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ANALYSIS OF THE TRADING OF AFRICAN HORNED CUCUMBERS: A CASE STUDY OF MBARE MUSIKA AGRICULTURAL PRODUCE MARKET

BY

ADMAN CHIRAMBADARE

B200791B

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SUPERVISOR: DR. R CHIVHEYA

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AUTHOR: ADMAN CHIRAMBADARE

REG NUMBER: B200791B

DEGREE: Bachelor of Science Honours Degree in Agricultural Economics and Management

PROJECT TITLE: Analysis of the Trading of African Horned Cucumbers: A Case Study of Mbare Musika Agricultural Produce Market

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Name of Supervisor: Dr. R Chivheya

Signature: 

Chairperson: Dr Mafuse

Signature: 

Date: 08 October 2024

Declaration

I hereby declare that the research project entitled 'Analysis of the trading of African horned cucumbers in Zimbabwe: A case study of Mbare Musika Agricultural produce market' submitted to Bindura University of Science Education, department of agricultural economics, education and extension is a record of an original work done by me under the guidance and supervision of Dr. R Chivheya and this work is submitted in partial fulfillment of the requirements for the award of the bachelor of agricultural science honours degree in agricultural economics and management. The results embodied in this dissertation have not been submitted to any university or institute for the award of any degree or diploma.

Student name: Adman Chirambadare

Reg Number: B200791B

Signature:

Date : 08 October 2024

Dedication

I dedicate this project to my mother and sisters.

Acknowledgements

I really want to thank God for giving me life and the strength to do this project. I would like to thank my supervisor Dr. R Chivheya for the intellectual support and guidance on this project. Finally I thank my family for the support that they showed me throughout this project.

Abstract

The research provides information and findings from a research study conducted at Mbare Musika agricultural produce market that aimed to analyze the trade of African horned cucumbers. The objective of the research was to determine challenges faced by suppliers, to determine price trends of African horned cucumbers at Mbare Musika in 2023 and to determine consumer perceptions towards African horned cucumbers. The study used a mixed method research approach where secondary data from eMkambo knowledge transfer and primary data collected using an interview guide were used to establish trends and patterns. The study revealed that 81.3% of the suppliers interviewed found price volatility to be the highest frequenting challenge and only 26.3% considered competitive landscape as the least frequenting challenge. December saw the realization of the highest price of African horned cucumbers traded at Mbare Musika with a heap going for $2.50 and $57 per 60 kg bag whilst April saw the least prices of $21 per 60kg bag and $0.40 per heap. The KAP analysis revealed that the highest variable of knowledge with a mean score of 4.09 was that the consumers had knowledge of African horned cucumbers before the survey whilst the least variable of knowledge was that consumers had no knowledge of their nutritional benefits with a mean score of 3.21 thereby suggesting that most participants did not have knowledge of the fruits nutritional benefits. The analysis of consumer attitudes showed that the highest mean score of 3.7 of the participants were not willing to try African horned cucumbers. The lowest mean score of 3.2 perceived that African horned cucumbers were unhealthy and that participants did not believe they could offer unique culinary possibilities. Lastly, a mean score of 2.4 showed that the least practice was willing to pay higher prices for African horned cucumbers and a mean score 3.82 suggested that the highest practice was having consumed African horned cucumbers before commencement of this study. The Spearman correlation analysis results showed that there is a strong positive monotonic relationship between knowledge and attitude, a correlation coefficient of 0.738 and p-value 0.155 indicated that attitude towards the fruit improves when consumers have better understanding of its nutritional value. There is also a strong positive monotonic relationship between knowledge and practice, a correlation coefficient of 0.90 and p-value 0.37 suggesting that more African horned cucumbers are consumed if consumers have greater knowledge of their nutritional and health benefits.

Lastly, there is a strongest positive monotonic relationship between attitude and practice, a correlation coefficient of of 0.949 and a p-value of 0.14 indicate that positive attitudes towards African horned cucumbers highly influence positive consumer practices.

Keywords: Marketing, African horned cucumbers, price, Moving average, challenges, perceptions

Acronyms

CIA	Central Intelligence Agency
FAO	Food and Agriculture Organization
FAOSTAT	Food and Agriculture Organization Corporate Statistical Database
GDP	Gross Domestic Product
ICT	Information Communication Technology
Kg	Kilogram
KAP	Knowledge Attitudes Practices
SPSS	Statistical Package for Social Science
USAID	United States Agency for International Development
USD	United States Dollar

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CHAPTER 1

Introduction

Background of study

When adjusted for purchasing power parity, Zimbabwe's GDP per capita is 12% higher than the global average. The agricultural sector contributes 11-14% of the GDP whilst employing 52.61% of the population (World bank, 2022). Smallholder farmers occupy 77% of agricultural land in Zimbabwe on the backdrop of the Accelerated Land Reform in 2000. In order to provide the population's needs, these farmers cultivate a wide range of crops, including horticulture products like onions, cauliflower, and cucumbers as well as staples like corn, wheat, and soybeans. These farmers use a variety of market channels to sell their produce, primarily because accessibility is more important to them than returns. The goal of ensuring food security has, nonetheless, caused a shift away from small-scale farming and toward commercial agriculture; however, this trend is being hampered by small-scale farmers' restricted access to better information and technology.

African horned cucumbers *cucumis metuliferus* is one of the widely produced and consumed horticultural crops in Zimbabwe that has generated local and export attention lately due to its culinary versatility and nutritional value. The African horned cucumber is oval shaped, about 6cm in diameter and 11cm long with sharp prominent spines or horns. The immature fruit is bright green with grey specks, ripening to bright orange. The flesh of the mature fruit is bright lime green and jelly like in consistency, with lots of seeds suspended in jelly capsules. This species is native to a large area of southern Africa, including Namibia, South Africa and Botswana as it is well adapted to dry climates including the Kalahari Desert (Hiremata. V, 2023). The fruit is high in antioxidants and is said to have qualities that help with depression symptoms, better digestion, eye protection, bone health, and skin health. As a result of its distinct flavor and possible health advantages, the fruit's demand is steadily rising in international markets.

Global vegetable production increased 68% globally starting in 2000 and reached 1.15 billion tonnes in 2021, 98 million tonnes of which was cucumbers, with China as the highest producer and consumer of cucumbers constituting 70% of the world’s total production followed by New Zealand (FAOSTAT, 2022) . The retail price range for African horned cucumbers in China is between US$8.37 and US$10.34 per kilogram or US$3.80 and US$4.69 per pound whilst in New

Zealand the wholesale price range is between US$3.61 and US$4.99 per kilogram (Selinawamucii, 2023) . Prices that are as high as US$6/kg of African horned cucumbers are charged per fruit as they are deemed exotic in some parts of Europe (Majuru, 2024) .This is the highest ranging price for a variety of cucumbers as English sold for only an average of US$0.90 per kg. The English cucumber gross value also decreased 30% in 2022 as compared to the 2020 production year.

The majority of African horned cucumbers traded in Zimbabwe are produced by small-scale farmers (Moyo, 2023) . The demand for African horned cucumbers has increased due to marketing initiatives and the recognition of the vegetable's nutritional worth and health advantages, as well as population growth and development. Farmers' and value chain participants' standard of living has improved in South Africa and Europe as a result of marketing African horned cucumbers and activities along the supply chain (MK Maluleke, 2021) . Even though Zimbabwe is producing an increasing amount of African horned cucumbers, the crop is still not well marketed. This context encouraged the researcher to look into African horned cucumber trading in Zimbabwe's primary agricultural market, the Mbare Musika agricultural produce market.

