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EXPLORING UNIVERSITY STUDENTS' PERCEPTIONS AND CONSUMPTION PATTERNS OF TRADITIONAL GRAINS: A CASE STUDY OF BINDURA UNIVERSITY.

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A Dissertation Submitted in Partial Fulfillment of the Requirements for the Bachelor of Agricultural Science Honours Degree in Agricultural Economics and Management

DECLARATION

I, Jesciline Shayamano, confirm that this dissertation, titled “Exploring University Students’ Perceptions and Consumption Patterns of Traditional Grains: A Case Study of Bindura University”, is my own original work and has not been previously submitted for any degree or examination at another university. This research does not include any data, graphs, images, or other materials from other individuals unless explicitly acknowledged.

I recognise the guidance and support provided by my supervisor, Dr Mujeyi, as well as other academic staff throughout the research process. However, the intellectual content and overall presentation of this dissertation are solely my responsibility. I have adhered to the plagiarism and academic integrity policies of Bindura University of Science Education, ensuring all sources of information used in this dissertation are properly cited and referenced.

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APPROVAL FORM

We, the undersigned, hereby certify that we have supervised, reviewed, and recommend to the Bindura University of Science Education the acceptance of the research project titled:

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Examiner

DEDICATION

This research study is dedicated to my parents Mr and Mrs Shayamano.

ACKNOWLEDGEMENT

First and foremost, I give praise to God for granting me endurance during challenging times.

I sincerely appreciate my supervisor, Dr Mujeyi, for taking on the responsibility of guiding me through this research. Her unwavering support, insightful advice, and prompt attention have been instrumental in the success of this project. Her expertise and guidance have significantly shaped the direction and scope of this study. Thank you, Dr Mujeyi, for your patience and understanding.

I am deeply grateful to the study participants who generously shared their time, experiences, and knowledge with me. Their contributions have been invaluable to the completion of this research.

I would also like to extend my gratitude to my classmates for their encouragement, helpful suggestions, and motivation throughout this journey. Their support has been truly meaningful.

Finally, from the bottom of my heart, I express my appreciation to my family, friends, and everyone who has supported, understood, and encouraged me throughout this academic endeavor. Their love and unwavering support have been a constant source of inspiration.

ABSTRACT

Traditional grains such as finger millet, sorghum, and pearl millet were consumed as staple food in the past years before the introduction of maize. Nowadays there is growing interest in the production and consumption of these grains because people are realising their importance due to climate change and food insecurity in Zimbabwe over the past years. In Zimbabwe, people are more interested in sorghum and millet products because of the high level of nutrients are now nutrients like high fibre content, cultural heritage and sustainability. However, the perceptions and consumption patterns of these grains among university students are still unknown. A mixed-methods technique was employed, combining both quantitative and qualitative data collection and analysis techniques. Survey questionnaires were distributed to a sample of 100 students to collect quantitative data on attitudes and perceptions and consumption patterns of traditional grains. Focus group discussions and in-depth interviews, as well as a semi-structured questionnaire, were used to collect qualitative data on factors affecting the consumption of traditional grains. Quantitative data were analysed using descriptive and inferential statistical methods to identify patterns and relationships between variables. Qualitative data were examined through thematic analysis to identify themes in factors affecting consumption of traditional grains among university students. Secondary data was analysed using SWOT analysis. The majority of respondents (83%) were from Zimbabwe, Zambia (8%), Malawi (5%), and Namibia (4%). The study identified key factors influencing preferences for traditional grain-based diets, including taste, price, availability, and nutrition. Taste was the most influential factor, accounting for (53%) of respondents, followed by price (24%), availability (15%), and nutrition (8%). The study highlights different consumption patterns of traditional grains among university students, with (48%) consuming them frequently or almost daily, while (51%) consume them only occasionally or rarely. Only (1%) avoid them totally, indicating potential barriers such as taste, convenience, and accessibility.

KEYWORDS

Traditional grains, university students, perceptions, consumption patterns, food security, sustainable agriculture, willingness to pay.

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LIST OF ACRONYMS

ADRAS	Agricultural Development and Research Association
BUSE	Bindura University of Science Education
FAO	Food and Agriculture Organisation
GMB	Grain Marketing Board
GMO	Genetically Modified Organisms
HBM	Health Belief Model
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IPCC	Intergovernmental Panel on Climate Change
NCD	Non-Communicable Diseases
OTA	Organic Trade Association
SPSS	Statistical Packages for Social Science
SWOT	Strength Weakness Opportunities and Threats
UNICEF	United Nations Children's Fund
VAT	Value Added Tax
WTO	Word Trade Organisation

CHAPTER 1: INTRODUCTION

1.1 Background of the Study

Traditional grains are crops that were cultivated and consumed as a staple diet in many regions years back. These grains are sorghum, rapoko, quinoa, millet, and spelt. These grains were sacred crops consumed during festivals and ceremonies in different cultures (Singh, 2018). The structure of traditional grains is composed of the bran, endosperm, and germ, which are rich in fibre, carbohydrates, fats, vitamins, and minerals.

The shift from traditional grains to modern grains like wheat, maize, and rice was caused by many factors. The major cause was the Green Revolution, where new farming methods, techniques and high-yielding crops were introduced (Pangali, 2012). As a result, farmers began to focus on growing crops that could produce more food and make more money. The Green Revolution promoted wheat, maize, and rice, which became widely adopted globally. These crops were bred to be high-yielding, disease-resistant, and responsive to fertilisers, making them attractive to farmers.

Another factor was trade and globalisation: the introduction of global markets allowed farmers to sell their crops to people in other countries (FAO, 2017). This created new opportunities for farmers to make money by growing crops that were in high demand. Trade agreements and globalisation made it easier for countries to import and export goods, including grains (WTO, 2020). As a result, modern grains like wheat and maize became widely available and affordable, leading to a shift away from traditional grains.

