

**PROFITABILITY ASSESSMENT OF GINGER RETAIL MARKETING IN KAMPALA
DISTRICT**

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**A SPECIAL PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF
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DECLARATION

I hereby declare that this special project is my original work and has never been submitted to any University or institution of higher learning for any academic award and where other peoples' work has been used, due acknowledgement has been made.

Signature



Date 24/02/2021

NAKATO MARGRET

APPROVAL

I certify that this special project has been prepared under my supervision and I give my approval for the work to be examined for the attainment of Bachelor of Science Degree in Horticulture of Makerere University

Signature.....

Date..... 24/02/21

Dr Stephen Lwasa

DEDICATION

This special project is dedicated to my mother; Miss Nakiganda Fatinah for her constant prayers and to my supervisor Dr. Stephen Lwasa for his continuous guidance and support.

I also dedicate it to Dr. Ochwo Mildred Ssemakula and to the ginger retail traders in Nakasero, Kalerwe and Nakawa market for taking off their precious time to give me the required information for this project.

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ABSTRACT

There is still a knowledge gap in ginger trade, its profitability and what influences profitability levels. This study was conducted to assess the profitability and the factors that affect the profitability of ginger among retail traders in Kampala district. A total of 80 respondents (29 males and 51 females) were interviewed using a structured questionnaire. The results indicated that many ginger traders in Kampala were generally youth (mean age of 32.61 years), that are married (70%); and have at least attained 7 years of education. Majority of the respondents (93.75%) indicated that they did not get support from the government. However, the Chi-square test of association indicated that this response was significantly related ($\chi^2 = 16$; $P < 0.001$) to the market of the respondent. Respondents from Kalerwe market mostly agreed to this. Variety of ginger traded and how often the respondent stocks ginger was significantly ($P \leq 0.05$) between the markets unlike time taken to sell a batch of ginger and quantities of ginger sold ($P > 0.05$). According to the respondents, ginger was profitable and this was ascertained by the profit calculation. Mean profits earned by the traders were Shs. 127,475.9 per 250 kilograms per week. Results of the regression model showed that this was significantly ($P \leq 0.05$) influenced by education level attained by the respondent and sex of the trader. Price fluctuation (32.5%) and low prices (18.75%) were the major constraints cited by the ginger retail traders. 25% of the retail traders said that the reason they have been sustained in the ginger business is attributed to the fact that ginger is not as perishable as other horticultural produce. As a recommendation, adequate security, standard prices, quality standards and well-built market structures should be put in place. These recommendations once addressed could also improve profitability.

CHAPTER ONE

INTRODUCTION

1.1 Background

Ginger (*Zingiber officinale* Rosc) is a monocotyledonous, herbaceous, tropical plant belonging to the family Zingiberaceae. It's a perennial plant usually grown as an annual crop. The crop is native to southern Asia mainly in India and china from where it spread to most tropical and subtropical countries. The plant is erect, has many fibrous roots, aerial shoots (pseudo stem) with leaves, and the underground stem (rhizome) where the ginger spice is obtained (Vasala, 2012). The roots of ginger are of two types, fibrous and fleshy. After planting, many roots having indefinite growth grow out of the base of the sprouts. These are the fibrous roots, and the number of such roots keeps on increasing with the growth of tillers. These fibrous roots are thin, have root hairs (Ravindran and Babu, 2016).

These roots are thicker, milky white in color, with few root hairs. In the roots, the important active component is the volatile oil and pungent phenol compound such as gingerol which is a very potent anti-inflammatory compound (Latona *et al.*, 2012). Kemper (1999) stated that the active ingredients in ginger are thought to reside in its volatile oils and comprise of 1-3% of its weight. He continued to state that the major active ingredients in ginger oil are the sesquiterpenes: bisabolene, zingiberene, and zingiberol and their concentration vary with growing conditions. The aerial shoots have many narrow leaves borne on very short petioles and with sheaths that are long and narrow, and the overlapping sheaths produce the aerial shoot. A pair of ligules is formed at the junction of leaves and sheath. The leaves are arranged in a distichous manner. Ginger has no information on the primary centers of domestication since ginger rhizomes can be easily transported over long distances and spread all over the tropics and subtropics hence the most dominantly grown spice as discussed by Ravindran and Babu (2016). Dinesh (2017) stated that ginger is one of the earliest known oriental spice. Ginger was introduced in East Africa by the Arabs in the thirteenth century (Okwuowulu, 2016).

1.2 Uses of ginger

Ginger has been used by the Indians and ancient Chinese as a tonic root for all ailments and also valued in mild carminatives and components of pharmaceutical preparations in European

medicine. Ravindran and Babu (2016). It has also been used in traditional and modern medicine for treatment of nausea, vomiting associated with pregnancy and prevention of motion sickness (White, 2007). It was also used as a raw material for certain soft drinks and variety of sweet meat. Today, it's widely used as a flavoring agent in beverages and many food preparations Conakry (2007) it's used as a spice where the rhizomes are dried and grounded into a powder to give the spicy taste and aroma. Ginger is used in making of ginger bread, biscuits, cakes, soups, pickles, ginger beer and wine. Ginger is also used in animal and in vitro models leading to speculation for its use as an antioxidant, antimicrobial, antifungal, antineoplastic and antihypertensive agent (Singletary, 2010). Other products from ginger include; fresh ginger, preserved, dried, ginger powder, ginger paste, oleoresins, ginger beer, candy ginger, extracts are used in dairy products.

1.3 Production of Ginger

1.3.1 Global ginger production

The major ginger producing countries include; India, china, Jamaica, Taiwan, Sierra Leone, Nigeria, Fiji, Mauritius, Bangladesh, Philippines, Sri-Lank, Thailand, Trinidad, Tobago, Uganda, Hawaii, Guatemala and many pacific oceans (Ravindran and Babu, 2016). Production of ginger globally was 3,038,120 tonnes under a harvested area of 371,816 hectares led by India with production quantity of 1,070,000 tonnes harvested from 168,00 hectares followed by china with 583,126 tons harvested from 53,515 hectares, Nigeria in the third position with 349,895 tonnes harvested from 66,446 hectares, followed by Nepal and Indonesia in 2017 others. In 2018, India was the largest producer of ginger with 33.9% of the total world's production of 1,109,000 tons followed by Nigeria with 16% with production of 522,964 followed by China with 14.2% of the total world's production of 492,905 (Retrieved from Atlas big.com)

In Africa, Nigeria is the major producer of ginger with a world's share of 11.5% with a production quantity of 349,895 tons in 2017 majorly grown in the Kaduna state. In the world, Kenya was the largest producer in East Africa although it was 28th in the world with an annual production quantity of 349 tonnes from an area of 33 hectares. Uganda was in the 31st position with 150 tonnes from 51 hectares and Tanzania in the 35rd position with 45 tons from 19 hectares. (FAO, 2017) [Retrieved from Atlas big.com].