Statement of the problem

Due to their limited access to financial markets, farmers have less negotiating power and are unable to sell their produce at the best price, which lowers the production value and results in minimal value addition along the value chain (Idachaba.F, 2001) . Farmers in the agricultural sector face a number of challenges, one of which is information asymmetry. This refers to the lack of information farmers have regarding market demand and commodity prices, which can fluctuate day to day or hourly depending on the quantity supplied to the market (Bienabe E, 2008). KTA provides stakeholders with raw data which is meaningless to them because they can not analyse it. Farmers may benefit from the data if it were presented in the form of graphs which make it easy for them to make decisions, therefore the data must be processed, analysed and presented such farmers and other stakeholders can use it to make informed decisions. This study therefore seeks to reason why there is slow growth in marketing of African horned cucumbers. More so, the study seeks to bring out clearly the marketing challenges faced by

suppliers of African horned cucumbers and factors affecting consumer behaviours and preferences.

Research questions

The research will be guided by the following questions

1. What are the main marketing challenges being faced by suppliers of African horned cucumbers to Mbare Musika agricultural produce market in 2023?
2. What were the weekly mean prices of African horned cucumbers at Mbare Musika agricultural produce market in 2023?
3. What is the consumer perceptions towards African horned cucumbers traded at Mbare Musika agricultural produce market in 2023?

Main objective

The main objective of the study is to analyze the trade of African horned cucumbers at Mbare Musika agricultural produce market in Zimbabwe.

Specific objectives

1. To determine the main marketing challenges faced by suppliers of African Horned cucumbers at Mbare musika agricultural produce market in 2023.
2. To determine African horned cucumbers weekly price trends at Mbare Musika agricultural produce market in 2023.
3. To determine the consumer perceptions towards African horned cucumbers traded at Mbare Musika agricultural produce market.

Justification

A market economy needs data on agricultural prices and values because they accurately reflect supply and demand. These changes benefit all parties involved in the industry, including farmers, distributors, middlemen, and even fertilizer manufacturers. Farmers have the deliberate ability to choose and create investment strategies about the composition and kind of their businesses. Price expectation, which is based on historical output prices, drives production. In order to deliver

their produce to the market when demand is high and command better prices, producers use information to determine the best time to do so. Through policy makers, the government assesses the scope of economic activity by utilizing economic trends to determine the value of horticultural output and income, which helps create national accounts and provide information.

There is a notable gap in understanding the dynamics of marketing challenges, pricing fluctuations and consumer attitudes towards African horned cucumbers at the market. By addressing this gap, the research hopes to contribute to a more comprehensive understanding of the factors influencing the trade of this unique agricultural commodity and thereby filling a crucial knowledge gap within the agricultural produce market. The potential benefits of the research findings include improved market insights, enhanced supplier insights and a better understanding of consumer preferences and behaviors. These insights can empower stakeholders to optimize their marketing approaches and tailor their offerings to align with consumer preferences ultimately fostering a more sustainable and thriving marketing environment.

Organization of study

This study is organized into five chapters. The first chapter contains the introduction. The second chapter has the literature review to set the context of the study. The third chapter contains the methods used to conduct the research and chapter four outlining the discussions and presentation of the results. Chapter five gives conclusion and suggests recommendations to curb the analysed findings of the study.

CHAPTER 2

Literature review

Introduction

After tomato, cabbage, and onion, cucumbers, and particularly African horned cucumbers are the fourth most widely grown vegetable crop (FAO, 2018) . Cucumbers are a great diet for humans because of their greater water content and nutrient content (Muruganantham N, 2016) . African horned cucumbers originated from New Zealand and were then introduced to West Africa by the Portuguese before reaching Southern Africa (Muruganantham N, 2016) . According to FAOSTAT 2020, 75.2 million tonnes of African horned cucumbers and cucumbers were produced on 1.984 million hectares of cultivated land globally in 2018. China accounted for 53.4% of this production, followed by Iran (3.8%) and Turkey (4.0%).

Prices of African horned cucumbers fluctuate every day as a result of poor weather and transportation issues in both supply and demand regions (Louw A J. D., 2006) . Weather can cause regions' production dates to vary from those of their typical seasons, resulting in surpluses or shortages and significant fluctuations. For instance, an unexpected discrepancy in the availability of English or local cucumbers could drive up prices. Nowadays, the majority of farmers grow cucumbers in greenhouses (USDA, 2011).

On 15% (8.5 million hectares) of the world's total land planted to vegetables, India produces 14% (146.55 million tons) of the world's veggies. India's vegetable productivity (17.3t/ha) is lower than the global average (18.8t/ha). The four main vegetables that account for 58.6% of the nation's total vegetable production are potatoes (28.9%), tomatoes (11.3%), onions (10.3%), and cucumbers (8.1%) (Prakash, 2013). The largest producing area in South Africa is 3 590 hectares in the province of Limpopo, where 17% of the entire land is planted with cucumbers, including African horned cucumbers. African horned cucumbers are summer/warm season crops that can only be cultivated in frost-free areas or in greenhouses; hence, the production of these cucumbers occurs in Zimbabwe during the warmer months. The general misconception is that cucumbers are easier to produce in cucumbers but this is not true since they require constant attention unlike cereal crops and the amount of experience needed and moisture is greater than that of most horticultural crops.

challenges faced by small scale farmers in marketing

Extension support services

Small-scale farmers are unable to install irrigation systems because of their inadequate financial resources. Sharaunga and Mudhara (2018) assert that irrigation and water availability are essential for land productivity. However, the challenges faced by some small-scale farmers are not solely related to a lack of adequate water supplies and effective irrigation methods. Thus, productivity gains are still hampered by small-scale farmers' restricted access to the market. According to the extension officers, a major obstacle limiting the amount and quality of production in the market is the lack of agricultural inputs, such as fertilizer. According to (Sisay et al. 2017), access to markets depends on having the ability to acquire agricultural supplies and services that are essential for farming.

Infrastructure

The deficiency in service delivery in rural areas is a challenge to small-scale farmers due to inadequate infrastructure development. According to Hofisi & Shava (2019), the expansion of small-scale farmers was negatively impacted by the deteriorating infrastructure in underprivileged areas. The lack of adequate rural infrastructure, such as good roads, irrigation systems, efficient water distribution, and storage facilities, contributes to the low productivity of small-scale farmers. Therefore, improved rural infrastructure and output capacity are related. Small-scale farmers depend on the development of rural infrastructure to link markets with production centers in order to increase productivity. Agricultural productivity is thus severely limited by a lack of connectivity caused by rural roads (Mdlalose, 2016). Roads that are in poor condition limit households' access to services and markets, making them more susceptible to shocks.

Storage

Small-scale farmers lack the storage facilities needed to keep and preserve items before consumption, which is a crucial part of marketing produce. Lack of funding is the reason for the absence of suitable storage facilities (Adeyeye S.A.O, 2017) . Mdlalose (2016) contends that inadequate storage facilities lead to a decline in quality. Since produce must be sold straight from the field, small-scale farmers are impacted by inadequate storage facilities, especially in rural locations (Masuku. N, 2015) . The absence of facilities for storing vegetables has decreased the profit margin for many small-scale growers. In order to overcome this obstacle and enable

farmers to produce a range of crops, the study recommends building custom storage buildings with technical elements like air conditioning, inside lighting, and a fresh air ventilator. Vegetables stored in this manner would retain their freshness until distribution or consumption, reducing water loss and maintaining enzyme respiratory activity.

