. The available literature therefore explains why farmers combine organic and conventional channels or choose among broad outlet groups, but less evidence is available on the frequency with which conventional pineapple farmers use several channels and the reasons they give for preferring their

main channel in Luwero District; this study addresses that issue by examining both the main channel and the use of additional outlets.

2.4 Challenges Associated with Pineapple Marketing Channels

2.4.1 Price and bargaining challenges

Low prices are common where farmers have limited information, urgent cash needs, or only one accessible buyer; farm-gate buyers may have stronger bargaining power because they organize transport and assume the risk of resale, and Arinaitwe et al. (2017) linked market decisions to trust and information conditions while Nahar et al. (2020) identified price instability as a major pineapple-marketing challenge. Weak bargaining power may also arise from individual selling, since a farmer with a small quantity may have little influence over the price offered by a large trader; farmer groups and access to alternative buyers can improve negotiation, although their effectiveness depends on the services actually provided (Sigei, 2014; Geoffrey, 2015).

2.4.2 Transport, handling, and storage challenges

Transport difficulties affect farmers using local markets, wholesalers, retailers, processors, and exporters: poor roads, high vehicle charges, and limited access to suitable transport increase marketing costs and may damage fruit during movement, and Nahar et al. (2020) found that inefficient transportation and market distance were among the main challenges affecting pineapple-channel selection. Storage is similarly limited because fresh pineapple continues to deteriorate after harvest, so farmers who cannot store fruit safely may sell quickly instead of waiting for a better price; processing can reduce this constraint by extending product life, but farmers need access to processors that can purchase the required quantity (Mwinyiheria et al., 2023; Hasan et al., 2024).

2.4.3 Quality standards and buyer access

Processors and exporters require farmers to meet product and delivery standards, which may include fruit size, maturity, appearance, variety, certification, and consistency of supply, and farmers who lack the required knowledge, inputs, or coordination may be excluded from these channels (Arinloye et al., 2015). Buyer access is a separate challenge from quality: a farmer may produce acceptable fruit but still lack a contract, contact person, transport arrangement, or sufficient quantity, and studies in Uganda

show that trust, contracts, farm size, distance, and buyer capacity all influence access to organic and export markets (Arinaitwe et al., 2017; Kyomugisha et al., 2019).

2.4.4 Market information and payment challenges

Farmers need information about prices, demand, buyer locations, standards, and collection schedules; inadequate information can lead to late decisions, weak negotiation, or dependence on intermediaries, and Nahar et al. (2020) and Sigei (2014) both identified information limitations as important constraints in pineapple marketing. Payment arrangements can also affect farmer welfare: immediate payment supports household and farm cash needs, while delayed payment may limit the farmer's ability to finance the next activity, and the preference for quick cash reported by Campita et al. (2022) shows that payment timing is an important part of channel evaluation.

2.5 Factors Influencing Marketing-Channel Choice

2.5.1 Farmer and household characteristics

Gender may influence access to transport, financial resources, buyer networks, and control over marketing decisions, and studies among pineapple farmers in Luwero and Kenya found that gender significantly influenced the choice of marketing outlets (Arinaitwe et al., 2017; Geoffrey, 2015; Sigei, 2014), although the direction of the relationship may differ according to local control of land, income, and mobility. Age can similarly represent farming knowledge and experience, but it may also reflect differences in willingness or ability to travel to distant markets; Sigei (2014) found that age influenced participation in pineapple marketing, while other studies placed greater importance on market access and institutional factors, so its effect should be established empirically rather than assumed to be positive or negative (Sigei, 2014; Mdoda et al., 2024).

Education may improve the farmer's ability to obtain and interpret price information, understand buyer standards, keep records, and negotiate agreements: Arinaitwe et al. (2017) found that education was associated with export-market choice among pineapple farmers in Luwero, and Sigei (2014) similarly found that education influenced participation in pineapple marketing in Kenya. Farming experience can likewise strengthen production knowledge and long-term relationships with buyers, and Kyomugisha et al. (2017) found that pineapple-farming experience influenced whether organic farmers used only the organic market or combined organic and conventional

channels, suggesting that experience can improve access to buyers even as it reinforces long-established selling arrangements.

2.5.2 Production scale and quantity supplied

The amount produced affects the range of buyers a farmer can serve, since larger buyers require a minimum quantity to justify collection, transport, processing, or export; Arinloye et al. (2015) found that production-system characteristics influenced channel selection, while Geoffrey (2015) and Sigei (2014) reported that pineapple output or yield influenced marketing-outlet choice in Kenya. In Uganda, annual pineapple harvests influenced the market choices of organic farmers (Kyomugisha et al., 2017): larger harvests can attract wholesalers, processors, and exporters, but they also increase the risk of unsold fruit where buyer capacity is limited, so during peak seasons farmers may use additional conventional outlets to sell quantities that are not purchased by the preferred buyer (Kyomugisha et al., 2019).

Evidence from other perishable crops supports this relationship: Mwinyiheria et al. (2023) found that tomato farmers with higher harvested quantities were more likely to choose processing channels, while smaller producers preferred channels that offered more complete marketing services, suggesting that quantity influences both buyer demand and the marketing services required by the farmer.