1.3.2 Ginger production in Uganda

According to fortune Africa, ginger is mainly grown in central parts of the country including districts of Butambala, Mpigi, Mukono, Mubende and Wakiso, Gomba, Masaka district. Traditionally, two varieties of ginger are grown and these include; land races (local with small rhizomes) and the hybrids with big rhizomes. Uganda exports its ginger to United Kingdom, Netherlands, United Arabs Emirates, Tanzania, Rwanda. Burundi and Egypt. According to Uganda ginger production suppliers, exports and markets, Uganda sold 405 tonnes of ginger in 2018 between 2015-2018 ginger exports improved by 65.68% bringing Uganda \$0.25m. In 2018 Uganda's share of the world export was less than 1%

1.4 Constraints to production in Uganda

Production of ginger in Uganda is still low due to low quality seed (rhizomes) from the previous season which facilitates transmission of diseases to the next generation. Access to good quality seed is limited by absence of nurseries that can raise certified seedlings to sell to the farmers. Pests and diseases are also a major limitation. Pests include caterpillars that feed on the leaves, root knot nematode, root meal bugs, fungal infections caused due to the excessive use of coffee husks during the damp weather which are not acceptable on the international market by the farmers.

Ginger is also a labor-intensive crop, high investment in field preparation, planting and harvesting since there is low mechanization and the available labor is expensive (Bangirana, 2014). Other constraints include the unreliable rainfall patterns due to the changing season known by the farmers which results into poor planning since the farmers have to wait for the rains to plant because ginger requires a lot of rainfall in its early stages hence poor yields obtained, there is also limited research done about the crop especially the knowledge about the pests and diseases (Bangirana, 2014).

The ginger market is also not organized with the market dominated with middlemen, no quality standards, no grading and also the markets are not reliable which has resulted into redundancy of the farmers to invest in ginger production. There are no ginger based development programs and yet it's one way to manage price fluctuation since a network of small-scale industries producing ginger products will provide good prices to the farmers (Ravindran and Babu, 2006).

1.5 Problem statement

Ginger producers lack appropriate skills, knowledge and information on ginger marketing (Geta and Kifle,2011). The producers are not aware of market information like value chain information including price at the end markets, demand situation and quality of the products. These compel them to sell at relatively low price. On the other hand, producers have very little stake over the value chain, and the system is mainly operated by the middleman, wholesalers, suppliers, retailers and cooperatives, who have the access to market information and the backward flow of this information to the farmers is managed in favor of these stakeholders (Geta and Kifle, 2011). There is need to ensure high level of farmers' participation and integration in the value chain through exploring market structure and opportunities to minimize unplanned losses in Ginger production. It is not clear whether retail traders of ginger make profits, and whether they are aware of this. The determinants of this profit are also not known well. This is partly due to limited research on horticultural crops. Lack of such knowledge makes it uncertain to the traders as to what prices to charge, and at what frequency to trade. If this uncertainty is not urgently addressed, many traders will be driven out of retail ginger trade, to the detriment of Uganda's economy.

1.6 Objectives

1.6.1 General objective

The main objective of the study is to assess the profitability of ginger among traders in Kampala district.

1.6.2 Specific objectives

- i. To characterize ginger traders in the different markets of Kampala.
- ii. To determine the profitability of ginger marketing.
- iii. To estimate the profit function for ginger retail traders
- iv. To identify the constraints faced by ginger traders in the different markets.

1.7 Hypothesis

Age of respondent, location, education, taxes imposed by the different authorities, access to training and information, have a significant influence on the profitability of ginger.

1.8 Justification

Ginger production in Uganda has seen a very rapid decline by 21.67% Madan (2016) due to the pull out of most of the major ginger growing district for example Butambala and Mpigi. Because of the intensive labor requirements involved in ginger, ginger growers in Butambala have moved away from its production as reported by (Agripro focus) while those in Mpigi its due to the poor pricing offered by the exporters and processors (Daily monitor, 2016). Even though is a highly profitable venture, a number of its growers have been forced out of production due to the less producers share and this can be combatted through understanding what actually the real economic ginger situation (Khanal *et al.*, 2018).

CHAPTER TWO

LITERATURE REVIEW

2.1 Ginger market channels

Market chains or channels are group of people or organizations that direct the flow of agricultural commodities from producers to consumers vertically. These market channels include market levels and actors that have a role in the distribution and transformation of the commodity. The flow of agricultural commodities starts from the farm but sometimes stored before directed to the rural (tertiary) markets then to the secondary markets or storage chamber where middlemen and wholesalers buy them in desired quantities and then sent to primary or main market or storage rooms from here, they are transported to the final markets where the goods are sold to retailers, wholesalers and big companies from export. Different institutions and institutional structures act in the marketing process of agricultural products and these include; village traders who work in periodic markets, middlemen, agents and brokers in addition to wholesalers in central and/or auction markets (ANSAB, 2011)

According to Binish (2018) marketing channels are very important because they aid and streamline how every consumer gets their desirable products. He further said that marketing Channels have become eyes and ears of marketing today and receive countless attention, they do not only create value addition but also customer and shareholder value, brand equity and market presence for a company.