Perishability

Lower agricultural productivity affects market access because quality and quantity determine market access states, and quantity produced is mostly determined by marketing information and output marketing services (Rangoato A, 2018) . Furthermore, because low quality goods reduce the supplier's market profit margins, it is the most important prerequisite for market access. Customers purchase items that seem appealing and healthful. Pathogens are what damages the cell walls of African horned cucumbers and the sap from damages African horned cucumbers damages the others in the same tray. Inadequate refrigerated storage and facilities for harvesting and storing are the secondary causes of losses in Zimbabwe. In affluent nations, shipping containers are cleaned to minimize infection (FAO, 2014).

Availability of markets and Market information

Small-scale farmers operate in isolated locations where it is challenging to find out what their rivals are doing to better market their produce. Due to the high expense of traveling to meet and identify possible markets, small-scale farmers are consequently unable to access potential buyers. Therefore, Mdlalose (2016) contends that enhancing the way in which farmers receive market information and motivating them to look for markets prior to production can be employed as a marketing tactic to guarantee market access. Further research, however, reveals that small-scale farmers' lack of marketing expertise can be attributed to a variety of factors, including a dearth of communication channels. Small-scale farmers need to receive training in a range of production and marketing techniques to strengthen their ability to communicate and negotiate, which will further increase their chances to acquire formal market contract and profitability (Khapayi & Celliers, 2016). According to Shiferawet al. (2011), marketing techniques facilitate the integration of farmer's products with high-value markets by offering the required equipment and inputs together with technical and market knowledge.

Price fluctuation

Price volatility can have an impact on a household's ability to purchase food from the market, particularly during lean seasons (Greene, 2003) . Price and availability to sizable markets in bordering nations like South Africa, Zambia, Mozambique, and Botswana have an impact on Zimbabwean markets. Vegetable production levels, the condition of common transportation, pests and illnesses, tariffs and quotas, and political unrest all affect the supply of vegetables from these nations (USAID, 2014). Perishability of the product has been determined to be the primary cause of price reductions (Baloyi, 2010) . Supply and demand in the market affect prices. Price reductions are expected when supply is high, and price increases are anticipated when supply is low. Seasonality determines the market pricing, where prices of products are likely to increase at the end of their season.

Factors influencing price trends

The price dynamics of African horned cucumbers are influenced by several key factors. Understanding factors such as market demand, supply, climate and production, Government policies and subsidies.

Market demand and supply

The law of demand and supply is a conceptual theory in economics that was popularized by Adam Smith in 1776 .Supply is the amount of a product that suppliers will offer to the market at a given price. As the price of an item goes up, suppliers will attempt to maximize their profits by increasing the quantity offered for sale. This means that the lower the price, the lower the quantity supplied; and the higher the price, the higher the quantity supplied. At low price levels only the customer's willingness and ability to purchase increases. Demand is defined as the amount of a product that consumers are willing and able to purchase at any given price and naturally, consumers are willing and able to buy less as the price rises.

Government policies and subsidies

The pricing and marketing of agricultural products is heavily influenced by the government in Turkey. It also has a significant role in the production, distribution, and pricing of agricultural inputs. In comparison to the value of some commodities, involvement is high. The cost of the intervention is equal to roughly 2% of the agricultural sector's national income as determined by increases in outstanding Central Bank credit. This appears very substantial on its own and does

not include planned subsidies to the agriculture industry. Even with simply operation and maintenance expenditures, the direct subsidies to production provided by fertilizer, seeds, and water would amount to over 2.5 percent of the nation's agricultural revenue. However, the importance relative to major commodities, sugar, tobacco, and tea, is over 10 percent. These proportions can be interpreted as indicative of the extent and relative cost of intervention for each commodity. It represents the extent to which producers and/or consumers of these commodities are subsidized by the government and the subsequent impact on market prices thereof. The net effect on consumer welfare depends on the manner by which the Government finances the intervention cost.

Consumer Perceptions

Consumers' perceptions of sustainable products, including agricultural goods, can significantly affect purchasing decisions and consumption patterns. Factors such as perceived value and trust play a role (Camilleri M A, 2023). The consumption of fruits and vegetables is influenced by a complex interplay of knowledge, attitudes, and practices. While knowledge about the health benefits of fruits and vegetables is widespread, it does not always result in increased consumption. Attitudes towards fruits and vegetables such as African horned cucumber, shaped by cultural, social, and personal factors, can either promote or hinder their intake. Practices, the actual behaviors of purchasing and consuming the fruits, are often constrained by external factors such as availability and affordability.

Knowledge

Knowledge is information and understanding about a subject (Collins Dictionary, 2024). Individuals who are knowledgeable about the health benefits and nutritional value of fruits and vegetables are more likely to consume them. A perceptions study by (Sue Foster-Cox, 2007) to educate participants on pesticide safety issued, exhibited positive outcomes with the acquirement of less harmful practices. This strongly supports the view that product knowledge has a positive impact on consumer behavior. However, awareness and understanding does not always lead to increased consumption due to various barriers such as availability and cost (Camilleri et al., 2023). Awareness of the nutritional benefits vegetables is crucial for promoting their consumption. However, knowledge alone is insufficient to change dietary habits and practices. The gap between knowledge and practice highlights the need for targeted interventions

that address other influencing factors (Sarfo et al., 2023). It needs to be supported by other factors such as accessibility, affordability, and tailored educational efforts to result in a meaningful increase in consumption.

Attitude

Attitudes towards fruits and vegetables are shaped by personal beliefs, preferences, and motivations. Positive attitudes towards healthy eating can promote higher intake of fruits and vegetables. This is influenced by personal health goals and the perceived benefits of a healthy diet (Xu et al., 2022). Attitudes towards the environment and sustainable practices can also affect fruit and vegetable consumption. Cultural factors can shape attitudes towards certain foods, affecting consumption patterns. Preferences for traditional diets can either hinder or promote fruit and vegetable intake (Sarfo et al., 2023).

Practices

Actual eating habits are influenced by factors including availability, convenience, and taste preferences. Practices may not align with knowledge and attitudes due to constraints like limited processing know-how or equipment (Sarfo et al., 2023). Camilleri et al. (2023) conducted a systematic literature review on consumer perceptions of sustainable products, which can be extrapolated to include agricultural products like fruits and vegetables.

Ways of improving smallholder market access

Value chain incorporation

Incorporating smallholders into value chains can greatly increase their market access. Kilelu et al. (2016) analyze the role of multi-stakeholder procedures in Tanzanian dairy development, emphasizing that, while such processes can drive market participation, their impact is frequently restricted by existing value chain structures and institutional constraints. The International Fund for Agricultural Development (IFAD,2024), highlights the importance of dependable market access in enhancing productivity and incomes, calling for interventions at various links of the value chain to generate revenue for the rural poor.

Access to market information

Access to market information is critical for smallholders who want to make educated production and marketing decisions. The Food and Agriculture Organization (FAO,2017) emphasizes the

significance of policy suggestions in connecting smallholders to markets, highlighting the necessity for governments to address specific restrictions and maximize the potential for beneficial access to reliable and remunerated markets. Ferris et al. (2014) also emphasize the increasing role of agricultural extension services in connecting smallholder farmers to markets, highlighting how agriculture can provide a bridge out of poverty.