2.5.3 Transport and market distance

Pineapples are bulky and costly to transport, especially where roads are poor or vehicles are not readily available, and farmers without transport are more likely to depend on buyers who collect fruit at the farm; Nahar et al. (2020) found that lack of transport and high transport costs encouraged smallholder pineapple growers to use farm-gate channels. Vehicle ownership or transport access, by contrast, increases the number of markets a farmer can reach and may improve the farmer's bargaining position by reducing dependence on a single nearby buyer: Geoffrey (2015) and Sigei (2014) found that vehicle ownership influenced pineapple outlet choice in Kenya.

Distance affects both the cost and risk of reaching a market, since long distances increase fuel costs, travel time, handling, and the possibility of quality loss before sale; market distance influenced pineapple market choice in Uganda and was also identified as a major constraint among pineapple farmers in Malaysia (Kyomugisha et al., 2017; Nahar et al., 2020).

2.5.4 Market information and buyer relationships

Market information enables farmers to identify buyers, compare prices, and understand quantity and quality requirements; without it, farmers may continue selling to familiar buyers because searching for another outlet involves time and uncertainty, and price information influenced pineapple outlet choice in Kenya while limited market information was identified as a major constraint in Malaysia (Sigei, 2014; Nahar et al., 2020). Information is most useful when it is timely and linked to an accessible buyer: a farmer may know that a distant market offers a higher price but remain unable to use it because of transport costs or small quantity sold, and Mwinyiheria et al. (2023) found that market information and extension access were associated with higher farm revenue among tomato farmers using different channels.

Contracts and stable buyer relationships can reduce uncertainty about price, quantity, and timing of sale: Arinaitwe et al. (2017) found that contract marketing and trust influenced export-market choice in Luwero District, and Geoffrey (2015) and Sigei (2014) similarly found that contract marketing influenced pineapple outlet choice in Kenya.

2.5.5 Credit and financial capacity

Credit can provide working capital for harvesting, packaging, transport, market fees, and other costs incurred before sale, and farmers with financial resources may be better able to move fruit to distant markets instead of accepting an immediate farm-gate offer, although the effect of credit depends on how the funds are used and whether higher-value buyers are available (Campita et al., 2022; Mdoda et al., 2024). Financial pressure can also push farmers toward channels that provide immediate payment: Campita et al. (2022) found that many pineapple farmers preferred wholesalers because they provided quick cash, even though direct selling generated a higher profit, indicating that liquidity needs can influence channel choice independently of the expected marketing margin.

Findings on credit are not always consistent. Some studies of horticultural and vegetable farmers found that access to credit supported use of particular market outlets, while others found a negative relationship with some channels (Hailu, 2017; Mdoda et al., 2024). In a pineapple-specific study in Ethiopia, Berhanu and Atinafu (2022) found that access to credit reduced the likelihood of farmers choosing informal private trader and cooperative outlets, since credit allowed farmers to purchase inputs and secure

transport that gave them access to formal private traders instead. The relationship should therefore be interpreted according to the channel and the local credit arrangements.

2.5.6 Farmer groups and collective marketing

Farmer organizations can help members combine produce, share transport, obtain information, and negotiate with larger buyers; group marketing influenced pineapple outlet choice in Kenya, while membership density and participation in groups influenced market decisions in Luwero (Sigei, 2014; Arinaitwe et al., 2017). Collective marketing can be especially useful where an individual farmer cannot supply the quantity required by a wholesaler, processor, or exporter, and groups may also lower the cost per fruit by sharing transport and handling expenses, though the benefit depends on effective management, trust among members, and the ability of the group to secure reliable buyers (Arinaitwe et al., 2017; Geoffrey, 2015).

2.5.7 Quality requirements and prices

Quality requirements differ among channels: farm-gate and local buyers may accept a wider range of fruit sizes and appearance, while processors and exporters apply specific standards, and Arinloye et al. (2015) found that knowledge and ability to meet quality requirements increased farmers' participation in high-value pineapple markets. Higher standards may offer access to better prices, but they also create rejection risk and additional production or handling costs, so farmers who cannot meet the required grade may sell through another outlet, which helps explain why farmers with access to export or processing markets may still retain conventional buyers (Kyomugisha et al., 2019; Arinloye et al., 2015).

Prices influence channel choice through both the amount offered and the conditions attached to the sale. Kyomugisha et al. (2019) found that price differences between organic and conventional markets affected channel use across peak and lean seasons. Farmers therefore compare price with the quantity accepted, quality requirements, payment speed, and marketing cost.

2.6 Research Gaps

The literature shows that pineapple farmers use several channels, including farm-gate buyers, local markets, wholesalers, retailers, processors, exporters, and direct

consumers, and the channel selected depends on a combination of farmer characteristics, quantity sold, transport, distance, information, finance, organizations, prices, buyer relationships, and quality requirements (Arinaitwe et al., 2017; Arinloye et al., 2015; Sigei, 2014). The studies also show that farmers may use more than one channel, allowing them to manage changes in prices, buyer capacity, quality, and seasonal supply; Ugandan evidence is especially strong on the choice between organic and conventional channels and on participation in export markets (Kyomugisha et al., 2017, 2019; Arinaitwe et al., 2017).