According to Pandey *et al.* (2010), prices paid by consumers and the corresponding share received by the producer are affected by marketing channels which are important channels of agribusiness He further stated that the shorter the channel, the less the marketing costs and cheaper the commodity to consumer. Devendra *et al.* (2019) in his study revealed that there are three types of marketing channels and the common types were; Farmers-Wholesalers-Retailers-Consumer constituted 40% respondents, 21.20% respondents in the Farmers-Retailers-Consumers, 17.50% respondents followed marketing channel of both Farmer-Wholesalers-Retailers-Consumers and Farmers-Commission agents-Wholesalers-Retailers-Consumers, 16.20% respondents followed both Farmers-Wholesalers-Retailers-Customers and Farmers-Retailers-Customers and 5% followed marketing channel of Farmers-Commission agents-Wholesalers-Retailers-Consumers.

2.2 Characteristics of ginger traders in markets

Abah *et al.* (2018) in a study of socio-economic analysis of ginger value chain analysis showed that majority of ginger retailers traders were female with 67% and 33% were males meaning that ginger retailing was done in small units with other food crops whose retailing is dominated by women, also less capital is required to carry out the ginger retail business.

Fifty-two percent (52%) of ginger retail traders had an average age 40 years which meant that they are strong enough to engage in marketing. The majority of ginger retailers by years of experience was 20 years or less (51%). This could have an effect on the profitability of ginger since experience is important in decision making and forecasting. The results also revealed that 77% of the retailers do not belong to any ginger marketing association. This indicates that the retailers have little capacity to influence marketing decisions.

2.3 Marketing costs

Binish (2018) defined marketing costs as costs incurred in moving goods from the producer to the consumer and the number of services offered. He further divided marketing costs into three; direct costs which include direct marketing functions and services for example; transportation and assemblage costs, treatment costs (loading, unloading and repackaging), processing and storage costs, taxes, levies, customs and duties. The operating costs which are the opportunity cost of tied up capital and physical damages that arise from transportation, storage as a fraction of initial market crop value. Binish (2018) continued to explain that marketing efficiency is directly linked to the marketing costs and that the higher the costs incurred as compared to services involved the lower the marketing efficiency and vice versa. Marketing margin is the price charged for a single or group of marketing services from one marketing node to another.

2.4 Profitability

Profitability (revenue-cost ratio) is the ability of a given investment to earn a return from its use (Howard and Upton, 1953). It shows how efficiently the management can make profit by using all the resources available in the market. Poudel *et al.* (2016) also defined profitability as the ability of a business to earn a profit. He further states that its money left after revenue of a business pays all expenses.

Gambo (2017) defined Profit as the difference between revenue and cost. He further noted that according to economics, profit can be positive or negative where the Positive profit is the excess of revenues over total costs and negative profit are losses which is the excess of total costs over revenues. A profit function is a mathematical relationship between a firm's total profit and output. It equals total revenue minus total costs, and it is maximum when the firm's marginal revenue equals its marginal costs.

Profit function provides an estimate of a full range of economic variables (Khatri *et al.*, 1997). The profit function provides a convenient and logical link between theoretical specification of a model and empirical implementation. Using a normalized profit function, one can derive a system of supply and demand functions thus one avoids the potential difficulties of obtaining closed form solutions. In a study conducted by Abah *et al.* (2018) the socioeconomic determinants of profit were; experience, education, age, sales income and extension contact for producers; and experience, education, age and sales income for assemblers, wholesalers and retailers.

2.5 Constraints to ginger marketing

Devendra *et al.* (2019) showed that high fluctuation, transport cost, storage facility and transportation costs are problems faced by traders with high fluctuation having the highest index value (0.90) and transport the least index (0.15), storage facility and transportation costs being the relative problems. According to Magohe *et al.* (2008) several trucks between seven to eight pick up raw fresh ginger per week in Same along the roads since during the rainy seasons the roads in the hilly areas are affected hence farmers now sell ginger in groups not as individuals to get better prices.

He further revealed that marketing is very inefficient and therefore farmers are disorganized, getting no reliable market information and domination by speculative middlemen. Above all, quality management, standards and grading are absent therefore the ginger market chain appears to be in a deadlock. Hence farmers are reluctant to invest because their market outlets are unreliable, and market agents are reluctant to invest because farm production is sub-optimal.

Ayoki (2007) noted that marketing of Uganda's staple foodstuffs and food distribution are constrained by poor market infrastructure, high transaction costs and inefficient price information transmission channels. He further said that agricultural markets are underdeveloped, poor roads networks and lack of knowledgeable private sector capable of trading competitively plus market

exchange facilitating institutions. Ayoki (2007) further revealed that generally, there is lack of information both on the demand and supply side, proper system of agricultural information is underdeveloped since the major source of day-to-day price and market information is speaking with other traders and also the use of newspapers, internet and radios are still very limited although there is wide use of mobile phones and public telephones amongst people in rural and urban areas.

Associations of agricultural producers and traders that could intervene in shaping the market conditions and advocating for interest of their members in the value chain, and disseminate market and price information are underdeveloped.

Geta and Kifle (2011) also stated that marketing malpractice is a common practice in ginger marketing especially when the price of ginger becomes higher. He continued to explain that both the traders and farmers are involved in the practice. He continued to state that there are two kinds of malpractices which include: mixing fresh ginger with a damp soil, and a dried ginger with special stones having exactly the same physical appearance with that of the dried ginger rhizomes.

CHAPTER THREE

METHODOLOGY

3.1 Description of the study area

Kampala is the capital City of Uganda which is situated almost in the middle of the country covering a total area of 189km² comprising 176Km² of land and 13km² of water. It is administratively divided into five divisions namely: Central, Kawempe, Makindye, Rubaga and Nakawa. According to Housing Census (UBOS, 2014), Kampala has an estimated population of 1,680,800 people by 31st July 2019. Kampala has a tropical rainforest climate under the Koppen Geiger climate classification system with an average annual temperature of 21.4 °C and 1747mm annual precipitation and lies on 1224m above sea level (*Climate-Data.org*, 2021). It has a longitude 32°34'55" E, Latitude of 0°18'58".

The study was carried out in selected major markets around Kampala district. This was because it's the capital and largest city of Uganda with a high demand for ginger and high per capita income. These markets included; Nakasero, Nakawa and Kalerwe markets. These were used because they are some of the major markets in Kampala which handle major trade in ginger.

Nakasero market is the oldest market Monteith (2015) and its located at the foot of Nakasero hill in the middle of Kampala. Its located 50 meters off Entebbe road and sells fresh food, texture, shoes and cheap electronics.