Contract farming

Contract farming can be both beneficial and detrimental to smallholders. While it has the ability to raise and stabilize incomes, as suggested by the World Bank (2007), it can also have negative implications such as reduced food consumption and income, as discovered by (Olounlade O.A, 2020) in their research of rice production in Benin. According to the FAO (2008), contract farming can help smallholders in developing countries transcend poverty by promoting involvement in reformed markets and value chains.

Summary

Africa's horned cucumber, along with cucumbers in general, are the fourth most widely grown vegetable crop worldwide, with 53.4% of the crop produced in China. However, weather and transportation-related factors cause shortages or surplus supply of these cucumbers, which can affect their price. Nowadays, the majority of farmers grow cucumbers in greenhouses. 58.6% of the world's vegetables are produced in India, where potatoes, tomatoes, onions, and cucumbers account for 14.5% of total production. The largest producing region in South Africa is the province of Limpopo, where cucumbers make up 17% of the total area planted. Production is winter-grown in Zimbabwe, and it needs constant care, water, and humidity.

Knowledge is essential for understanding and promoting the consumption of fruits and vegetables. But altering eating customs and behaviors is insufficient. Personal views, tastes, and reasons influence how people feel about fruits and vegetables. Consumption can be influenced by attitudes toward sustainable practices and the environment as well as positive attitudes toward healthy eating. Attitudes toward particular cuisines can also be influenced by cultural influences.

Value chain integration, contract farming, and information access to the market can all be used to

increase smallholders' access to markets. Value chain integration can encourage market involvement, but intelligent decision-making requires access to market data.

CHAPTER 3

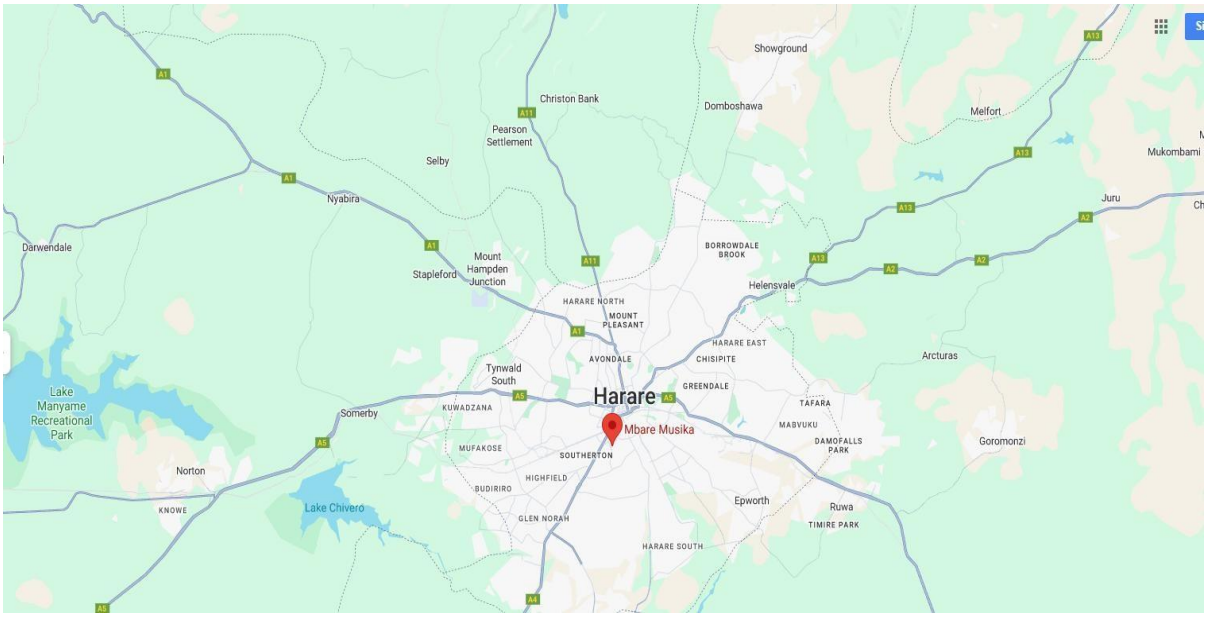
Methodology

Introduction

This chapter shall provide knowledge of the study area and criteria for data collection. The sampling procedure and data analysis methods will also be discussed on this chapter.

Description of study area

Figure 3.1Map of study area



The research will be undertaken in ward 3, Harare urban in Harare, Zimbabwe. It happens to be Zimbabwe's largest fresh produce market. Its geographical coordinates are 17° 51' 29" South, 31° 2' 14" East of Harare. It is in agro-ecological region 2A which encompass high temperatures, typically ranging from 25 to 35 degrees Celsius (77 to 95 F) during the warmer months. Humidity levels might vary whilst Rainfall averages around 300 to 600mm annually. Many people employ horticultural marketing as a way of trade, which is why this location was selected. Mbare Musika is a market that sells both local and imported food from South Africa, Mozambique, and Zambia. It is situated about 100 meters from the bus terminal. Daily deliveries of produce are made by more than 4500 farmers to Mbare Musika and other major agricultural markets. The market can handle up to 54 different produce categories, with tomatoes, groundnuts,

onions, cucumbers, and sweat potatoes ranking among the top five revenue-generating produce categories. Vegetables are mostly supplied by Chihota (eMkambo knowledge center, 2023).

Research design

In this study, a mixed method approach was used to capture a detailed understanding of the research topic. This approach involved the integration of both quantitative and qualitative data allowing for a more nuanced exploration of challenges faced by suppliers, price trends and consumer perceptions. The quantitative component of the research involved the analysis of data from KTA, a key source for understanding price trends within the market. Through the systematic collection and analysis of numerical data, trends and patterns in pricing behaviour were identified and thereby provided empirical insights into the fluctuation of prices throughout 2023. Complementing the quantitative analysis, qualitative data was gathered through in depth interviews with 80 individuals closely connected to the market. These interviews provided a rich source of qualitative insights thereby offering perspectives, experiences, and opinions that shed light on the trade of African horned cucumbers at Mbare musika agricultural produce market.

Sampling procedure

Due to practical considerations, a purposive sampling method was employed for this study selecting only participants in the trade for African horned cucumbers and a total of 80 participants involved in the trade of African horned cucumbers where interviewed. The researcher firstly obtained information from the local council. The information provided by the officers indicated that there is a population of approximately 100 fruits and vegetable participants trading through Mbare Musika agricultural produce market. In order to determine the sample size, the researcher used Krejci and Morgan (1970) table for determining sample size which is constructed using the formulae.

Formula for determining sample size

$S=X^2NP\ (1-P)/d^2\ (N-1) + X^2P\ (1-P)$

S=required sample size

$X^{2=}$the table value of chi-square for 1 degree of freedom at the desired confidence level (3,841)

$S^{=}$the population size

$P^{=}$the population proportion (assumed this would be 0.50since this would provide the maximum sample size)

$d^{=}$the degree of accuracy expressed as a proportion (0.50)

The researcher decided that 80 participants where enough because social science research often uses 30 participants, which is considered to be statistically significant to draw up meaningful conclusions (Bailey, 1994).

Data collection

Data used for the study to determine price trends was obtained from KTA whilst the rest of the data was collected through interviews. Working on the nation's informal agriculture markets, KTA is an organization dedicated to knowledge brokerage and information sharing. It gathers data on all produce varieties, quantity, price, and destinations of farmers who are trading agricultural produce. KTA's main goal is to use ICTs to connect farmers with markets. Thus, it is possible to process and exchange such high-quality data with stakeholders in the agriculture sector.