However, the existing Ugandan studies do not fully compare the farm-gate, local-market, wholesaler or retailer, and processor or exporter channels used by the wider population of pineapple farmers in Luwero District. They also provide limited channel-specific evidence on the challenges experienced by farmers after selecting these outlets. This study addresses these gaps by identifying the main channels used, estimating the factors associated with the primary channel, examining multiple-channel use and reasons for channel preference, and comparing the challenges reported across channels.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

The study used a quantitative cross-sectional survey design. The design was appropriate because data were collected from pineapple farmers at one point in time to describe the marketing channels used and examine the factors associated with their main channel. The design also supported the use of descriptive statistics and multinomial logistic regression.

3.2 Area of the Study

The study was conducted in Luwero District in Central Uganda. Bamunanika and Kalagala sub counties were purposively selected because pineapple farming is practiced in both areas and the locations provided access to farmers using different marketing channels. In Bamunanika Subcounty, the study covered Mpologoma Parish, specifically Bbuga, Kangulumira, Kiyunga, Mityebiri, Mpologoma, and Mpungu villages. In Kalagala Subcounty, the study covered Kalanamu Parish, specifically Gangama, Kajjama, Kalagala Main, Kalagala Town, Kalanamu, and Kalungu villages. Luwero District was appropriate for the study because pineapple growing is an important agricultural activity in the district and farmers sell through farm-gate buyers, local markets, wholesalers, retailers, processors, and exporters.

3.3 Study Population

The study population consisted of pineapple farmers in Luwero District. According to Amin (2005), a population refers to the complete collection of elements that are of interest in a research study. The pineapple farmers were selected because they directly participate in production and marketing activities. They provided relevant information regarding the types of marketing channels they use, the reasons for choosing particular channels, and the challenges they face. The population therefore represented individuals with practical experience in pineapple marketing within the district.

3.4 Sample Size Determination and Sampling Method

3.4.1 Sample size determination

The researcher used the Cochran's formula to estimate the sample size since the population size of pineapple farmers in Luwero District was unknown.

$$n = \frac{Z^2 \cdot p \cdot (1 - p)}{e^2}$$

Where:

n= sample size

Z= Z-score corresponding to desired confidence level (e.g., 1.96 for 95%)

p = estimated proportion of the population with the characteristic (commonly use 0.5 if unknown to maximize sample size)

e= desired margin of error (e.g., 0.09 for ±10%)

$$n = \frac{(1.96)^2 .0.5. (1-0.5)}{(0.09)^2}$$

$$= \frac{0.9604}{0.0081}$$

$$= 119$$

Therefore, the researcher used a sample size of 119 respondents

3.4.2 Sampling procedure

The sampling process began with the purposive selection of Bamunanika and Kalagala subcounties because pineapple farming is practiced in both areas. Mpologoma Parish was selected in Bamunanika Subcounty, while Kalanamu Parish was selected in Kalagala Subcounty. The study covered six villages in Mpologoma Parish, namely Bbuga, Kangulumira, Kiyunga, Mityebiri, Mpologoma, and Mpungu, and six villages in Kalanamu Parish, namely Gangama, Kajjama, Kalagala Main, Kalagala Town, Kalanamu, and Kalungu. The villages were identified with the assistance of local leaders and agricultural extension personnel.

Lists of active pineapple farmers in the selected villages were obtained from local leaders, farmer associations, cooperatives, and extension workers. These lists formed the sampling frame and were reviewed to remove duplicate names. Simple random sampling was then used to select a total of 119 pineapple farmers. Each farmer in the sampling frame was assigned a unique number, after which random numbers were generated to identify the respondents. When a selected farmer was unavailable or declined to participate, another farmer was randomly selected from the same sampling frame.

Table 3.1: Distribution of respondents by study location

Subcounty	**Parish**	**Village**	**Respondents**
Bamunanika	Mpologoma	Bbuga	8
Bamunanika	Mpologoma	Kangulumira	16
Bamunanika	Mpologoma	Kiyunga	11
Bamunanika	Mpologoma	Mityebiri	9
Bamunanika	Mpologoma	Mpologoma	12
Bamunanika	Mpologoma	Mpungu	6
Kalagala	Kalanamu	Gangama	8
Kalagala	Kalanamu	Kajjama	7
Kalagala	Kalanamu	Kalagala Main	13
Kalagala	Kalanamu	Kalagala Town	12
Kalagala	Kalanamu	Kalanamu	11
Kalagala	Kalanamu	Kalungu	6
Total			**119**

Source: Field survey data, 2026.

3.5 Data Collection Sources

3.5.1 Primary Data

Primary data was collected directly from pineapple farmers using structured questionnaires. This data provided firsthand information about marketing channels, influencing factors, and challenges experienced in channel selection. The researcher

personally administered the questionnaires to ensure clarity and completeness of responses.

3.6 Data Collection Instrument

3.6.1 Questionnaire

Structured questionnaires were used as the main data collection instrument. The questionnaires contained close-ended questions and open ended questions designed in line with the research objectives. According to Oso and Onen (2009), questionnaires are effective for collecting standardized data from a large number of respondents. The use of close-ended questions made data coding and analysis easier. The instrument was divided into sections corresponding to the study objectives to ensure that all research questions are addressed systematically.

3.7 Data analysis

3.7.1 Analysis of Market Channels Utilized by Pineapple Farmers

To address the first objective, questionnaire responses were coded, cleaned, and analyzed using Stata. Frequencies and percentages were used to summarize the marketing channels used, multiple-channel use, and reasons for preferring the main channel. Means, standard deviations, minimum values, and maximum values were used to summarize continuous farmer and market-access characteristics.