Nakawa Market is located along the Kampala–Jinja Highway in Nakawa division 4 kilometers from Kampala town. The geographical coordinates of Nakawa Market are: 0°19'48.0"N, 32°36'42.0"E.

Kalerwe market is located along Gayaza Road adjacent the Northern By-pass about 5 kilometers from Kampala city center. The coordinates of Kalerwe are: 0°21'07.0"N, 32°34'19.0"E Latitude: 0.351950; Longitude: 32.571950.

3.2 Research design

The study adapted a non-experimental design that is a cross sectional design which is a onetime measurement and gives a snapshot of a particular group of people as defined by Setia (2016). The data was collected from ginger retail traders during a season where ginger quantities where high

on the market. Both the qualitative and quantitative approaches were used. A quantitative approach was used because the study assessed the profitability of ginger in the markets and thus allowed collection of numerical data from the given sample. The qualitative approach was also used and helped to capture data on the appearance of the ginger and other factors which also determines the price at which retailers can sell of their ginger.

3.3 Sampling design and sample size

Osuagwu (2020) defined sampling as a process of drawing a subset or sample from a population. Krieger (2012) defined population as all members of any well-defined class of people, events or objects. The population therefore represents the target of the study and represents a group of people with the same characteristics. Osuagwu (2020) further described a sample as a finite part of a statistical population whose characteristics are studied to obtain information about the whole population.

In this study a sample of 80 retail traders were studied and these had stalls in the market. The study was carried out in Kampala district on ginger retail traders. A probability sampling procedure that is simple random sampling technique was employed to select respondents this is because its suitable for studying a small group. The 80 traders were selected from the three markets and these included; 30 traders from Kalerwe, 25 traders from Nakasero and 25 traders from Nakawa market.

3.4 Data types and sources

In this study primary data was obtained from ginger traders through personal interviews using structured questionnaires and observations made when retail traders were visited. Secondary data was also used to provide background information such as production trends, profits, constraints. This data was obtained from past reports that were obtained through internet searches.

Primary data such as education level attained, sex, information accessed, government support, marital status, age, membership in a marketing association, benefits obtained from the marketing association, family size, number of dependents, variety sold, time taken to sell a certain batch of ginger, how often does the respondent stock ginger, kilograms stocked at a given time, quantities in which ginger is sold, selling and buying price of ginger and costs incurred(purchase of ginger, packaging, labor for loading, offloading and carriage, transportation, storage, toilet, garbage, rent, taxes, water and electricity).

3.5 Data collection

Structured questionnaires, interviews and observation methods were used together to collect data from all the respondents in the three markets. The respondents were interviewed using questionnaires that were in tandem with the stated objectives. This also helped me to further get explanations about other relevant information from the traders that wasn't in the structured questionnaires. The observation method assisted to complement and triangulate what was missed in through the face-to-face interviews held with questionnaires.

3.6 Data analysis

The data collected were entered and analyzed using the SPSS (statistical package for social scientists) version 16.0 statistical package. This statistical package was used to characterize ginger retail traders. Factors (sex, age, marital status, family size, access to information, belonging to a marketing association, government support, type of information accessed, source of information accessed, initial capital, source of capital, variety of ginger sold, family size, number of dependents, time it takes to sell a certain batch of ginger, how often they stock, source of capital, benefits obtained from the marketing association, from whom do they buy the ginger from, from where do they buy the ginger from and where it comes from, quantities in which they sell the ginger, costs incurred (purchase of ginger, packaging, taxes, transport, labor for loading offloading and carriage, rent, toilet, garbage). The analysis included descriptive statistics (percentages, frequencies and means). One sample t-test and Chi-square tests were used to establish significance in relationships between the characteristics and markets.

A linear regression analysis was used to estimate the profit function and assess factors that affect ginger profitability. Ezra *et al.* (2017) stated that a linear regression assumes a linear relationship between the dependent and independent variables. The linear regression was used to assess factors that affect ginger profitability. According to Allison (1999) multiple regression is a statistical method used for studying a single dependent variable and one or more independent variables. This will involve estimating a profit function as used by Anghelache *et al.* (2014).

The dependent variable is the profit obtained by the respondent.

$$Y=B_0+B_1X_1+B_2X_2+B_3X_3+B_4X_4+B_5X_5.....+e$$

Where Y= profit obtained by the retail traders

Profit obtained by the retail traders = quantity stocked by the traders* selling price of ginger

B_0 = constant

B_1 - B_{10} = parameters estimated

X_1 = Age of the respondent (in years)

X_4 = Education level attained by the respondent (Number of years in school)

X_5 = Distance covered by the respondent from home to work place (in kilometers)

X_6 = Sex of the respondent (1= male, 0= female)

X_7 = Government support (1= yes, 0 = no)

X_8 = Number of dependents (Number of people supported by the respondent)

X_9 = Market association (1 = yes, 0 = no)

X_{10} = Access to information (1 = yes, 0 =(no)

To determine the profitability of ginger in the three markets. Net margins were computed as given below:

Net margin (NM) for the individual respondents per week was calculated as follows,

$NM = \text{Total Revenue (TR)} - \text{Total Costs (TC)}$

But $TR = Q \times P$

Where: Q is the Quantity of ginger sold per week

P is the price of a kilogram of Ginger

$TC = \sum VC + \sum FC$

Where: FC are fixed costs (rent, taxes, security, electricity and garbage,)

VC are the total variable costs (cost of ginger purchased, labor for loading, offloading and carriage, storage, transportation, water, toilet) incurred per week

The Constraints faced by ginger retail traders were analyzed using descriptive statistics that included frequencies and percentages. The data were summarized in tables.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Results

4.1.1 Characteristics of ginger traders in the different markets of Kampala

4.1.1.1 Demographic characteristics

Summary of demographic characteristics of the retail respondents interviewed are presented in the tables 1 and 2. The results indicated that majority of the respondents (63.75%) were female traders; and these were more (n = 25) in Kalerwe market. This is because retail trading is mainly involved in small units of the different agricultural produce which is mainly dominated by women. This is also attributed to the fact that that small amounts of capital are needed. This agrees with Abah (2018).