Working along with the local municipalities, KTA plays a significant part in providing market traders and farmers with trading space. The price, source, and unit of measurement of each piece of produce that is delivered to the market are all taken into account by the council when compiling data on the produce. Next, the information is recorded and analyzed on an Excel spreadsheet.

Description of Data analysis methods

Table 3.1 data analysis methods

Objective	Data Collection method	Analytical method	Analytical software
Determining main marketing challenges by suppliers	Structured interviews	Thematic analysis	SPSS 20
Determining price trends	Price data (KTA)	Moving average, trend analysis	Microsoft Excel
Determining consumer perceptions	Interview Guide	KAP analysis	SPSS 20

The thematic analysis method was used to analyse challenges as the researcher meant to identify common challenges being faced by suppliers of African horned cucumbers in the market and it was easier to use this method when examining the sets of text from the interviews and then analysing to determine common challenges. Then, in order to sort the price data, generate trend lines, and produce a readily understood visual diagram, the time series analytic tool known as the moving average was employed in the analysis of price data for African horned cucumbers which where collected daily and analysed weekly using Microsoft Excel. To determine customer perceptions, the KAP analysis was used. It is a method of enquiry used in social sciences to better understand the behaviour of individuals and communities. The researcher used this method to gather information of consumers on their knowledge, attitude and practices. The data was analysed to identify patterns in the knowledge, attitude and practices of the consumers in Mbare Musika. The results where further analysed using spearman correlation on SPSS software to see the relationship shared by knowledge, attitude and practices of consumers of African horned cucumbers at Mbare Musika agricultural produce market.

Reliability analysis

Reliability can be defined as the demonstration to which the research generates consistent and dependable outcomes or data after repeated trials (Mugenda, 1999). This study demonstrated a

Cronbach's alpha coefficient of 0.782 showing a high level of consistency. This suggests that there was sufficient basis for data analysis hence the findings of this study can be generalized to other markets in the country.

CHAPTER 4

Results and discussion

4.1 Main marketing challenges faced by suppliers of African Horned cucumbers.

Table 4. 1 Challenges faced by suppliers of Africa Horned cucumbers in the market

Challenge	Frequency	Percentage
Limited market awareness	56	70.0
Inefficient distribution channels	31	38.8
Seasonality	25	31.3
Quality control	22	27.5
Competitive landscape	21	26.3
Regulatory compliance	38	47.5
Access to markets	48	60.0
Price volatility	65	81.3

Table 4.1, shows that suppliers of African Horned cucumbers face various challenges in marketing their product with price volatility ranking highest at 81.3% of responses, significantly impacting profitability. Limited market awareness closely follows, representing 70.0% of concerns and hindering efforts to generate consumer interest. Access to markets poses a substantial barrier, with regulatory compliance adding complexity to international trade, together accounting for 60.0% and 47.5% of responses, respectively. Inefficient distribution channels further complicate logistical hurdles, constituting 38.8% of concerns. Competition from other cucumber varieties (26.3%), seasonal availability (31.3%), and quality control issues (27.5%) also demand attention, highlighting the multifaceted nature of challenges faced by suppliers in promoting African Horned cucumbers effectively.

Thematic analysis of the challenges

The following are the themes that were derived from the challenges identified in the study on the supplier side in the Mbare agricultural market.

i. Limited Market Awareness and Access

Suppliers of African Horned cucumbers encounter challenges stemming from limited market awareness and access. Respondents express concerns about the unfamiliarity of African Horned cucumbers among consumers and the difficulties in accessing international markets. One respondent emphasizes, *"Consumers are unfamiliar with African Horned cucumbers, making it challenging to create demand in new markets"*. These results are similar to the findings of Mdlalosi, (2016) who also identified limited market access and awareness as the biggest challenge and underscored the importance of raising awareness and expanding market access for this unique product.

ii. Logistical Hurdles and Distribution

Inefficient distribution channels pose significant challenges for suppliers, impacting the timely delivery and quality of African Horned cucumbers. Respondents highlight issues such as transportation delays and inadequate infrastructure, which hinder the efficient distribution of the product. As one respondent laments, *"Poor distribution networks lead to delays in delivering fresh African Horned cucumbers to market, affecting product quality"*. This concurs with findings from Hofisi and Shava, (2019) who indicated limited and inefficient distribution changes ls as the biggest challenge affecting marketing of horned cucumbers. Mdlalosi, (2016) highlighted that addressing these logistical challenges is crucial for ensuring the availability and freshness of African Horned cucumbers in the market.

iii. Regulatory Compliance and Quality Control

Regulatory compliance and quality control are paramount concerns for suppliers of African Horned cucumbers. Respondents express the challenges of navigating complex regulations for export and maintaining consistent quality standards throughout the supply chain. A respondent emphasizes, *"Meeting stringent regulatory requirements for export is a significant challenge, and ensuring consistent quality is crucial for maintaining customer satisfaction"*. This is similar to the findings of (Khapayi and Celliers, 2016) who indicated that in developing countries there are stringent policies and a lot of costs in terms of regulatory compliance which affects marketing of the cucumbers. Camilleri et al., (2023) highlighted the importance of adherence to regulations and stringent quality control measures to meet market demands.

iv. Price Volatility and Competitiveness

Price volatility and competitiveness further compound the challenges faced by suppliers in the African Horned cucumber market. Respondents discuss the impact of price fluctuations on profitability and the need to differentiate their product in a competitive landscape. As one respondent reflects, *"Price fluctuations make it difficult to plan and budget effectively, while competition from similar products adds pressure to differentiate our offering"*. This concurs with findings from Hofisi and Shava, (2019) who indicated that in highly inflated conditions and economic turmoil, price Strategies to address price volatility and enhance competitiveness are essential for the long-term sustainability of suppliers in this market.

Price Analysis of African horned cucumbers

Price analysis for 60kgs

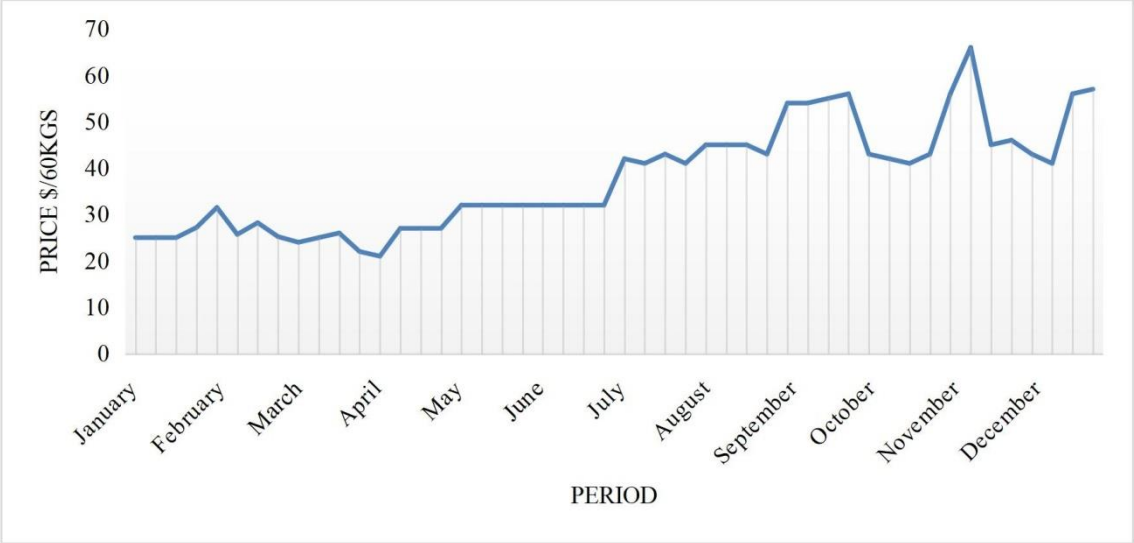


Figure 4.2.1 Yearly Trend analysis for 60kg bags of African horned cucumbers

Description for mean weekly prices for 60kg bags

Table 4.2.1 above indicates that the highest price per 60kg bag was realized in December at $57 whilst the lowest price was realized in April at $ $21 per 60kg bag. The weekly average price for African Horned cucumbers exhibits some fluctuations over the course of the year. In January, February, and March, the price remains relatively stable, ranging from $24 to $31.5 per 60kg. However, in April, there is a notable decrease to $21 per 60kg, followed by a sharp increase to $32 per 60kg in May and June, indicating a sudden surge in demand or limited supply. This high