Nowadays there is growing interest towards traditional grain consumption because many people are realising their health and nutritional benefits. Many studies support that consuming whole grains is associated with greater health advantages, such as the promotion of better digestive health, a lower risk of NCDs, such as heart diseases and cancers, and the promotion of weight management. The key elements for these health benefits include high fibre, starch, fat, minerals, and vitamins, which reduce inflammation and promote heart health. Also, the growing demand for non-organic products contributed to the global shift from modern grains to traditional grains. According to OTA (2021), the global market for organic products has grown by 8.4%, which suggests that consumers are now interested in products that are free from synthetic pesticides, herbicides and non-genetically modified organisms.

Furthermore, global research and development has led to a shift from modern grains to traditional grains. Research on traditional grains has led to the development of high-yielding varieties which are more resilient to pests, diseases and climate change. For example, ICRISAT has developed varieties of sorghum, like ICSV 400, and pearl millet, like HHB 67-2.

Many African countries, including Zimbabwe, have abandoned their culture, food habits and habits following Western cultures because they think that their culture is inferior. Sorghum, millet, and teff have been staples in many countries for many years and were associated with cultural and traditional practices. For example, in Ethiopia, teff is used to make injera, a traditional flatbread that is a key part of Ethiopian food. University students in Africa like traditional grains; they consume them as staple food (Svodziwa, 2015). The African countries with the highest consumption rates of traditional grains among university students are Kenya, Botswana, and Ethiopia.

The consumption of traditional grains in Africa has declined recently, mostly among the urban populations, as processed foods and fast food have become more accessible and affordable. The increasing availability of modern food options has led to a shift away from traditional grains, reducing their role in daily diets (Chopera et al., 2022).

In Zimbabwe, during the pre-colonial era, traditional grains were used for many purposes, such as cooking sadza, baking bread, and brewing beer for cultural events like rain-making ceremonies and reincarnation ceremonies. However, the introduction of cash crops like tobacco, cotton, and maize, which became the staple food, led to a decline in traditional grain production in Zimbabwe. Also, climate change has contributed to the shift. Climate change has led to changing weather patterns, droughts, and heatwaves, making it challenging for farmers to grow traditional crops (IPCC, 2013). Modern grains like wheat and maize are often bred to be more resilient to these changes, making them a more attractive option for farmers. Additionally, climate change has affected the suitability of certain regions for traditional crops, leading farmers to adapt by growing more resilient modern grains (FAO, 2017).

However, there is a growing trend towards the consumption of traditional grains because many people are now health-conscious, and there is increased awareness of their nutritional benefits. The shift to traditional grains in Zimbabwe was caused by several factors, which include climate resilience; the country is experiencing food shortages and drought caused by

El Niño and La Niña weather effects have made traditional grains desirable options because these crops are drought resistant. Traditional grains are well adapted to the local climate and soil conditions, especially in the arid regions of Zimbabwe, for example, in Mwenezi, Zaka and Chiredzi.

Another driver of the production of traditional grains is the economic factors in Zimbabwe, as the GMB is offering higher producer prices for traditional grains, incentivising farmers to grow them. Also, there is a high demand for traditional grains in local and international markets; this motivates farmers to produce traditional grains.

Furthermore, the shift to traditional grains is caused by the desire to increase food security in Zimbabwe. Over 7 million people are facing food shortages, and the government of Zimbabwe and other organisations like ICRISAT and Trocaire are trying to increase the production of traditional grains to 1.2 million tonnes from 2024 to 2025. Trocaire's Traditional Grain Seed Distribution collaborates with Fambidzanai Permaculture Centre, ARDAS and Matobo Rural District Council to distribute over 8.5 tonnes of traditional grain seeds to smallholder farmers in Matobo (Trocaire, 2025). Also, the local seed breeders are developing drought-resistant seed varieties, including traditional grains like pearl millet and sorghum.

Zimbabwean universities have students from different cultures, religions and family backgrounds and have different eating habits. University students in Zimbabwe have mixed perceptions towards traditional grains, with some recognising their cultural importance and health benefits, while others perceive them as poor and orphan crops, making them less desirable options (Manwa et al., 2018).

Some universities, like Great Zimbabwe University in Masvingo, form a contract farming programme with small-scale farmers so as to promote the production, processing and marketing of traditional grains. The students from such universities are likely to have positive perceptions toward traditional grains. Students from rural areas tend to prefer traditional grains more than those from urban areas, as rural communities maintain stronger cultural significance and traditional food practices (Chopera et al., 2022). Lupane State University produced juice from sweet sorghum (infe), promoting the value addition of the traditional grains so that they look appealing for consumption (Nyoni et al., 2022). Also, one of the students at the University of Zimbabwe produced snacks from millet and sorghum as a way to promote value addition of traditional grains.

The common barriers to consuming traditional grains include low production of traditional grains, ignorance of health benefits, lack of preparation knowledge, cost, availability of products in stores, and negative perceptions of the taste, texture and aroma of traditional grains.

University students' food preferences are influenced by several factors, such as cultural heritage and family background; rural students have higher consumption patterns of traditional grains than students from urban areas (Mudimu, 2003). However, there is a lack of research on traditional grain perceptions and consumption patterns among university students in Zimbabwe.

This study aims to address this knowledge gap by exploring the perceptions and consumption patterns of traditional grains among BUSE students. The study findings contribute to the development of programmes that encourage students to eat more traditional grains. Consumption of traditional grains promotes health benefits and cultural heritage of our country.

1.2 Statement of the Problem

Even though there is growing interest in traditional grains in Zimbabwe and other African countries, there is a lack of research on the perceptions and consumption patterns of traditional grains among university students. Existing studies on traditional grains have primarily focused on their nutritional benefits, production, and marketing, with little attention paid to the consumption patterns and perspectives of students. This study aims to fill this knowledge gap by exploring the perceptions and consumption patterns of students towards traditional grains.

1.3 Objectives of the Study

1.3.1 Main Objective

To explore Bindura University students' perceptions and consumption patterns of traditional grains.