Respondents' age ranged between 20 and 50 years with a mean of 32.61 years. This implies that the ginger retail traders have the energy to carry out the marketing since they are since youthful. It also shows that the youth have started involving themselves in trading Maximum family size reported was 8 people with a mean of 3.75 people. This is because many people give birth while still young although this disagrees with Abah (2018) findings that attributed the large family size to polygamy. This has an implication that there is enough labor in the business although a big family size has many needs therefore large expenditure (Ezra, 2017).

Respondents reported to travel for up to a maximum of 18km from home to work place, averagely 5.03km. This is because these markets are located in the city center and the housing is very expensive therefore traders travel long distances to their work places since the nearby cheap houses are in slums. This results into increased expenditures by the traders hence having an impact on the total revenue they get from the sale of ginger. Initial capital invested by respondent ranged from 5,000 - 1,000,000 shillings with a mean of 94,000 shillings. This implies that anyone with low startup capital can start ginger trading and keeps on increasing in quantity as the business grows and therefore reduce on unemployment among the youth.

Majority (70%) of the respondents were married. The mean number of years in school is 7. This implies that traders are able to access and use information obtained for the benefit of their business especially information about prices and demand of ginger. This is in agreement Abah (2018).

The source of capital invested into business was mainly own capital (75%). This implies that many people are able to start up their own ginger business without government support hence reducing on the high rates of unemployment.

Table 1: Demographic characteristics of sampled ginger traders in Kampala

Characteristics	N	Minimum	Maximum	Mean	Stv. Dev
Age	80	20	50	32.6	6.63
Family size	80	0	8	3.75	2.27
Number of dependents	80	0	9	4.17	1.73
Education	80	0	16	7.35	4.25
Distance from work to home	80	0	18	5.03	3.69
Initial capital invested	80	5000	1000000	94000	148316.29

Table 2: Demographic characteristics of sampled ginger traders (N =80) in Nakawa, Kalerwe and Nakasero markets of Kampala

Characteristic	Market in Kampala			Total (Frequency)	Percentage (%)
	Nakawa	Kalerwe	Nakasero		
Sex of the respondent					
Male	13	9	7	29	36.25
Female	13	25	13	51	63.75
Total	26	34	20	80	100.00
Marital status					
Single	6	3	4	13	16.25
Married	17	26	13	56	70.00
Separate	3	5	3	11	13.75
Total	26	34	20	80	100.00
Source of capital					
Own capital	21	24	15	60	75.00
Loan from a Sacco	5	10	3	18	22.50
Loan from a bank	0	0	1	1	1.25
Both own capital and loan from Sacco	0	0	1	1	1.25
Total	26	34	20	80	100.00

4.1.1.2 Trade characteristics

Majority of the respondents (63.75%) belonged to a marketing association. About half (51.25%) indicated savings and loans as benefits obtained from the association. This has an implication that traders are able to influence decisions in the markets. This does not agree with Abah (2018) in his study of socio-economic analysis of ginger value chain whose findings showed that most (77%) of the ginger retail traders did not belong to marketing association hence cannot influence marketing decisions. Most of the traders (75%) access market information. Fifty-five percent (55%) of the respondents obtained prices of the ginger as the major information searched. This implies that traders are able to know the sources of ginger at cheaper prices so as to maximize profits.

Majority (76.25%) of the respondents obtained information from their fellow traders. This implies that consumers are able to buy ginger at almost the same prices from the retail traders in the markets and therefore there is no monopoly in the markets. About ninety-four percent (93.75%) of the respondents do not get any support from the government. The chi-square analysis showed that respondents belonging to a marketing association were significantly related to the market in which the respondent traded ($\chi^2 = 0.082$; $0.05 < P < 0.1$). The support from the government had a significant ($\chi^2 = 16$; $P < 0.001$) influence on the market in which the traders traded their ginger. The chi-square also showed that benefits obtained from the marketing association, information accessed, market information searched for and the of information were not significantly related to the market where the traders traded from ($P > 0.05$) (Table 3 and Table 4).

Table 3: Trade characteristics of sampled ginger traders (N = 80) in Nakawa, Kalerwe and Nakasero markets of Kampala

Characteristic	Market			Total (Freq.)	Percentage (%)	χ^2 value
	Nakawa	Kalerwe	Nakasero			
Membership in marketing association?						
No	10	12	7	29	36.25	
Yes	16	22	13	51	63.75	
Total	26	34	20	80	100.00	0.082*
Benefits got from marketing association						
None	9	12	7	28	35.00	
Savings	1	8	2	11	13.75	
Savings and loans	16	14	11	41	51.25	
Total	26	34	20	80	100.00	5.691 ^{ns}
Access to market information						
No	5	10	5	20	25.00	
Yes	21	24	15	60	75.00	
Total	26	34	20	80	100.00	0.814 ^{ns}

Table 4: Trade characteristics of sampled ginger traders (N = 80) in Nakawa, Kalerwe and Nakasero markets of Kampala

Characteristic	Market			Total (Freq.)	Percentage (%)	χ^2 value
	Nakawa	Kalerwe	Nakasero			
Market information searched for						
None	5	11	4	20	25.00	
Prices	18	15	11	44	55.00	
Both prices and demand	1	2	0	3	3.75	
Both prices and quality	2	4	2	8	10.00	
All the information	0	2	3	5	6.25	
Total	26	34	20	80	100.00	8.460 ^{ns}
Source of information						
None	4	10	5	19	23.75	
Fellow traders	22	24	15	61	76.25	
Total	26	34	20	80	100.00	1.624 ^{ns}
Do you get support from the government?						
No	26	34	15	75	93.75	
Yes	0	0	5	5	6.25	
Total	26	34	20	80	100.00	16.000 ^{***}

Where Freq. is frequency, χ^2 is the chi square statistics, * significant at 10%, *** significant at 1%, and ^{ns}not significant, Freq. is frequency

4.1.1.3 Product information

The product information is presented in the table 4 below. The results indicated that most traders (93.75%) dealt in local ginger variety; and 6.25% that dealt in both local and hybrid variety and where from Nakawa and Nakasero markets. This implies that the hybrid variety can mainly be found in Nakasero and Nakawa markets.