price is maintained throughout the summer months, likely due to seasonal factors impacting production or market conditions. In July and August, the price peaks at $42-$45 per 60kg before gradually increasing further in September to $54-$56 per 60kg, suggesting a combination of increased demand and reduced supply. However, in October and November, the price fluctuates between $41 and $66 per 60kg, indicating possible market instability or external factors influencing pricing. By December, the price stabilizes again around $41-$57 per 60kg, reflecting the end of the seasonal fluctuations and returning to a more typical pricing range.

Price analysis for heap/kg

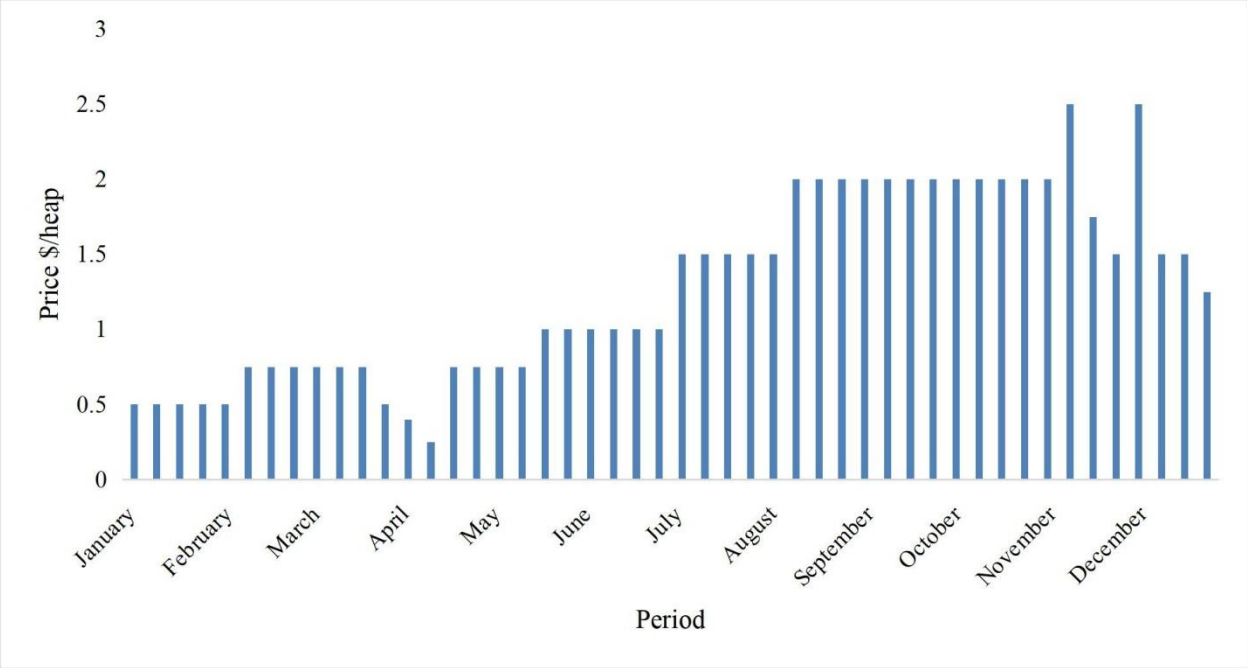


Figure 4.2.2 Annual Trend analysis per heap/kg of African horned cucumbers

Description for mean weekly price per heap/kg

Table 4.2.2 above indicates that the highest price per heap/kg was realized in December at $2.50 whilst the lowest price was realized in April at $0.40 per heap/kg. The price per heap of African Horned cucumbers also displays fluctuations throughout the year, influenced by various factors such as supply, demand, and seasonal variations. In January, February, and March, the price per heap remains relatively stable, ranging from $0.5 to $0.75. However, in April, there is a slight decrease to $0.4 per heap, followed by fluctuations in May and June, with prices ranging from $0.75 to $1 per heap. These fluctuations may be attributed to changes in market conditions or variations in production levels. In July and August, there is a noticeable increase in price per

heap, reaching $1.5 to $2, possibly due to increased demand during the summer months. This trend continues into September, with prices remaining consistently at $2 per heap. In October and November, the price per heap fluctuates between $1.5 and $2.5, indicating market volatility or changes in supply and demand dynamics. By December, the price per heap stabilizes again around $1.25 to $2.5, reflecting the end of the seasonal fluctuations and returning to a more typical pricing range. Overall, these trends highlight the influence of seasonal factors and market dynamics on the price per heap of African Horned cucumbers throughout the year.

i. Supply and demand

The observed trends in the price of African Horned cucumbers underscore the complex interplay between seasonal factors and market dynamics within the agricultural industry. The stability in prices during certain months, such as January through March, suggests a period of equilibrium where supply meets demand adequately. These results are supported by assertions by Khapayi and Celliers, (2016) who indicated that the stability can be attributed to factors such as consistent production levels and steady consumer demand, as evidenced by studies on agricultural pricing dynamics. However, the emergence of fluctuations, particularly in the spring and summer months, highlights the susceptibility of the market to external influences.

ii. Seasonal variations

Fluctuations in supply due to seasonal variations in harvesting or unexpected weather patterns can lead to temporary imbalances, resulting in price volatility. Additionally, shifts in consumer preferences or changes in export/import dynamics may exacerbate these fluctuations, further impacting market stability Camilleri et al., (2023) The observed increase in prices during peak demand periods, such as July and August, aligns with theories of demand-supply dynamics, where heightened consumer interest during certain seasons drives prices upwards (Bailey & Brorsen, 2019). Moreover, the persistence of elevated prices into September suggests a lag effect, where market adjustments to changing supply conditions occur gradually (Hofisi and Shava, 2019). Overall, these findings align with the concurs with Mdlalosi, (2016) who further highlighted the need for stakeholders in the African Horned cucumber industry to anticipate and adapt to both seasonal and market-driven fluctuations in order to maintain profitability and ensure market stability.