1.3.2 Specific objectives

1. To assess the attitudes and perceptions of university students towards traditional grains.

2. To analyse the consumption patterns, habits and preferences of students towards traditional grains.

3. To identify factors influencing students' consumption of traditional grains.

4. To develop effective strategies for promoting and marketing traditional grains to students.

1.4 Research Questions

1. What are students' perceptions towards traditional grains?

2. What are the consumption patterns of students regarding traditional grains?

3. What factors influence students' consumption of traditional grains?

1.5 Hypothesis

1. University students with higher incomes are more likely to pay higher premiums for traditional grain-based products compared to lower-income students.

2. Government support for traditional grain production, including input provision and extension services, would increase their availability and affordability in local markets.

3. The consumption patterns of traditional grains among university students are positively influenced by health benefits.

1.6 Significance of the Study

Traditional grains are important to many cultures around the world, as they promote food security and cultural heritage. Assessing how students perceive these grains helps protect cultural identity and encourages people to eat local traditional foods. This is especially important in today's world, where traditional grains are neglected by many people.

Assessing how university students think about traditional grains can help them to understand their health benefits, such as reduced risk of heart diseases, diabetes and obesity, and nutritional benefits like being rich in fibre, vitamins, and minerals. This information can support better eating behaviour among students. The results can also help universities and colleges to provide traditional grain diets at school.

The findings can help identify challenges that affect students from eating traditional grains. Universities can then create solutions, such as workshops, cooking lessons, and food taste tests, to educate the students about the cooking skills and the benefits of consuming these grains. This research provides important knowledge about the personal, cultural, social, economic, and environmental factors that influence students' food choices. By understanding

these influences. The results can help the food manufacturers produce traditional grains that suit the preferences and needs of students, producing different varieties of traditional grain products with good taste and texture. Also, the policy makers should make sure that traditional grains are affordable to increase consumption among the university students since they have limited financial resources.

The study promotes sustainable agriculture, as these grains are more environmentally friendly than modern grains (Phiri and Nyika, 2025). This study improves awareness about sustainable agricultural practices and encourages students to make informed, environmentally conscious food choices.

1.7 Limitations of the Study

The study has some limitations; it focuses only on university students at Bindura University. By choosing this group, the study ignores other groups, like high school students, workers, lecturers, and non-students and other university students, who may have different views and eating habits toward traditional grains. Another limitation is that the study was done over a short period, which is less than a year. This short period of time means that different attitudes, perceptions, consumption patterns and factors affecting the consumption of traditional grains of all the university students were not studied.

The research used specific methods, like surveys and focus group discussions for data collection. Other methods, like experiments and long-term studies, were not used, which might limit the consumption patterns over time. Lack of good network systems was another challenge. Some students did not participate in answering the survey questionnaire because of poor network systems; some could not manage to, but data bundles made them fail to respond to the survey questionnaire since the data collection was done online.

1.8 Organisation of the report

Chapter two includes definitions of important terms like traditional grains, perceptions and consumption patterns. This section reviews the types of traditional grains, trends of production and consumption of traditional grains, and the health benefits to the students. The section also reviews the literature on university students' knowledge, perceptions, barriers affecting consumption of traditional grains among university students, and strategies to promote consumption, as well as the theoretical framework. In chapter three, a brief description of the study area and research methodology is presented. Study results are

debated in chapter four. Finally, chapter five presents the summary, conclusions and recommendations of the study.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Traditional grains are the backbone of agriculture in Zimbabwe. These grains include sorghum, pearl millet and finger millet, and they have been cultivated for many years around the world. They include sorghum, pearl millet and finger millet. The consumption of traditional grains has decreased because of processed grains, which are considered affordable and convenient. The government of Zimbabwe is attempting to increase the production and consumption of traditional grain through subsidising smallholder farmers in the semi-arid regions of Zimbabwe (FAO, 2021).

People are now realising the nutritional advantages of traditional grains as compared to modern diets. These grains have lower environmental impacts compared to processed grains. They require less water, they are resistant to pests and diseases, and they are more resilient to climate change, making them sustainable food choices in Zimbabwe. These grains are important as global food security faces challenges from population growth and climate change.

Traditional grains are well known for their richness in nutrients, including high fibre, vitamins, and minerals. Research has shown that consuming traditional grains helps reduce the risk of chronic diseases, such as heart disease, obesity, and diabetes. Traditional grains also play a role in promoting food security and fighting malnutrition, particularly in regions vulnerable to climate change and economic instability (Phiri and Nyika, 2025).

These grains are of importance because of their cultural significance, as they are deeply rooted in the cultural heritage and cooking traditions of many communities worldwide. Traditional grains are often used in traditional dishes, rituals, and celebrations, reflecting the rich diversity of cultures and the cooking skills of different societies (Nyarota et al., 2022). In the Shona culture, they practice the rainmaking ceremony (Mukwerere) where women beyond childbearing brew beer using traditional grains to appease the ancestors and ask for rains and land cleansing from the ancestors, led by spirit mediums.

Nowadays, there is increased interest in traditional grains among consumers, farmers, chefs, and food manufacturers, driven by the demand for health benefits and food shortages in Zimbabwe (Phiri and Nyika, 2025). This interest is also influenced by the ability of traditional grains to support food security, especially in semi-arid regions which receive low amounts of rainfall (FAO, 2021).

2.2 Types of traditional grains

Types of traditional grains include millet, quinoa, sorghum, teff, rapoko, and barley, each offering different nutritional benefits and functional properties (Phiri and Nyika, 2025). There are several types of traditional grains in Zimbabwe, but sorghum, pearl millet, and rapoko are the most popular grains grown in Zimbabwe since the pre-colonial era. Sorghum (Sorghum bicolour) is widely grown in natural region five, which receives 450-650 mm of rainfall annually. Nowadays, maize production and other cash crops like tobacco and cotton continue to dominate in the semi-arid regions of the country where sorghum production would be more appropriate, leading to a decline in sorghum production (Phiri and Nyika, 2025). Traditional grains are labour intensive when it comes to harvesting and processing. This puts a huge burden on women who make up the majority of those who harvest process and prepare these crops.