3.7.2 Analysis of Challenges Limiting Choice of Marketing Channels

To address the second objective, responses to Questions 19 to 24 were reviewed and grouped into recurring themes. Separate binary indicators were created for each challenge, where 1 meant that the respondent mentioned the challenge and 0 meant that it was not mentioned. A respondent could be assigned to more than one challenge category. The indicators were analyzed within the respondent's main marketing-channel group using frequencies and percentages. The percentages therefore do not add to 100 percent. The coded indicators and the original open-ended responses were retained in the final dataset to support verification and replication.

3.7.3 Analysis of Factors Influencing Choice of Marketing Channels

A multinomial logistic regression model was used because the dependent variable was categorical and had four unordered outcomes, namely farm-gate buyers, local markets, wholesalers or retailers, and processors or exporters. Farm-gate buyers were used as the reference outcome.

In this study, the dependent variable (Y) represents the choice of marketing channel selected by the farmer, while the independent variables (X) represent the key factors expected to influence this decision. These include:

Table 3.2: Definition and measurement of variables

Variable	Description	Expected sign and basis
Choice of marketing channel	Dependent variable; farmer's main marketing channel: farm-gate (reference), local market, wholesalers/retailers, or processors/exporters	
Gender	Male = 1, Female = 0	Ambiguous a priori; no strong theoretical basis for direction
Age of the farmer	Farmer's age in years at the time of the survey	Ambiguous; older farmers may have more market experience but also more established farm-gate relationships
Education level	No formal education (reference), Primary, Secondary, Tertiary	Positive; more educated farmers can better interpret price and quality information and access higher-value channels
Years in pineapple farming	Farmer's experience in pineapple farming (years)	Positive; experienced farmers are more likely to know and trust alternative buyers
Distance to the nearest market	Distance to the nearest market measured in kilometers	Negative; farmers farther from markets rely more on buyers who collect at the farm-gate
Access to transport	Access = 1, No access = 0	Positive; transport access enables farmers to reach more distant, higher-paying channels
Access to credit	Access = 1, No access = 0	Positive; credit can finance the working capital and transport

Variable	Description	Expected sign and basis
		needed to bypass farm-gate buyers
Access to market information	Access = 1, No access = 0	Positive; market information reduces the information asymmetry that keeps farmers at the farm-gate
Quantity of pineapples sold	Number of pineapples sold during the most recent completed marketing season (thousands of fruits)	Positive; larger quantities sold may attract wholesalers, retailers, processors, and exporters

The multinomial logistic regression estimated the probability that a farmer chooses a particular marketing channel relative to a baseline (reference) category. For instance, with farm-gate selling as the reference category, the model compares the likelihood of choosing local market, wholesalers/retailers, or processors/exporters against farm-gate selling.

$$ln(P_j/P_0) = \beta_0 + \sum_{i=1}^{7} \beta_i X_i + \varepsilon$$

Mathematically, the model is expressed as:

$$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 \ldots\ldots + \beta 7X7 + \varepsilon$$

Where:

βo is the intercept,

β1 … βk are coefficients for the explanatory variables included in the model, and ε is the error term.

ε is the error term.

The model coefficients compare each channel with the farm-gate reference category. Average marginal effects were then used for the main interpretation because they show the change in the predicted probability of selecting each channel following a one-unit change in an explanatory variable, holding the other variables constant.

Average marginal effects (dy/dx) were calculated from the multinomial logistic regression. These effects were reported as percentage-point changes in the predicted probability of selecting each marketing channel.

$$ME = P_j(1 - P_j) \times \beta_j$$

where:

- ME = marginal effect
- Pj = predicted probability of choosing a marketing channel
- Bj = regression coefficient (B)

The final model was estimated with robust standard errors. Pineapple farm size was initially considered but was excluded because it was highly correlated with the number of pineapples sold (r = 0.907). Quantity sold was retained because it gave the better-fitting model. Farmer-group membership and extension access were retained as descriptive variables but were not included in the final model.

3.8 Ethical Considerations

Informed consent was obtained from all participants before the questionnaire was administered. Participation was voluntary, and respondents could decline to answer any question or withdraw from the interview. Confidentiality and anonymity were maintained throughout the study, and the data were used only for academic purposes.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Characteristics of the Respondents

The mean age of the farmers was 41.0 years, while the mean pineapple farming experience was approximately 11 years. The average household contained six persons. Farmers cultivated an average of 2.6 acres of pineapple, confirming that production was generally small-scale, although farm size ranged from 0.5 to 12 acres. The average distance to the nearest market was 7.2 kilometers, and the mean quantity sold was approximately 13,342 fruits. The wide range in quantity sold shows that farmers differed considerably in the volume they could offer to buyers.

Table 4.1a: Continuous characteristics of pineapple farmers

Variable	Mean	Std. deviation	Minimum	Maximum
Age (years)	41.01	10.82	20	69
Household size (persons)	6.08	2.47	1	12
Pineapple farming experience (years)	10.95	7.08	1	29
Pineapple farm size (acres)	2.60	1.90	0.50	12.00
Distance to nearest market (km)	7.21	4.52	0.90	20.90
Quantity sold (fruits)	13,341.93	10,538.17	1,820	65,000

Source: Field survey data, 2026.