More than half (53.75%) of the respondents gave reasons why they preferred the ginger variety they traded in were customer preference, availability and season. This is because local ginger has a high pungency as compared to the hybrid ginger which is preferred by consumer who use it as a spice in food. Traders also acknowledged the closure of borders as to one of the reasons as to why ginger was more on market since it was no longer exported to other countries due to COVID 19 hence its availability. Fifty-five percent (55%) buy ginger for their retail business from wholesalers who buy it from the farmers. This is because most of the retail traders buy in low quantities therefore do not want to incur other costs such as transportation, offloading and yet they can buy it from the wholesalers or suppliers. Out of which 20% buy it directly from the farmers' fields. Majority of the traders (75%) stock ginger weekly and 51.25% stock more ginger before the one they have is sold off. Majority (72.5%) of the ginger retail traders take a week to sell off all the ginger they have stocked for a given batch bought.

Majority of the traders (93.75%) sell local ginger this is because local ginger is mainly preferred by the customers and also because it was grown by the farmers during the season as compared to the hybrid variety.

Table 5: Ginger product information traded in Nakawa, Nakasero and Kalerwe markets of Kampala (N = 80)

Variable	Market			Total (Freq.)	Percentage (%)
	Nakawa	Kalerwe	Nakasero		
Variety of ginger traded					
Local	24	34	17	75	93.75
Both local and hybrid	2	0	3	5	6.25
Total	26	34	20	80	100.00
Reasons for preference of the varieties					
Customer preference	2	0	1	3	3.75
Both customer preference and available	0	24	10	34	42.50
Customer preference, available and season	24	10	9	43	53.75
Total	26	34	20	80	100.00
Location of purchase of ginger					
Butambala	1	7	9	17	21.25
Mpigi	1	2	0	3	3.75
Kamengo	0	3	0	3	3.75
Nakawa but from Butambala	22	0	3	25	31.25
Kalerwe but from Butambala	0	20	0	20	25.00
Nakasero but from Butambala	1	1	8	10	12.50
Nakawa but from Mpigi	1	0	0	1	1.25
Kalerwe but from Mpigi	0	1	0	1	1.25
Total	26	34	20	80	100.00
How often the respondent stocks					
Daily	4	3	1	8	10.0
Weekly	13	29	18	60	75.0
Once in 3 weeks	1	1	0	2	2.50
Twice in a week	8	1	1	10	12.50
Total	26	34	20	80	100.00

Table 6: Ginger product information in Nakawa, Nakasero and Kalerwe markets in Kampala district (N = 80)

Variable	Market			Total (Freq.)	Percentage (%)
	Nakawa	Kalerwe	Nakasero		
From who do you buy the ginger from?					
Farmer	3	7	6	16	20.00
Wholesaler	19	18	7	44	55.00
Both farmer and wholesaler	4	3	3	10	12.50
Both fellow retailers and wholesaler	0	6	4	10	12.50
Total	26	34	20	80	100.00
Do you have to sell all the ginger before buying more?					
No	12	17	12	41	51.25
Yes	14	17	8	39	48.75
Total	26	34	20	80	100.00
Time taken to sell a batch of ginger					
A week	17	22	19	58	72.50
A day	3	1	1	5	6.25
5 days	0	3	0	3	3.75
2-3days	0	2	0	2	2.50
1-3 days	1	2	0	3	3.75
3-4 days	2	3	0	5	6.25
10 days	3	1	0	4	5.00
Total	26	34	20	80	100.00
Quantities of ginger sold					
A kilogram	1	0	0	1	1.25
Sells a kilogram, half and quarter	19	19	14	51	63.75
A half and 1kilogram	6	15	6	25	31.25
Total	26	34	20	80	100.00

Where Freq. is frequency

4.1.2 Profitability determination of ginger marketing in Kampala

All the respondents (100%) said that ginger is profitable. Table 4 below summarizes the profitability analysis of ginger retail trading business. The table breaks down the various mean costs incurred by the traders and also the mean revenues.

The average net margin is 127,475.9 Uganda shillings per week. This implies that retailers are making profits from ginger business. This may be attributed to the low costs incurred especially when the ginger is bought in large quantities and most of these costs are paid daily therefore the traders do not really give them much attention.

The average standard deviation of the net margins is also wide that is 168,868.2 Uganda shillings. This implies that there is a wide gap in the net margin got by the different retail traders.

The mean highest cost incurred by the traders is cost of ginger purchased per week (282,125 Ugandan shillings) followed by taxes (7,749.7 Ugandan shillings) incurred while paid to the authorities in the different markets and the lowest cost is for water 0 Ugandan shillings. This is because most of the traders buy already washed ginger from the wholesalers and farmers.

Table 7: Ginger costs information of sampled ginger traders in Kampala

	Mean	Stv. Dev
Fixed costs		
Rent costs incurred per week	7,131.22	10,500
Security costs incurred per week	1,989.14	1,418.218
Garbage costs incurred per week	1,677	1,577.827
Electricity costs incurred per week	306.25	1,193.585
Tax paid by the respondent per week	7,749.7	5,734.155
Average total fixed costs	18,853.31	13,182.062
Toilet cost	1,837.5	698.892
Carriage costs incurred	3,625	3234.995
Water costs incurred	0	0
Storage costs incurred	400	2,593.077
Transport costs incurred	4,062.5	9746.591
Packaging costs incurred	4,714.6	6899.08
Loading costs incurred	762.5	1,569.034
Offloading costs per week	737.5	1,564.995
Cost of ginger per week	282,125	272,098.9
Average total variable costs	298,264.6	286296.5
Average total costs	317,117.9	285,458.1
Average total revenue	444,593.8	454,326.3
Average net margins	127,475.9	168,868.2

Where Stv. Dev. is the standard deviation

4.1.3 Estimation of profit function for ginger retail traders

Age, family size, number of dependents, government support, access to information, marketing association and distance from home to work place of the retail trader had no significant relationship with the profits obtained from ginger. R-square = 0.174, implying that 17.4% of the variation in the dependent variable is influenced by the independent variables used in the regression ($F = 1.86$).

Education level achieved by the respondent had a significant relationship with the profits obtained. It was significant at 5% ($p = 0.01$). A unit increase in the education attained increases the profits obtained by 2.8744. This may be due to their ability to search for information on ginger before buying and keeping records of their expenditures. This is in agreement with Abah (2018) who out that education positively influences profits obtained by the retailers, a unit increase in education increases profits by 0.2%. These findings are also in agreement with (Ezra *et al.*, 2017).