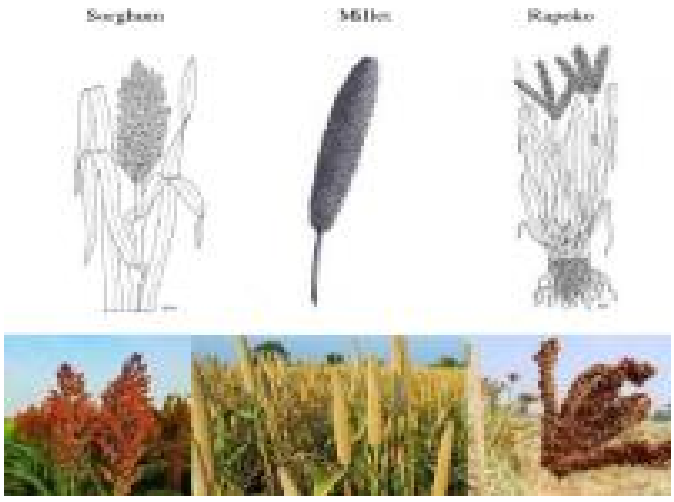

Figure 2.1 Types of traditional grains

2.3 Types of traditional grains-based products

In Zimbabwe we have different types of traditional grain-based products consumed since the pre-colonial era up to now; these include sorghum, pearl millet and rapoko. Sorghum has many uses, but in Zimbabwe, it is mainly used for human and animal consumption. There are two types of sorghum: white and red sorghum. The red-grained sorghum is mainly used for brewing beer and non-alcoholic fermented drinks like maheu (Mundia et al., 2019). The white-grained sorghum is used to make mealie meal, which is used to cook sadza, snacks, puffed sorghum, pasta, flatbreads, and porridge. Sweet sorghum (ipwa) has juice-sweet stalks, which are consumed like sugarcane. Delta Beverages produces beer like chibuku and lager using sorghum. Another example is Hutano Foods, a company in Zimbabwe that produces instant porridges made from sorghum.

Pearl millet (Pennisetum glaucum) is known for its nutritional value; according to a study published by Samuel and Peerkhan (2020), pearl millet contains up to 15% protein, making it an excellent source of protein for vegetarians and vegans. Millet is used to make mealie meal and flour for cooking sadza and porridge, brewing beer and maheu, as well as baking bread and biscuits.

Rapoko/Finger millet (Eleusine coracana) is a hardy plant that requires relatively little rainfall, making it an ideal crop for drought-prone areas in Zimbabwe (Mtambanengwe, 2023). In Zimbabwe, these grains are mostly grown in natural regions four and five. Several brands produce pearl and finger millet-based products, including National Foods, which produces pearl millet mealie meal, porridge, and flour. Simbisa Brands produces millet snacks and crunches, while Delta Beverages and Zambezi Breweries use millet for beer production (Mukarumwa and Mushunje, 2010).

Figure 2.2 Types of traditional grains products

2.4 Methods of processing traditional grains

Milling

Milling is a process where grains are reduced into fine particles or powder. Through the process of milling, these grains can be processed into various forms, like meal, flour, porridge, and malt. Traditional milling processes include the use of grinding stones and grinding mills powered by electricity or diesel. The disadvantage of milling is that nutrients like fibre and minerals are lost during the process (Singh et al., 2018).

Roasting

Roasting is a traditional processing technique that enhances the taste, flavour, and appearance of grains. This method is through heating the grains to convert starches into sugars, resulting in an appealing product (Kadan et al., 2017). Roasting is the best method since nutrients are preserved during the process. Roasting sorghum and millet increases protein content while also reducing anti-nutrients, which helps to reduce blood pressure and inflammation.

Malting

Malting is a processing method where the grains are soaked in water to allow germination to activate enzymes and then dried (Kadan et al., 2017). Traditional grains are malted to break

down the cell walls of the crop, making it easier to dissolve sugars and solutes for brewing beer, maheu, and malted porridge (Zvidzai et al., 2025). Commercial companies in Zimbabwe, including Delta Beverages, produce malted beverages, while National Foods Holdings Limited offers malted products like porridge and maheu.

Fermentation

Fermentation is one of the oldest food processing and preservation methods. This process breaks down complex molecules using microorganisms, which results in changes to flavour, pH levels, and nutrient composition. Fermentation enhances nutrient availability, including iron, zinc, and calcium. Traditional fermented grain products include beer, maheu and fermented porridge. Fermented products have a pleasant sour taste, making them appetising and nutritious.

2.5 The consumption of traditional grains among students

The consumption of traditional grains among students has become an interesting topic as there is a rise of modern food trends among this generation due to a lack of cultural heritage, health and nutritional benefits of traditional grains. Students do not consume traditional grains as staple food; they prefer processed grains over traditional grains. The university students face a lot of barriers resulting in low consumption of these grains. These barriers are a lack of knowledge about traditional grain types and health benefits, as they are only exposed to modern diets like maize and rice. Cultural erosion also contributes as a barrier since many people in Zimbabwe are interested in Western diets; they are no longer following the culture and traditions of our country. Barriers to traditional grain consumption include limited availability, high cost, and lack of cooking skills. Other barriers are lack of availability and accessibility of these grains on campus meals and in local stores.

2.6 Benefits of Traditional Grains

Traditional grains are rich in protein, fibre, minerals, vitamins, and antioxidants (Musidzaramba et al., 2025). Traditional grains have high proteins for muscle growth and repair. Quinoa and millet are high in protein and contain amino acids. For example, quinoa provides around 8g of protein per cup, making it the most source compared to other grains.

Traditional grains contain high fibre content, which supports digestive health by preventing constipation and other digestive problems. Barley and sorghum are high in fibre, offering both soluble and insoluble fibre, which is important for gut health and metabolism.