Male farmers accounted for 60.5 percent of the respondents. Nearly half of the farmers had completed primary education, while 9.2 percent had tertiary education. Access to marketing services was uneven. Slightly more than half had access to transport, but only 28.6 percent had access to credit. Access to market information was reported by 48.7 percent, while 32.8 percent belonged to a farmer group. These conditions are relevant to the marketing-channel analysis because they affect farmers' ability to identify buyers, organize transport, and meet the costs of selling outside the farm gate.

The descriptive results show that farmers differed in production scale and access to marketing services. These differences are important because larger quantities may attract bulk buyers, while transport, credit, and market information can affect the cost and feasibility of reaching alternative outlets. Similar factors have been identified in

pineapple marketing studies in Uganda and other producing areas (Arinaitwe et al., 2017; Kyomugisha et al., 2017; Nahar et al., 2020).

Table 4.1b: Categorical characteristics of pineapple farmers

Characteristic	Category	Frequency	Percentage
Gender	Male	72	60.5
	Female	47	39.5
Education	No formal education	17	14.3
	Primary	59	49.6
	Secondary	32	26.9
	Tertiary	11	9.2
Marital status	Married	83	69.7
	Not married	36	30.3
Access to transport	Yes	62	52.1
	No	57	47.9
Access to credit	Yes	34	28.6
	No	85	71.4
Access to market information	Yes	58	48.7
	No	61	51.3
Member of farmer group	Yes	39	32.8
	No	80	67.2
Access to extension services	Yes	60	50.4
	No	59	49.6

Source: Field survey data, 2026.

4.2 Marketing Channels Used by Pineapple Farmers

Farm-gate buyers were the most common primary channel and were used by 42.0 percent of the farmers. Wholesalers and retailers together accounted for 28.6 percent, while 21.0 percent mainly sold through local markets. Processors and exporters were each the main channel for only 4.2 percent of the farmers. The results show that most farmers relied on channels that were relatively close and accessible, while only a small proportion mainly served processors or export buyers.

Table 4.2a: Primary marketing channels used by pineapple farmers

Primary marketing channel	Frequency	Percentage
Farm-gate buyers	50	42.0
Local markets	25	21.0
Wholesalers	14	11.8
Retailers	20	16.8
Processors	5	4.2
Exporters	5	4.2

Source: Field survey data, 2026.

The six original channels were combined into four groups for the multinomial logistic regression. Farm-gate buyers were retained as the reference channel. Wholesalers and retailers were combined because they represent resale-oriented buyers, while processors and exporters were combined because they impose more formal volume and quality requirements.

Table 4.2b: Marketing-channel groups used in the regression analysis

Grouped marketing channel	Frequency	Percentage
Farm-gate buyers	50	42.0
Local markets	25	21.0
Wholesalers and retailers	34	28.6
Processors and exporters	10	8.4

Source: Field survey data, 2026. Wholesalers and retailers were combined, while processors and exporters were combined, because the individual processor and exporter groups were small.

The dominance of farm-gate sales may be explained by the lower transport and search costs associated with buyers collecting fruit directly from the farm. Nahar et al. (2020) similarly found that transport constraints and perishability encouraged on-farm sales. The small share using processors and exporters may reflect the volume, quality, and delivery requirements of these channels, as reported by Arinloye et al. (2015).

4.2.1 Use of Multiple Marketing Channels

Only 20.2 percent of the respondents reported that they never used more than one channel. About 34.5 percent sometimes used multiple channels, while 30.3 percent did so often or always. The result confirms that the main channel does not represent every sale made by a farmer. It identifies the outlet relied on most, while many farmers also use other channels when prices, quantities, or buyer availability change.

Table 4.3: Frequency of multiple marketing-channel use

Frequency of multiple-channel use	Frequency	Percentage
Never	24	20.2
Rarely	18	15.1
Sometimes	41	34.5
Often	29	24.4
Always	7	5.9
Total	119	100.0

Source: Field survey data, 2026.

The high level of multiple-channel use agrees with Kyomugisha et al. (2017, 2019), who found that Ugandan pineapple farmers combined organic and conventional outlets when prices, seasonal supply, and buyer capacity changed. The finding confirms that the main channel represents the outlet used most, rather than the only outlet available to the farmer.

4.2.2 Reasons for Preferring the Main Marketing Channel

Easy access was the most frequently reported reason for preferring a channel, mentioned by 67.2 percent of the farmers. Quick payment was reported by 56.3 percent, while 52.1 percent selected better prices. Low transport costs and reliable buyers were also important. The results show that farmers considered convenience, payment, and transaction costs together with the selling price.

Table 4.4: Reasons for preferring the main marketing channel

Reason	Frequency	Percentage
Easy access	80	67.2
Quick payment	67	56.3
Better prices	62	52.1
Low transport costs	59	49.6
Reliable buyers	57	47.9

Source: Field survey data, 2026. Multiple responses were allowed; therefore, the percentages do not add to 100 percent.

The importance of easy access and quick payment shows that farmers did not choose channels on price alone. Pineapple is perishable, and delayed sale can reduce quality or leave part of the harvest unsold. The result is consistent with Nahar et al. (2020), who found that transport, distance, and perishability encouraged farmers to choose outlets that provided immediate sales.

4.3 Channel-Specific Marketing Challenges

The challenges were analyzed according to the farmer's main marketing channel. Because respondents could report more than one challenge, the percentages do not add to 100 percent. Figure 4.2 compares the leading challenge in each channel, while Table 4.6 presents the two most frequently reported challenges for each group.