Sex of the trader also had a significant relationship with the profits obtained. It was significant at 5% ($p = 0.05$). A unit increase in the male traders increases profits obtained by 1.9. This may because male traders are hard hearted so take business seriously as compared to women. Also, since women deal in various small units of products, they invest very little capital in the ginger business as compared to men who always concentrate on a single product in large quantities.

The analysis of variance results indicates that the regression sum of squares (5.35×10^{11}) is smaller compared to the residual sum of squares (2.55×10^{12}) This implies that the model does not accounts for most of the variations in the dependent variable. The ANOVA further shows that the significant value of the F-statistics (0.08) is larger than the used level of significance (0.05); which implies that the independent variables do not play a big role in explaining variation in the dependent variable.

Table 8: Summary regression analysis of variance of profitability estimation of ginger trade in Kampala markets

ANOVA(b)					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	5.35×10 ¹¹	8	6.69×10 ¹⁰	1.86	0.08
Residual	2.55×10 ¹²	71	3.58×10 ¹⁰		
Total	3.08×10 ¹²	79			

a. Predictors: (Constant), government support, sex of the respondent, access to information, age (number of years of the respondents), education level attained by the respondent, membership to a marketing association, distance from work place to the home in kilometers, access information, number of dependents.

b. Dependent Variable: profits

Table 9: Linear Regression of predictors of profit among ginger traders in Kampala

Model	Unstandardized		Standardized	t	Sig.
	Coefficients	Std. Error	Coefficients (Beta)		
(Constant)	-160613	135162.1		-1.19	0.24
Sex	93218.88	47977.54	0.23	1.9	0.05
Age	2080.625	3738.25	0.07	0.56	0.58
number of dependents	17404.27	14542	0.15	1.20	0.24
Education	15630.24	5437.67	0.34	2.87	0.01
distance from work to home	397.8846	6342.47	0.00	0.06	0.95
marketing association	-68153	47619.77	-0.17	-1.43	0.16
access information	61308.85	51832.13	0.14	1.18	0.24
government support	-90221.1	95100.25	-0.11	-0.95	0.35

b. Dependent Variable: profits

Where t is the t statistical value, sig. is the t-probability, ^aconstant is the profit of ginger

4.1.4 Constraints faced by ginger traders in the different markets in Kampala and solutions

Thirty-three percent (32.5%) of the respondents said price fluctuation was the major constraint faced. This was followed by low prices (18.75%) offered by the customers in the three markets. Most of the respondents (25%) said that they have been sustained in the ginger business because it's not perishable therefore it can stay on stalls for a long if stored well and the trader will not make losses as compared to other horticultural produce. This is followed by it being profitable with 23.75%. This is because the traders buy a kilogram of ginger between (1000-1500 Ugandan shillings) depending from whom it bought and sold between (2000-3000 Ugandan shillings) per kilogram. 20% of the traders said ginger has an existing demand. This is because some customers buying other produce like tomatoes may need ginger and therefore the traders are required to have it on their stall. 18.75% of the traders said that they can save some money after selling ginger. (Table 7 and Table 8).

4.1.4.1 Price fluctuations of ginger

The research showed that price fluctuations had the highest percentage among constraints faced by ginger retail traders. This is as a result of seasonality of the ginger when the ginger is in high production in the season. This is because ginger takes 6 months to mature therefore from December to February ginger is plenty on markets. This is in agreement with Devendra *et al.*, (2019), in his study of economics of production and marketing of ginger in Sunsari district, Nepal ranked price fluctuation as the highest (ranked one) challenge faced by ginger traders. Traders also acknowledged the fact that borders were closed during the COVID period and therefore ginger was not exported to other countries hence fall in the prices. Timsina (2010) in his study about economics of ginger production ranked price fluctuation fourth in his findings.

4.1.4.2 Immature and poor-quality ginger.

The research showed that some traders while packing ginger add soil to the sack of ginger in order to increase their weight to add up to the recommended 120kg as stated. Traders also in the different markets also stated that some ginger bought is immature and therefore its poor quality and sometimes starts germinating which is not required by the consumers. This agrees with ginger marketing malpractice practiced by both farmers and traders as mentioned by Geta and Kifle (2011).

Also ginger produced in Uganda has a high fiber content that is mainly the local variety (small rhizomes), small in size and with unequal finger which compromises with the international markets' requirements (Magohe *et al.*, 2008; Dahal and Rijal, 2020).

4.1.4.3 Inadequate security

The research also showed that there is little security provided to the traders in the markets and therefore sometimes they find their ginger reduced having been stolen when stored since they keep it in their stalls after the day's work. Dahal and Rijal (2020) stated insecurity as one of the threats to ginger marketers in his study.

4.1.4.4 Limited capital

Inadequate capital is one of the constraints faced by the ginger retail traders and this is due to limited access to financial services (Dahal and Rijal, 2020). Traders in the different markets attributed this to high interests demanded from the banks and also fear of taking their property in case they fail to pay off the debts. Timsina (2010) revealed that insufficient credit facility was ranked first among challenges faced by ginger marketers.

4.1.4.5 Low prices

The findings revealed that consumers want cheap ginger which is a challenge to retail traders and therefore if your ginger is highly priced, it will stay on the stall till the prices are lowered or when other retail traders have the same price as you do (Timsina, 2010). This results into low profits to the traders yet sometimes they buy the ginger at high prices. Shristi (2020) in his study of Production and Marketing of Ginger: A Case Study in Salyan District, Nepal ranked low prices as the first.