Additionally, these grains are rich in minerals, including zinc, iron, potassium, and magnesium, which are vital for overall health (Musidzaramba et al., 2025). Iron is responsible for red blood cell production, while zinc supports immune function and wound healing. Quinoa, millet, and sorghum are particularly high in minerals, helping to prevent deficiencies. Also, traditional grains contain vitamins B, E, and K, which play critical roles in energy production and immune function. Vitamin B improves metabolism, while vitamin E supports skin health.

2.7 Importance of traditional grains to university students

Traditional grains like sorghum, millet, and maize are rich in fiber, vitamins, and minerals, promoting better digestion and overall health. They help to prevent lifestyle diseases such as diabetes and heart disease, which are becoming more common among young adults.

A balanced diet that includes traditional grains supports mental well-being, concentration, and energy levels, helping students perform better academically (Rugwete et al., 2023). Their slow-digesting properties provide sustained energy, reducing fatigue and improving focus during studies.

Encouraging students to consume traditional grains helps maintain indigenous food practices and strengthens cultural identity (Tavuyanago et al., 2010). Universities can integrate traditional grains into campus meals, promoting local food traditions.

Research and development in traditional grain-based products can create employment opportunities for students and local communities (Rugwete et al., 2023). Universities can collaborate with agricultural sectors to develop sustainable food solutions to promote food safety and security.

2.8 Students' attitudes, perceptions and knowledge of traditional grains

Perception is well defined as the process by which a person selects, organises, and interprets stimuli into an expressive and clear image of the world.

Attitudes and perceptions towards traditional grains

Research indicates that students' attitudes toward traditional grains are mixed; some studies show a positive perception, indicating the nutritional benefits and cultural significance of these grains. Most of the university students have bad attitudes towards the taste, texture and aroma of traditional grains. The students have positive attitudes on the sweet flavours and soft textures of modern grains over traditional grains (Manwa et al., 2018).

Awareness and Knowledge

University students are not aware of the health and nutritional benefits of traditional grains. Some students cannot even identify them or differentiate them from modern grains. Students from faculties of agriculture are more aware of these grains because they have learnt a lot about them. Lack of awareness and knowledge leads to negative perceptions towards these grains (Nyarota et al., 2022).

2.9 Factors influencing students' perceptions of traditional grains

Cultural Background

Students' cultural heritage plays an important role in shaping their attitudes and perceptions toward traditional grains. Students from cultures where traditional grains are staple foods, they are likely to consume them, leading to positive perceptions towards these grains (Manwa et al., 2018). This can lead to a greater willingness to eat them in their daily diets. Additionally, in some cultures, traditional grains are viewed as inferior food choices, leading to low consumption of these traditional grains.

Socioeconomic Status

Economic factors can limit access to traditional grains. Students from higher socioeconomic backgrounds may have better access to a variety of foods, including traditional grains, while students from lower socioeconomic backgrounds may have less exposure to information about health benefits and nutritional value, limiting their food choices. Food costs also play a role; students facing financial constraints may prefer cost over nutrition, and they often buy cheap processed foods rather than consuming traditional grains, which can sometimes be more expensive or less accessible.

Education Level

Educational level influences knowledge about nutrition and cooking methods. Students with higher levels of education in food and nutrition often show greater knowledge about nutrition and health benefits of traditional grains. Students with a high level of education seem to consume traditional grains because they know the importance and benefits of these grains. Also, students with low-level education have no knowledge about the nutritional value of these grains, leading to low consumption of traditional grains.

Peer Influence

Social circles and peer groups can impact food choices. If peers value and consume traditional grains, others may be persuaded and start consuming them.

Availability and Accessibility

The presence of traditional grains in campus dining facilities or local grocery stores affects students' willingness to try these foods. Limited availability can lead to reduced consumption and knowledge.

Media and Marketing

Media and marketing play a role in influencing students' perceptions of traditional grains because exposure to media that promotes healthy eating habits and traditional diets can positively influence students' perceptions. Conversely, destructive marketing of convenience foods can reduce traditional grains consumption.

2.10 Consumption Patterns of Traditional Grains among Students

Research on the consumption patterns of traditional grains among students reveals several key trends regarding frequency, quantity, and types of grains consumed.

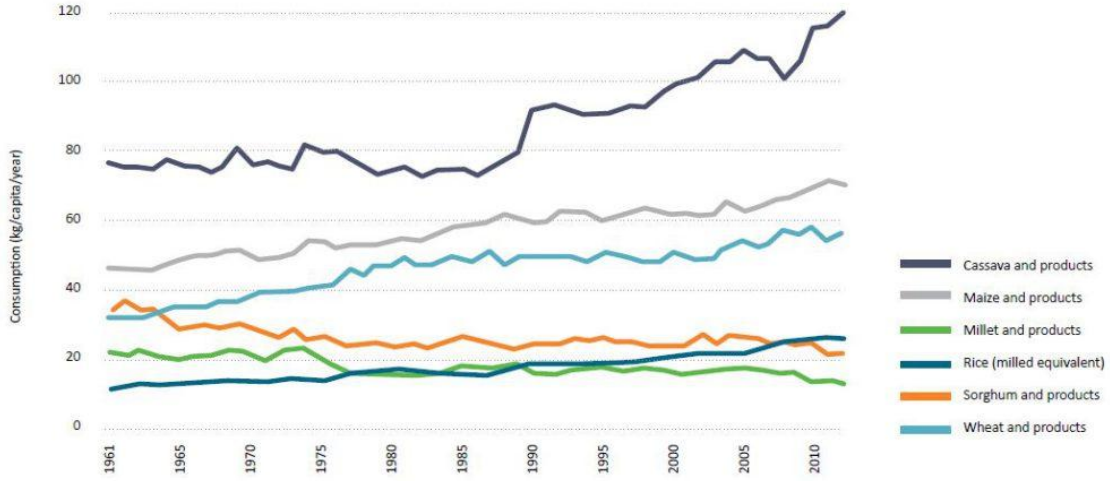

Figure 2.3 Consumption patterns

The figure above is showing a decline in the consumption of sorghum and millet in Africa, while people consume more cassava products, especially in Nigeria, and maize and wheat products. Traditional grains like sorghum and wheat were mostly consumed before the introduction of these modern grains like wheat, maize, rice and cassava.