The pattern of constraints differed across marketing channels. Farm-gate sellers were mainly affected by low prices and weak bargaining power. Transport was the leading challenge among farmers selling through local markets and wholesalers or retailers. Farmers using processors or exporters mainly faced strict quality requirements and difficulty accessing or meeting buyer standards. The processor and exporter results should be interpreted cautiously because this group contained only ten respondents.

The concentration of low prices and weak bargaining power among farm-gate sellers reflects the trade-off between convenience and control over the sale. Farmers avoid transport and market-search costs, but they negotiate from a weaker position when only a few buyers come to the farm. This agrees with Arinaitwe et al. (2017) and Nahar et al. (2020), who linked restricted market access and information to dependence on intermediaries.

Transport difficulties among local-market and wholesaler or retailer users also support the regression result that transport access increased the probability of using channels beyond the farm gate. Nahar et al. (2020) similarly identified inefficient transport as a major constraint in pineapple marketing. The quality problems reported by processor and exporter users are consistent with Arinloye et al. (2015), who found that participation in high-value channels depended on the ability to meet technical and quality requirements.

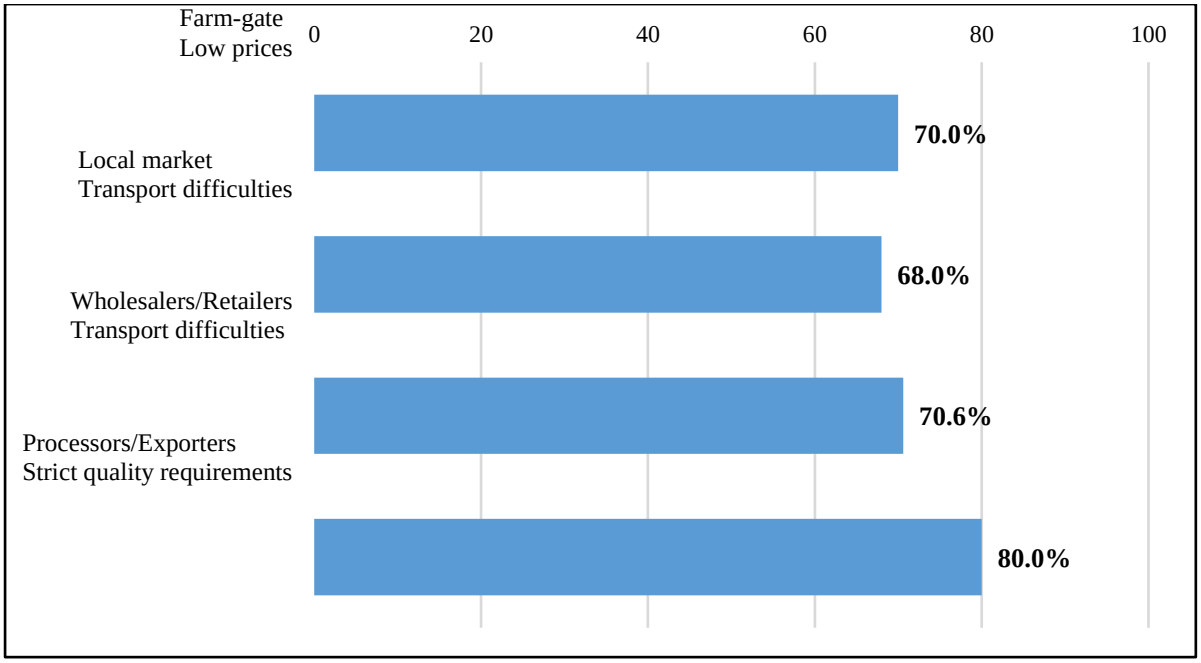


Figure 4.2: Leading challenge reported in each marketing channel

Source: Field survey data, 2026.

Table 4.5: Main challenges experienced across marketing channels

Marketing channel	n	Leading challenge	Percent	Second challenge	Percent
Farm-gate buyers	50	Low prices	70.0	Weak bargaining power	68.0
Local markets	25	Transport difficulties	68.0	Competition / market fees	44.0
Wholesalers and retailers	34	Transport difficulties	70.6	Storage limitations	52.9
Processors and exporters	10	Strict quality requirements	80.0	Buyer access / standards	60.0

Source: Field survey data, 2026. Note: Multiple responses were allowed.

4.4 Factors Associated with the Main Marketing Channel

A multinomial logistic regression was estimated using farm-gate buyers as the reference channel. Average marginal effects are reported because they show the change in the predicted probability of selecting each channel, holding the other variables constant.

Tertiary education was associated with a 36.9 percentage-point increase in the predicted probability of using wholesalers or retailers, compared with having no formal education. The effect was statistically significant at the 5 percent level. Primary and secondary education were not statistically significant.

Access to transport increased the predicted probability of using wholesalers or retailers by 13.4 percentage points and processors or exporters by 9.0 percentage points. Both effects were statistically significant at the 10 percent level. Transport access therefore distinguished farmers who could reach buyers beyond the farm gate.

Access to credit was associated with a 17.7 percentage-point reduction in the predicted probability of using local markets. This result was statistically significant at the 10 percent level. The cross-sectional data do not establish why credit users were less likely to select local markets, so the result should be interpreted as an association rather than a causal effect.