Consumer perceptions towards African horned cucumbers

Description of Perceptions of Knowledge

Table 4.3.1 Perceptions of knowledge of customers on cucumbers

Knowledge/ Question	SDA		DA		N		A		SA		Mean Score
	N	%	N	%	N	%	N	%	N	%	
I am familiar with African Horned cucumbers.	3	3.75	5	6.25	11	13.75	28	35	33	41.25	4.04
I can identify African Horned cucumbers based on their unique appearance.	4	5.0	5	6.25	15	18.75	25	31.25	31	38.75	3.93
I am aware of the nutritional benefits of African Horned cucumbers.	9	11.25	11	13.75	29	36.25	16	20.0	15	18.75	3.21
I have heard about African Horned cucumbers before participating in this survey.	3	3.75	6	7.5	11	13.75	21	26.25	39	48.75	4.09
I feel confident in my knowledge about African Horned cucumbers.	6	7.5	12	15.0	17	21.25	27	33.75	18	22.5	3.49
Average Mean Score											**3.75**

SDA=Strongly Disagree; DA=Disagree; N=Neutral; A=Agree; SA=Strongly Agree

The results in table 4.2 indicate the highest variable of knowledge with a mean score of 4.09 was that the consumers had knowledge of African horned cucumbers before the survey whilst the least variable of knowledge was that consumers had no knowledge of their nutritional benefits with a mean score of 3.21 thereby suggesting that most participants did not have knowledge of the fruits nutritional benefits. This is similar to the findings of Camilleri et al., (2023) who indicated that the generality had knowledge of these since they grew abundantly in the rural areas. However, certain aspects, such as awareness of nutritional benefits, received lower mean scores, suggesting areas for improvement in consumer education. This is supported by the findings from Xu, et al., (2022) who indicated that knowledge of the nutritional benefits was somehow low because of lack of awareness and education on the cucumber.

Description of Perceptions of Attitude

Table 4.3.2 Perceptions of attitude of customers on African horned cucumbers

Attitudes Questions	SDA		DA		N		A		SA		Mean Score
	N	%	N	%	N	%	N	%	N	%	
I find African Horned cucumbers to be interesting and exotic (New Zealand).	8	10.0	12	15.0	24	30.0	20	25.0	16	20	3.3
I believe African Horned cucumbers offer unique culinary possibilities.	13	23.75	15	18.75	24	20.0	19	11.25	9	16.25	3.2
I am willing to try African Horned cucumbers.	17	33.75	10	12.75	13	16.25	22	27.5	8	10.0	3.7
I perceive African Horned cucumbers as healthy and nutritious.	9	11.2	11	13.75	29	36.25	16	20.0	15	18.75	3.2
I believe African Horned cucumbers could add excitement to my meals.	18	22.75	22	27.5	15	18.75	14	17.5	11	13.75	3.3
Average Mean Score											**3.3**

SDA=Strongly Disagree; DA=Disagree; N=Neutral; A=Agree; SA=Strongly Agree

The results in table 4.3.2 indicate that the highest mean score of 3.7 of the participants were not willing to try African horned cucumbers. The lowest mean score of 3.2 perceived that African horned cucumbers were unhealthy and that participants did not believe they could offer unique culinary possibilities. This is similar to findings by Xu, et al., (2022) who highlighted that this type of cucumber is less preferred by the consumers because of the appearance and also the taste which is surpassed by the English cucumber which doesn't have "horns".

Description of Perceptions of Practices

Table 4.3.4 Perceptions of practices of customers on cucumbers

Practices/ Questions	SDA		DA		N		A		SA		Mean Score
	N	%	N	%	N	%	N	%	N	%	
I have previously purchased African Horned cucumbers.	15	18.75	18	22.5	21	26.25	14	17.5	12	15.0	3.82
I have consumed African Horned cucumbers before.	1	1.25	3	3.75	12	15.0	25	31.25	39	48.75	2.53
I am willing to pay a premium price for African Horned cucumbers.	26	32.5	21	26.25	15	18.75	11	13.75	7	8.75	2.40
Concerns about the price of African Horned cucumbers influence my purchasing decisions.	6	7.5	7	8.75	14	17.5	21	26.5	32	40.0	2.88
I would actively seek out African Horned cucumbers in local markets.	22	27.5	19	23.75	17	21.25	12	15.0	10	12.5	2.61
Average Score											**2.85**

SDA=Strongly Disagree; DA=Disagree; N=Neutral; A=Agree; SA=Strongly Agree

Table 4.3.4 above showed the highest practice, with a mean score of (3.82) was having consumed African horned cucumbers before commencement of this study. The least practice, with a mean score of (2.4) was willing to pay higher prices for African horned cucumbers showing that most consumers are not willing to pay higher prices for African horned cucumbers. This is supported by Camilleri et al., (2023) who indicated that respondents were not likely to pay for these cucumbers in the market since they are in abundance and almost free in the rural areas. Moreso, Sarfo, et al., (2023) added that because of their taste and appearance most people are reluctant to actively seek them and look out for the exotic ones without horns.

Correlation for knowledge, attitude and practices

Table 4.4.1 spearman correlation results

Correlations

			knowledge	Attitude	practices
Spearman's rho	knowledge	Correlation Coefficient	1.000	.738	.900*
		Sig. (2-tailed)	.	.155	.037
		N	80	80	80
	attitude	Correlation Coefficient	.738	1.000	.949*
		Sig. (2-tailed)	.155	.	.014
		N	80	80	80
	practices	Correlation Coefficient	.900*	.949*	1.000
		Sig. (2-tailed)	.037	.014	.
		N	80	80	80

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4.4.1 indicates that there is a strong positive monotonic relationship between knowledge and attitude, knowledge and practices as well as practices and attitude of consumer perceptions for African horned cucumbers relationship which means as one variable increases, the other increases. The correlation coefficient ranges from +1 to -1, where a value above 0 and closer to means a perfect positive association. A value of 0 means there is no association between variables. A value between 0 and -1 indicates a negative relationship meaning an increase in one variable will result in a statistically significant decrease in another variable. Table4.4.1 shows a correlation coefficient closer to one which is 0.738, 0.900 and 0.949 respectively for each relationship. The p-value denoted as sig in table 4.5 resembles the significance level (evidence against the null hypothesis). The results show that the value is above 0.05 for every relationship as it is sig 0.155 between knowledge and attitude, (0.37) knowledge and practices then lastly (sig 0.14) between practices and attitude therefore there is no evidence against the null hypothesis hence null hypothesis is true meaning we fail to reject null hypothesis.

i. Correlation of knowledge and attitude

The relationship between knowledge and attitude indicates a strong positive monotonic relationship. The correlation coefficient is (0.738), this represents that consumers attitude towards African horned cucumbers consumption improves when they have better understanding of the nutritional value of the fruit as well as its culinary uses. These finding statistically align with Sarfo et al, (2023) who suggested that knowledge of agricultural products positively affects

consumer attitudes. This further indicates gaps in market information dissemination at Mbare Musika agricultural produce market. Table 4.4.1 also gives a p-value of 0.155 meaning we fail to reject null hypothesis.

ii. Correlation of knowledge and practices

Correlation between practices and knowledge indicates a strong positive monotonic relationship with a correlation coefficient of (0.90). These findings suggest that more African horned cucumbers are consumed if consumers have greater knowledge of their nutritional, health and culinary benefits. These findings disagree with Camilleri et al., 2023 in his study; he suggests that awareness and understanding do not always lead to increased consumption due to various barriers such as availability and cost. The p-value is (0.37) hence there is no evidence against null hypothesis indicating the existence of chances for knowledge to influence practices.

iii. Correlation of attitude and practice

The results gave a correlation coefficient of 0.949 and a p-value of (0.14) showing the strongest positive monotonic relationship from the study existed between attitudes and practices. The results suggests that attitudes highly influence practices and this agrees with Camilleri et al., (2023) who indicated that practices may not align with attitude due to limitations of know-how where in this case respondents were not likely to pay for these cucumbers in the market since they are in abundance and almost free in the rural areas. These results suggest and prove that if the consumer attitudes towards African horned cucumbers are positive, they will demand higher consumption and if the market is convinced to have a positive attitude towards them, their demand will increase.