Frequency of Consumption

The study's findings indicated that students do not consume traditional grains frequently compared to modern grains. Several students reported that they only consume traditional grains during cultural gatherings and festivals. Some surveys highlight that many students eat traditional grains once a week or less, with many preferring more convenient fast foods during busy school days. Students who eat traditional grains are more likely to have a lower risk of getting affected by chronic diseases such as heart disease and diabetes (Chopera et al., 2022; Rahmat et al., 2021).

Quantity of Consumption

University students consume traditional grains in very small quantities; they often consume traditional grains as side dishes rather than main diets, leading to lower overall intake. In some studies, students consume traditional grains in smaller quantities alongside other foods, which can dilute their overall consumption. Research has found that students who consume larger quantities of traditional grains tend to have higher fibre intake, vitamins, and minerals (Mchiza et al., 2019).

Types of Grains Consumed

The types of traditional grains consumed by the students depend on cultural background; for instance, students from Masvingo province backgrounds may prefer bulrush millet. Less common traditional grains, such as fonio and teff, are not included in student diets, despite their high nutritional value. Students consume a limited variety of traditional grains, with a preference for grains that are readily available and affordable (Chopera et al., 2022).

2.11 Factors influencing students' consumption patterns of traditional grains

Availability of traditional grains

The availability of traditional grains in dining halls and local grocery stores directly influences consumption. If traditional grains are not offered in the dining halls, students are less likely to consume them. Production of traditional grains affects the consumption patterns of traditional grains. If a country has high production of traditional grains, these grains will be available in shops and markets at lower prices; hence, consumers will be able to purchase them for consumption. However, if there is low production, it leads to shortages and high prices of these grains, leading to limited availability and low consumption. Institutions that provide a variety of traditional grains in their meal menu tend to influence the consumption among students (Chiwunze, 2020).

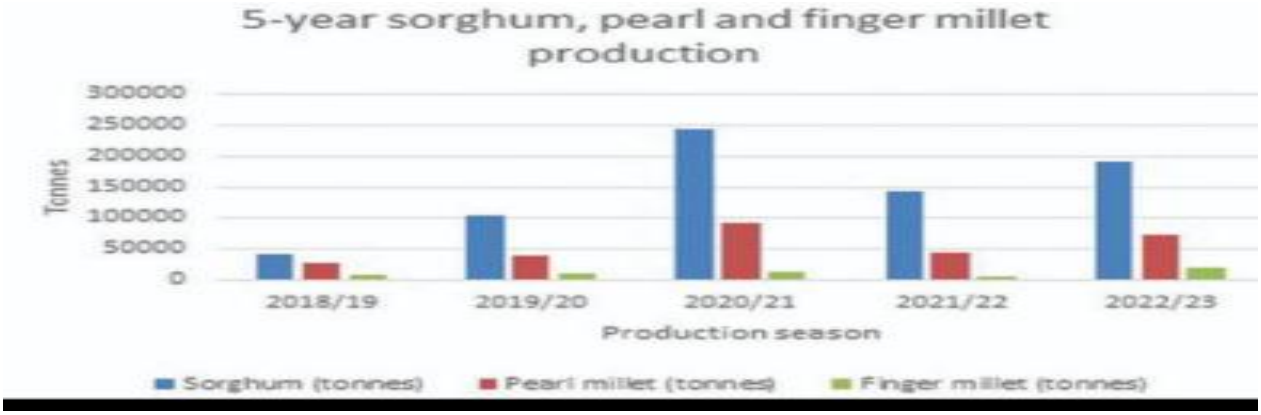

Figure 2.4 Production trend of tradition grains in Zimbabwe

The graph shows the total production trends of traditional grains like sorghum, pearl millet, and finger millet in Zimbabwe. Sorghum and pearl millet production slowly increased from 2018 to 2020, then dropped in 2021, followed by another increase in 2022. Finger millet

production remained the same from 2018 to 2021, with only a small increase in 2022 and 2023.

Cooking knowledge

Many students lack the knowledge and skills to cook traditional grains more properly, which can limit them from consuming traditional grains. Cooking facilities in dormitories can influence students' willingness to experiment with traditional grains.

Affordability

The cost of traditional grains compared to processed foods can affect consumption patterns. If traditional grains are more expensive than processed foods, students may choose the cheaper processed food for more economic reasons (Mchiza et al., 2020). Financial resources cause students to prefer cheaper food options, further limiting the take of traditional grains.

Cultural influence

Cultural heritage can affect consumption; students from backgrounds where traditional grains are staple foods are more likely to consume them regularly (Mugwagwa, 2020). Conversely, students lacking exposure to these grains may find it difficult to include them in their diet.

Peer Pressure and Social Influences

The influence of peers can play a role in influencing the consumption of traditional grains. If a student’s social circle values and consumes traditional grains, they are more likely to do the same (Chiwunze, 2020). Social events that highlight traditional food can encourage students to try and adopt these grains into their diets.

2.12 Barriers to the Consumption of Traditional Grains among Students

Barriers to consumption refer to the obstacles that prevent students from accessing, purchasing or consuming a particular product. These barriers can be physical, economic, social and cultural in nature and can affect the demand, availability and overall consumption of traditional grain (Chopera et al., 2022).

Lack of awareness

Lack of awareness refers to limited knowledge and understanding of traditional grains. This can include lack of knowledge on the health and nutritional benefits, preparation methods and

cultural significance. Some students are not aware of the different types of these grains; they only have knowledge about wheat, maize and rice.