Each additional year of pineapple farming experience was associated with a 1.0 percentage-point reduction in the predicted probability of using local markets, significant at the 10 percent level. An additional 1,000 fruits produced increased the predicted probability of using processors or exporters by 0.5 percentage points, significant at the 5 percent level. Gender, age, distance to the nearest market, and access to market information were not statistically significant in the estimated model.

The positive association between transport access and the use of wholesalers, retailers, processors, and exporters is expected because these channels often require the farmer to move fruit or coordinate delivery. The finding agrees with Nahar et al. (2020), who showed that poor transport restricted channel choice, and with Arinaitwe et al. (2017), who found that market distance influenced pineapple market selection in Luwero District.

Tertiary education increased the probability of using wholesalers or retailers. Higher education may improve the farmer's ability to obtain buyer information, understand market requirements, and maintain business relationships. This result is consistent with

Arinaitwe et al. (2017), although the absence of significant effects for primary and secondary education suggests that only the highest education category clearly distinguished channel choice in this sample.

The positive association between quantity sold and the use of processors or exporters supports the view that larger buyers require sufficient and regular volumes. Kyomugisha et al. (2017) similarly found that annual pineapple harvest influenced market choice. In contrast, credit access reduced local-market use. This result differs from the expectation that credit would improve access to alternative markets. The data did not capture the amount or purpose of credit, so the finding may reflect production borrowing or pre-existing buyer arrangements rather than a direct effect of credit on marketing.

Gender, age, distance, and market information were not statistically significant after the other variables were controlled for. This differs partly from Arinaitwe et al. (2017), who found effects for gender and market distance. The difference may arise from the channel categories, sample composition, or market conditions examined in the two studies.

Table 4.6: Average marginal effects from the multinomial logistic regression

Factor	Category	Local market AME (SE)	Wholesalers/retailers AME (SE)	Processors/exporters AME (SE)
Gender	Male	0.106 (0.072)	-0.014 (0.085)	-0.007 (0.050)
Age (years)	Continuous	0.004 (0.004)	0.000 (0.005)	0.004 (0.003)
Education	Primary	0.044 (0.093)	0.065 (0.114)	-0.007 (0.074)
	Secondary	0.068 (0.112)	0.157 (0.130)	0.025 (0.075)
	Tertiary	-0.070 (0.127)	0.369** (0.179)	0.012 (0.119)
Farming experience	Years	-0.010* (0.006)	0.005 (0.006)	-0.006 (0.004)
Distance to nearest market	Kilometers	-0.002 (0.009)	-0.008 (0.009)	0.003 (0.006)
Access to transport	Yes	0.067 (0.075)	0.134* (0.076)	0.090* (0.049)
Access to credit	Yes	-0.177* (0.098)	0.016 (0.091)	0.009 (0.054)
Access to market information	Yes	-0.022 (0.069)	0.110 (0.080)	0.077 (0.051)
Quantity sold	000 fruits	-0.005 (0.004)	0.003 (0.004)	0.005** (0.002)

*Notes: Farm-gate buyers were the reference channel. AME means average marginal effect. Robust standard errors are in parentheses. * $p < 0.10$; ** $p < 0.05$. No formal education was the reference education category. Source: Field survey data, 2026.*

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary and Conclusions

The study concludes that pineapple farmers in Luwero District use several marketing channels, but farm-gate buyers remain the most common main outlet. Many farmers also use additional channels depending on buyer availability, quantity sold, prices, and the urgency of selling. Easy access and quick payment were as important as better prices in the preference for a main channel.

Marketing challenges were channel-specific. Farm-gate sellers mainly faced low prices and weak bargaining power. Local-market and wholesaler or retailer users mainly faced transport difficulties, while processor or exporter users mainly faced strict quality and buyer standards. Interventions should therefore respond to the requirements of each channel rather than treating all farmers as having the same marketing problem.

Transport access, tertiary education, credit access, farming experience, and quantity sold were statistically associated with at least one marketing-channel outcome. Transport access increased the probability of reaching wholesalers or retailers and processors or exporters, while a larger quantity sold increased the probability of using processors or exporters. The negative association between credit access and local-market use requires further investigation.

5.2 Recommendations

To address the low prices and weak bargaining power reported by farm-gate sellers, farmer groups should strengthen collective marketing and produce bulking. Farmers can negotiate as a group, compare offers from several buyers, and use current price information before agreeing to farm-gate sales. Extension officers and farmer organizations should also support stronger linkages between farmers and alternative buyers.

To reduce the transport difficulties faced by farmers selling through local markets, wholesalers, and retailers, Luwero District local government, farmer organizations, and private transport providers should promote shared produce collection and group-based transport arrangements. Organized collection points and coordinated delivery schedules can reduce individual transport costs and make it easier for farmers to reach buyers beyond the farm gate.

To address competition and market-fee challenges in local markets, market authorities and farmer organizations should improve communication on market charges, selling arrangements, and available market space. Farmers should also be encouraged to obtain market information before transporting produce so that they can compare expected prices and marketing costs.

To reduce the storage limitations reported by farmers using wholesalers and retailers, farmer groups and local authorities should support better temporary handling and aggregation arrangements at collection points. Coordinated collection, careful handling, sorting, and timely transport can reduce delays and quality losses before the fruit reaches buyers.