CHAPTER 5

Summary, Conclusion and recommendations

Research summary

The research provides information and findings from a research study conducted at Mbare Musika agricultural produce market that aimed to analyze the trade of African horned cucumbers. The objective of the research was to determine challenges faced by suppliers, to determine price trends of African horned cucumbers at Mbare Musika in 2023 and to determine consumer perceptions towards African horned cucumbers. The study used a mixed method research approach where secondary data from eMkambo knowledge transfer and primary data collected using an interview guide were used to establish trends and patterns. The study revealed that 81.3% of the suppliers interviewed found price volatility to be the highest frequenting challenge and only 26.3% considered competitive landscape as the least frequenting challenge. December saw the realization of the highest price of African horned cucumbers traded at Mbare Musika with a heap going for $2.50 and $57 per 60 kg bag whilst April saw the least prices of $21 per 60kg bag and $0.40 per heap. The KAP analysis revealed that the highest variable of knowledge with a mean score of 4.09 was that the consumers had knowledge of African horned cucumbers before the survey whilst the least variable of knowledge was that consumers had no knowledge of their nutritional benefits with a mean score of 3.21 thereby suggesting that most participants did not have knowledge of the fruits nutritional benefits. The analysis of consumer attitudes showed that the highest mean score of 3.7 of the participants were not willing to try African horned cucumbers. The lowest mean score of 3.2 perceived that African horned cucumbers were unhealthy and that participants did not believe they could offer unique culinary possibilitiest. Lastly, a mean score of 2.4 showed that the least practice was willing to pay higher prices for African horned cucumbers and a mean score 3.82 suggested that the highest practice was having consumed African horned cucumbers before commencement of this study. The Spearman correlation analysis results showed that there is a strong positive monotonic relationship between knowledge and attitude, a correlation coefficient of 0.738 and p-value 0.155 indicated that attitude towards the fruit improves when consumers have better understanding of its nutritional value. There is also a strong positive monotonic relationship between knowledge and practice, a correlation coefficient of 0.90 and p-value 0.37 suggesting that more African horned cucumbers

are consumed if consumers have greater knowledge of their nutritional and health benefits. Lastly, there is a strongest positive monotonic relationship between attitude and practice, a correlation coefficient of of 0.949 and a p-value of 0.14 indicate that positive attitudes towards African horned cucumbers highly influence positive consumer practices.

Conclusion

According to the study, the main obstacle faced by African horned cucumber suppliers to the local market is price fluctuation. The highest price of African horned cucumbers traded at Mbare Musika was in December whilst April had the lowest price. The study also demonstrated that consumers do not have knowledge of African horned cucumbers nutritional and health benefits. There is a negative attitude towards African horned cucumbers as most of the consumers are not willing to include African horned cucumbers in their culinary dishes. Majority of consumers have previously tried African horned cucumbers but are not willing to pay higher prices for them at the market. There is a positive relationship between knowledge and attitude, knowledge and practice as well as attitude and practice.

Recommendations

Objective 1: to determine the challenges faced by suppliers of African horned cucumbers

- It is highly recommended for small scale farmers to invest in information and communication technology to facilitate the exchange and tracking of data regarding the price and marketing of African horned cucumbers at Mbare musika and other markets. The ICT sector should focus on its transformative nature for international competitiveness positioning African horned cucumbers as part of a locally accessible fruit thereby capitalizing on the growing interest in organic nutrient rich foods.
- Since most small-scale farmers lack the financial means to regularly produce African horned cucumbers on a commercial scale, encouraging public-private partnerships between them and cooperatives has the potential to boost output.

Objective 2: to determine the weekly price trends of African horned cucumbers at Mbare Musika agricultural produce market in 2023.

- It is advised that farmers should sell their African horned cucumbers when there are peak prices in December. It is important to encourage smallholder farmers to develop and to participate in market analysis and evaluation. In order to ensure smallholder farmers have a ready market prior to production, more work needs to be done in the sector to encourage them to engage in contract farming.
- There is need for government and non governmental organizations to fund research and development into low cost and design of horticultural facilities such as greenhouses and irrigation to facilitate a steady year-round supply of African horned cucumbers.
- Effective handling and packaging techniques can also lessen fruit bruises and mechanical injuries that occur when fruits are transported from rural fields to urban markets over poorly maintained road networks, guaranteeing the quality of the final product. Using gases like nitrogen and sulfur or lowering temperatures and humidity are examples of conventional techniques used by cold storages and warehouses that can assist extend product shelf life and lower perishability levels to maximize return revenue from the sale of African horned cucumbers.

Objective 3: to determine consumer perceptions towards African horned cucumbers traded at Mbare Musika agricultural produce market.

- It is recommended that programs about nutrition and health benefits of African horned cucumbers which raise consumer knowledge of African horned cucumbers are developed to improve their attitude and practice.
- Extension services are encouraged to improve awareness of the different benefits of consuming African horned cucumbers so that consumers have a buy into the product.

Chapter summary

This chapter briefly summarized and gave a full conclusion of the findings from chapter 4. The researcher also gave recommendations to suppliers, small-scale farmers, government and other stakeholders involved in the trade of African horned cucumbers at Mbare Musika agricultural produce market.

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Appendix
Interview guide

My name is Adman Chirambadare; I am a student pursuing a Bsc Honours Degree in Agricultural Economics and Management at Bindura University of Science Education. I am undertaking a study analyzing the trade of African horned cucumbers at Mbare Musika agricultural produce market in Zimbabwe. All information provided by participants will be kept confidential and will serve only for academic purposes. Your cooperation is valuable in the process.

INTERVEIW GUIDE ON TRADE OF AFRICAN HORNED CUCUMBERS AT MBARE MUSIKA AGRICULTURAL PRODUCE MARKET

Name of respondent…….

Date……

Section A

Demographics

1. What is your age? …… [ ]
2. What is your marital status? Single [ ]…married[ ]…divorced[ ]…widowed[ ]…other[ ]
3. what is your gender?……..male[ ]……female[ ]
4. Are you a supplier... farmer [ ]…..wholesaler [ ]……retailer [ ]……other [ ]…..
5. What is your highest level of education…..primary [ ]…..secondary [ ]…tertiary [ ]….. Informal [ ]….other [ ]
6. How many years of experience do you have trading African horned cucumbers.. ?

Section B

Determining challenges faced by suppliers of African horned cucumbers

1. How often do you supply African horned cucumbers?
2. What challenges have you faced in the supplying African horned cucumbers?

3. What obstacles have you encountered in sourcing, transporting and selling African horned cucumbers?
4. How do you ensure that the African horned cucumbers remain fresh and of high quality during the supply process?
5. What strategies do you employ to overcome challenges related to the supply of African horned cucumbers?

Section C

Determining consumer perceptions towards African horned cucumbers

1. Do you have any prior experience or knowledge of African horned cucumbers?
2. What do you think are the potential health benefits of consuming African horned cucumbers?
3. How do you describe taste and texture of African horned cucumbers?
4. What do you think are the unique selling points of African horned cucumbers compared to other vegetables or fruits?
5. How often do you use African horned cucumbers in your cuisine?
6. How often do you purchase and consume African horned cucumbers?