Lack of cooking skills

Cooking and preparation is a common barrier; students may not know how to cook these grains, leading them to buy processed modern foods which are convenient. Research has found that students have a belief that traditional grains are difficult to cook and are time-consuming due to long processing methods (Mchiza et al., 2019). More so, in some cultures traditional grains are perceived as orphan crops which are outdated and less appealing as compared to modern and processed grains. These perceptions limit students from consuming traditional grains, preferring modern grains like rice, which is already processed.

Limited availability

Limited availability refers to the lack of access to traditional grains in local markets and supermarkets and online platforms (Laroche et al., 2016). Limited availability can be a barrier to the consumption of traditional grains, as individuals may not have access to these products or may have to travel long distances to buy them. Lack of traditional grains in retail and local grocery stores limits access, making it difficult for students to purchase these grains for cooking at home. Also, geographical factors: students living in urban areas may have better access to a variety of foods, including traditional grains, compared to those in rural areas.

High cost

High cost refers to the relatively expensive price of traditional grains compared to modern or processed grains. High cost is a barrier to consumption of traditional grains, especially for students with limited financial resources. Price comparison: studies have shown that traditional grains can sometimes be more expensive than modern grains. For low-income students, the higher cost can limit them from buying traditional grains; as a result, they will purchase cheaper and less nutritious modern foods.

2.13 Strategies that can be used to overcome these barriers

Educational awareness and campaigns

Informational workshops: studies show that workshops focusing on the nutritional benefits of traditional grains can promote student knowledge. For example, programmes that educate

students on the health benefits of grains like millet, rapoko, sorghum and barley have been effective in increasing their consumption (Chopera et al., 2022). Also, introducing nutrition education classes can positively influence student perceptions of traditional grains. Research indicates that when students learn about the role of grains in a balanced diet, they are more likely to include them in their meals (Rahmat et al., 2021).

Cooking Demonstrations

Cooking demonstrations that allow students to see how traditional grains are prepared can influence them to eat traditional grains regularly. Cooking demonstrations are conducted in a way that the school provides the products to be cooked, then the students cook different types of traditional meals. Research indicates that students are more likely to try new foods when they have the opportunity to learn how to cook them (Kumar et al., 2017).

Taste Test

The school can implement food taste programmes by inviting traditional grains chefs. A variety of traditional grain foods are cooked, and students come and taste the food and give feedback on how they perceive the taste, texture and aroma of these grains. For example, sadza, porridge, maheu, bread, and snacks. Then the chefs explain to students why these grains have different tastes and textures and the health benefits of these grains. By doing this the students can have better insights into traditional grains, hence encouraging them to consume these grains (Chopera et al., 2022).

2.14 The role of stakeholders in promoting the consumption of traditional grains

The successful promotion of traditional grains among students involves several key stakeholders, each playing a vital role.

The Government of Zimbabwe

The government can implement policies that support the production and distribution of traditional grains (Kumar et al., 2017). Subsidies for farmers growing these grains can make them more affordable for consumers. Government-led public health campaigns can educate the community about the benefits of traditional grains, encouraging healthier eating behaviour among students and families.

Schools and Educational Institutions

The schools can introduce nutrition education that educates the students on the importance and benefits of traditional grains; they can also educate them on how to prepare and cook these grains. Furthermore, adding traditional grain-based products to the dining menus as main dishes and as side dishes to promote consumption. Also selling traditional grain products at lower prices than modern grains to promote consumption.

Food Manufacturers

Food manufacturers play a role in promoting the consumption of traditional grains among students by developing and marketing products of these grains. This includes ready-to-eat meals, snacks and grain blends that suit student preferences. Also, marketing strategies and effective marketing campaigns like promotions and discount free gifts can improve awareness and encourage students to try these products.

2.15 Summary of the key findings from the literature review

Students' consumption of traditional grains is influenced by factors such as cultural background, education level and socioeconomic status. By understanding these factors, stakeholders can develop ways to promote the consumption of traditional grains among students, such as educational campaigns and cooking workshops.

Barriers to the consumption of traditional grains among students include lack of awareness, limited availability and high cost. There are strategies to overcome these barriers, such as subsidies and financial support to lower the cost of traditional grains and make them more accessible to students. Also, implementing education and awareness programmes that highlight the nutritional benefits and cultural heritage of traditional grains can increase awareness.

Strategies to promote the consumption of traditional grains include education and awareness campaigns and nutrition education programmes that include workshops and social media campaigns that enhance students' knowledge and attitudes towards traditional grains. Furthermore, cooking demonstrations and hands-on cooking events increase students' exposure and willingness to try traditional grains. Food taste tests, providing opportunities for the students to taste traditional grains can promote positive perceptions and encourage consumption.

The roles of stakeholders like government can create policies and public health campaigns to promote traditional grains. Also, educational institutions like schools can introduce nutrition education courses and also offer traditional grain meals at the dining hall and tuck shops. Then food manufacturers can develop more traditional products like snacks and juices from sweet sorghum and sell them at more affordable prices than other processed foods.

2.16 Implications of the findings for policy, practice, and future research

Policy Implications

Disruption of the current food systems, supporting sustainable agriculture practices and promoting traditional grains may disrupt the existing food systems, leading to food insecurity for some populations. Also, increased costs of promoting traditional grains may lead to increased costs for food manufacturers, schools and restaurants, which could be passed on to the consumers (Phiri and Nyika, 2025).

Practice Implications

Limited consumer acceptance: the grains may not be widely accepted by the students and other consumers due to unfamiliarity with these grains or their perceived taste, texture and aroma (Mchiza et al., 2020). Also, farmers may face high production costs when growing traditional grains, which could lead to reduced profits (Chopera et al., 2022).

Future research

Insufficient collaboration: research on traditional grains may require collaboration among multiple stakeholders like the government, food manufacturers and researchers, which could be challenging. In addition, research on traditional grains may be limited by funding constraints, which could affect the advancement of knowledge in this area.

2.17 Recommendations for promoting traditional grains consumption among students

Education and Awareness

Developing targeted educational programmes that focus on the health benefits and preparation of traditional grains. Utilising social media and digital platforms to disseminate engaging content, such as recipes and cooking tips (Chopera et al., 2022).