To address the strict quality requirements and buyer-access challenges faced by farmers using processors and exporters, extension agencies should provide practical training on harvesting maturity, sorting, grading, handling, and buyer quality specifications. Training should be linked to processors and exporters so that farmers understand required standards, quantities, and delivery conditions before committing produce to these channels.

5.3 Limitations of the Study

The study used cross-sectional data collected at one point in time. The estimated relationships therefore show associations and do not establish that the explanatory factors caused farmers to choose a particular channel.

The regression used the farmer's main marketing channel, although many respondents used more than one channel. The model therefore explains the outlet relied on most and does not capture every sale or changes in channel use across seasons.

Processors and exporters were combined because each group contained only five farmers. The channel-specific findings for the combined group are based on ten respondents and should be interpreted cautiously.

5.4 Areas for Further Research

Future studies should collect seasonal sales records showing the quantity, price, costs, and payment conditions for every channel used by each farmer. A multivariate model could then examine simultaneous use of several channels. Further research should also assess credit amount and use, buyer contracts, price differences, marketing costs, and the profitability of each channel.

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APPENDICES

Appendix 1:

Diagnostic Tests for the Multinomial Logistic Regression

Table A1 reports variance inflation factors (VIF) for the covariates in the final multinomial logistic regression model, used to check for multicollinearity.

Table A1: Variance Inflation Factors

Variable	VIF
Gender	1.13
Age	1.68
Farming experience	1.70
Access to transport	1.08
Access to credit	1.14
Access to market information	1.08
Quantity sold	1.04
Distance to nearest market	1.12
Education: Primary	2.43
Education: Secondary	2.36
Education: Tertiary	1.64
Mean VIF	1.49

Note: All VIF values are well below the common threshold of 10, indicating no serious multicollinearity among the covariates in the final model.

Source: Author calculations based on field survey data, 2026.

Appendix 2:

QUESTIONNAIRE FOR PINEAPPLE FARMERS

Marketing Channel Choices Among Pineapple Farmers in Luwero District

Respondent ID: _____

Date: _____

Enumerator: _____

Introduction and Consent

Thank you for agreeing to take part in this study. My name is Nakiranda Faridah, registration number 23/U/25013, and I am a student of Makerere University pursuing a Bachelor's degree in Agribusiness Management. I am conducting research on the marketing channels used by pineapple farmers in Luwero District as part of the requirements for completing my degree.

You have been selected because of your experience in pineapple farming and marketing. The information you provide will be used only for academic purposes and will be kept confidential. Your name will not appear in the report, and your responses will be combined with those of other farmers.

There are no right or wrong answers. We are interested in your actual experience. Taking part is voluntary. You may skip any question or stop the interview at any time without any penalty.

Do you agree to participate in this study?

☐ Yes ☐ No

Do you have any questions before we begin?

SECTION A: Background Information

1. What is your gender?

☐ Male ☐ Female

2. What is your age (in completed years)?

Age: _____

3. What is your level of education?

☐ No formal education ☐ Primary ☐ Secondary ☐ Tertiary

4. What is your marital status?

☐ Married ☐ Not married

5. What is your household size (number of people living in your household)?

Household size: _____

6. What is your farming experience, in years?

Years: _____

7. What is the size of your pineapple farm, in acres?

Acres: _____

If you are not sure of the exact acreage, give your best estimate to one decimal place (e.g. 1.5 acres).

SECTION B: Marketing Channels Used

8. Which marketing channels do you use to sell your pineapples? (Tick all that apply. You may select more than one.)

☐ Farm-gate (middlemen) ☐ Local market traders ☐ Urban wholesalers ☐ Retailers ☐ Exporters ☐ Processors

9. Which is your main marketing channel, meaning the one you rely on most? (Tick only one.)

☐ Farm-gate ☐ Local market ☐ Wholesalers ☐ Retailers ☐ Processors ☐ Exporters ☐ Other (specify) _____

10. How often do you use more than one marketing channel?

☐ Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Always

11. Why do you prefer your main marketing channel? (Tick all that apply)

☐ Quick payment ☐ Better prices ☐ Easy access ☐ Low transport cost ☐ Reliable buyers ☐ Other (specify) _____

SECTION C: Challenges Experienced in the Main Marketing Channel

12. What challenges do you experience when using your main marketing channel?

_____

_____

_____

_____

_____

13.How do these challenges affect your ability to sell your pineapples?

_____

_____

_____

_____

_____

14. Can you describe any difficulties related to costs (such as transport, rent, or fees) when using this marketing channel?

15. What problems do you face in accessing customers through this channel?

16. Are there any issues related to competition within your marketing channel? Please explain.

17. What challenges do you encounter regarding product quality, storage, or preservation when using this channel?

SECTION D: Factors Influencing the Main Marketing Channel

18. What is the distance from your farm to the nearest market where you sell pineapples, in kilometers?

Distance (km): _____

19. Do you have access to transport for moving your pineapples to market?

☐ Yes ☐ No

20. Do you have access to credit services for pineapple production or marketing?

☐ Yes ☐ No

21. Do you have access to market information such as prices, buyers, and demand?

☐ Yes ☐ No

22. Are you a member of any farmer group, cooperative, or farmers' association?

☐ Yes ☐ No

23. How many pineapples did you sell during your most recent completed pineapple marketing season?

Number of fruits sold: _____

Estimated average weight per fruit, if known: _____ kg

24. Do you have access to extension services related to pineapple production or marketing?

☐ Yes ☐ No

Thank you for your time and participation.