Table 10: Constraints faced by traders in ginger trade in the different markets in Kampala

	Frequency (n)	Percent (%)
Weather	5	6.25
Price fluctuation	26	32.5
Inadequate security	2	2.5
Immature ginger and poor quality	4	5
Competition	8	10
Limited capital	14	17.5
High taxes	6	7.5
Low prices	15	18.75
Total	80	100

Table 11 : Reasons for sustainability in ginger business among traders in Kampala

Reasons for sustainability in ginger business	Market in Kampala			Total (Freq.)	Percent age (%)	χ^2 value
	Nakawa	Kalerwe	Nakasero			
Fear of unemployment	4	4	2	10	12.50	
Ginger is not perishable	5	12	3	20	25.00	
Ability to save	7	3	5	15	18.75	
Existing demand	5	8	3	16	20.00	
Its profitable	5	7	7	19	23.75	
Total	26	34	20	80	100.00	7.907^{ns}

Where Freq. is frequency, χ^2 is the chi square statistics, ^{ns}not significant

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The study showed that ginger retail traders in the study area are predominantly women (63.75%) since retailing comprises of small units of products. The study further indicated that the mean age 32.61 years in the three markets. Majority of the retail traders have attained at least 7 years of education (they have gone to school up to primary seven according to the Ugandan structure of education). The mean distance covered by the retailers from their homes of residence to the different markets is 5.03kilometers. The mean household size is 3.75. The study also indicated that most of the ginger sold in Nakasero, Nakawa and Kalerwe markets is grown in Butambala district although the traders buy it from the wholesalers in the different markets they trade in and is mainly the small rhizome ginger (local variety). Majority of the retail traders belong to marketing association and do not get support from the government.

Study findings also revealed that ginger retail traders on average are making reasonable profits out of their business since with an average net margin of 127,475.9 Ugandan shillings per 250 kilograms per week. It further showed that demographic characteristics such as age, distance from home to work place, information searched for the respondent, membership in a marketing association, government support, family size, access to information and number of dependents do not significantly influence profitability. However, education level attained and sex of the trader were significant predictors since their levels of significance were less than or equal to the critical at 5% confidence interval influence profitability.

The study also revealed that there are number of constraints that affect the ginger retail traders and these include; inadequate security (2.5%), weather (6.25%), immature and poor-quality ginger (5%), high taxes (7.5%), competition (10%) limited capital (17.5%), low prices offered by consumers (18.75%) and price fluctuation (32.5%).

5.2 Recommendations

According to the results obtained and analyzed, the following recommendation have been made

There is urgent need to sensitize ginger retail traders about the importance of keeping records as concerns to the costs used and income obtained so as to help them know the profits obtained through different programs in the different markets.

The government of Uganda should consider supporting the traders financially through marketing associations since most of the traders are members of the associations. This is because it is easy for the government to monitor the financial support provided and how it's being used to benefit the traders.

Also, government should build proper market structures. This will not only help traders store their ginger well to avoid direct contact with the sun, disorganization when it rains but also reduce on their costs such as garbage, mpoza (tax to KCCA), security, rent but instead a standard cost paid to the market officials to cover up all.

From the study, results showed that ginger business is profitable, has a high shelf life and therefore very few losses will be registered as compared to other horticultural produce like tomatoes therefore the government should create policies to attract more youth to ginger trading since less care is needed.

Study finding revealed that a unit increase in the number of male increase profits obtained. This therefore means that there is a for the government to encourage more women in ginger retail business.

5.3 Areas of further study

This study mainly focused on profitability assessment of ginger retail traders which is a narrow scope of what traders experienced.

Another study should be undertaken to cover analysis of the entire value chain of ginger in the country to identify the most paying and least paying nodes, and challenges that can be addressed to make the commodity better paying.

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APPENDIX

DATA COLLECTION TOOL

Dear respondent

I am NAKATO MARGRET, a student of Makerere University taking a course of Bachelor of Science in Horticulture. I am conducting a study on the profitability of ginger trade in different markets and I would like to gather information regarding this topic. The information you will provide me with, will be confidential and you will be anonymous.

I am carrying out this study because am interested in this topic and also as part of a requirement for my degree requirement.

I therefore humbly request you to co-operate with me by completing this questionnaire. I thank you very much for your efforts, time and the information you will provide

May God bless you.

DEMOGRAPHIC CHARATERISTICS

Name of the respondent.....

1.	Name of the market	8.	How far is your work place from home (if not able to give the distance, capture the name of the home)
2.	Sex of the respondent(male/female)	9.	Source of capital (loan/ own capital/ others) If loan specify for example: SACCOs, Banks, Microfinance institutions.....
3.	Age of the respondent.....	10.	How much was the capital invested?
4.	Level of education(what class did you stop in)	11.	What proportion of ginger compared to other products that you trade in (in terms of revenue or volume)
5.	Marital status (single, married, divorced, separate)	12.	Do you belong to any marketing association? (Yes or No) If yes, what benefits do you get from the association?

6.	What is your family size?	13.	Do you access market information from any sources(e.g., price, varieties, quantities needed) from any sources?(Yes or No)
7.	How many dependents do you support?	14.	Do you get support from the government? (Yes or No) If Yes, what kind of support do you get? And what would you want the government to improve?
		15.	What market information do you search for?

PRODUCT INFORMATION

1.	What variety(ies) of ginger do you mainly trade in? Give reasons why you prefer these varieties.....	
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2.	Where do you purchase the ginger from(location, if you buy from the market, where does the ginger come from?).....	
3.	How often do you stock?.....	
4.	How many kilograms of ginger do you stock each time?	
5.	how much do you buy a kilogram of ginger or a bag?(if it's a bag, tin, basin please specify the kilograms in it)	
6.	From who do you buy the ginger from? 1. The farmer 2. Wholesaler 3. Other fellow retailers	
7.	Do you have to sell all the ginger before buying more?	
8.	For how long does it take you to sell a certain batch of ginger?	
9.	In what quantities do you sell your ginger?	
10.	How much do you sell a kilogram of ginger?	
11.	How much profit do you make per kilogram of ginger?	

Costs

Costs

Type of cost	Period (daily, weekly, monthly) – Please specify the period	Amount
Purchase of ginger		
Packaging costs (bags, polythene) at the time of purchase		
Loading		
Transport		
Off-loading		
Market dues		
Storage costs		

Trading License		
Communication		
Tax		
Helper (any other person who helps you)		
Water		
Electricity		
Toilet / Sanitation		
Other costs (please specify)		

CONSTRAINTS AND SOLUTIONS

Other information

1. In your opinion is ginger trading profitable?.....
2. why have you sustained the ginger trading business?.....
3. what problems do you face while doing this business?.....
4. What do you suggest should be done in order to address the problems that you have stated above.....