Increase availability of traditional grains

Collaborating with campus dining services to incorporate a variety of traditional grains into menus. Partner with local farmers and suppliers to improve access to traditional grains in campus stores and dining facilities (Chiwunze, 2020).

Implement cooking and tasting events

Organising regular cooking demonstrations and tasting events to allow students to explore different traditional grains in an engaging way. Include student feedback mechanisms to tailor future events to their preferences.

Provide financial incentives

Exploring options for subsidising the cost of traditional grains in campus dining and local grocery stores to make them more affordable. Implement discount programmes for students purchasing traditional grains (Chopera et al., 2022).

Engage stakeholders

Fostering partnerships among government agencies, educational institutions and food manufacturers to create a cohesive approach to promoting traditional grains. Leveraging student ambassadors to promote traditional grains through peer education and engagement can also be effective (Singh et al., 2019).

By addressing the identified barriers and implementing these strategies, stakeholders can significantly enhance the consumption of traditional grains among students, leading to healthier dietary habits and improved overall well-being.

2.2 Theoretical Framework

Health Belief Model

The HBM model explains how individual beliefs about the risks and benefits of health affect people's perceptions, attitudes, and health behaviours. The model describes students' willingness to consume traditional grains in their diets as influenced by the value of traditional grains, such as nutritional and health benefits. The HBM explains that students who think that consuming traditional grains can improve their health or prevent diseases are more likely to consume them (Janz and Becker, 2020).

Theory of Planned Behaviour

The theory explains that a person's intentions predict behaviour. The theory has three assumptions about attitudes towards behaviour; this is what the students think about traditional grains, such as health benefits, taste, cultural heritage and personal values (Ajzen, 2018). Also, perceived social pressure refers to what other people think about our behaviour. For example, community, peers, and family in discouraging or encouraging certain behaviour. Perceived behavioural control refers to confidence in one's ability to consume traditional grains, cooking skills, affordability, and accessibility of traditional grains. Students with positive attitudes toward traditional grains, influenced by health benefits and cultural heritage, show higher consumption rates.

Cultural Food Practices and Identity

The culture is important because it influences what we eat, how, and when. Students from families where traditional grains are staple foods are likely to consume them every day. The connection between cultural heritage and food choices promotes understanding of students' food choices, as studies indicate that cultural identity influences food choices. Teaching students about cultural heritage and nutrition can increase traditional grain consumption among students (Taylor and Alonso, 2024).

Barriers to Eating Habits Framework

This framework identifies barriers affecting food behaviours, including limited access to traditional grains, lack of knowledge about preparation methods, and some students think that traditional grains do not taste good, so they have negative perceptions of the taste and texture of these grains (Manwa et al., 2018). Studies indicate that food choices are affected by time

constraints; busy students often lack enough time to cook these grains. Traditional grains are very expensive, making it difficult for students, and most students depend on their parents' money. Understanding these challenges helps in developing strategies to promote consumption of traditional grains.

Social Cognitive Theory

This theory explains how people learn different behaviours by observing other people. Individuals learn through observations, self-efficacy and reinforcement. Observational learning is when students learn about traditional grains through observing others, such as peers, family members and friends (Bandura, 2018). Reinforcement is very useful in shaping behaviour; it uses rewards and punishment to influence the future. Future consumption of traditional grains among university students is achieved if social approval or health benefits are reinforced (Schunk and DiBenedetto, 2021). Availability, affordability, and accessibility of traditional grains affect students' self-efficacy.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter presents the research methodology adopted to explore students' perceptions and consumption patterns of traditional grains. It details the study area, research design, sampling methods, data collection tools, and data analysis techniques employed in the study. The methodology ensures systematic, valid, and reliable data collection, allowing for an accurate examination of the factors influencing traditional grain consumption among university students.

3.2 Description of study area

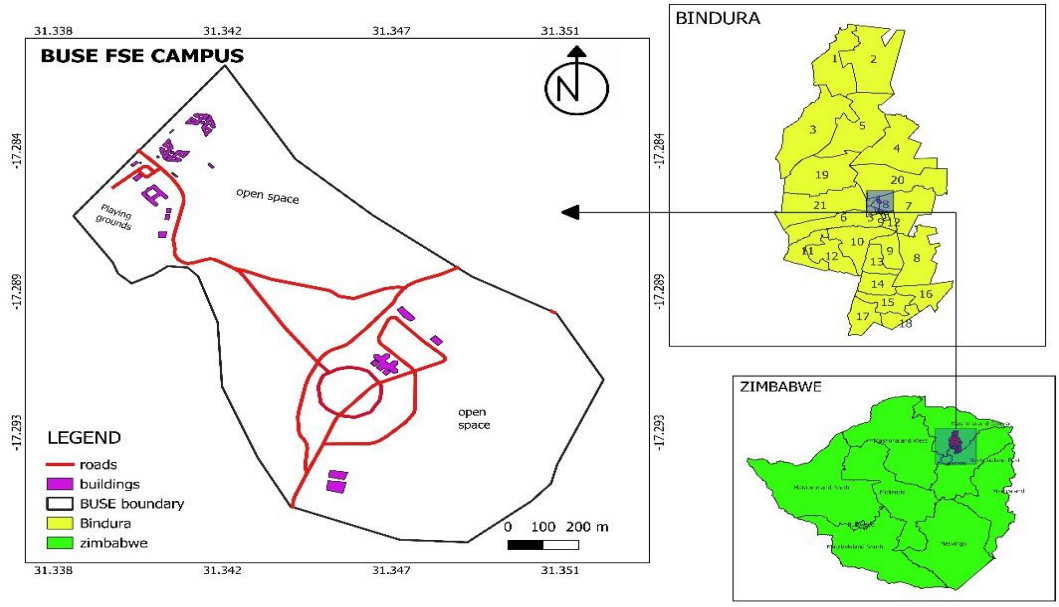

Figure 3.1 Map of the study area

Bindura University of Science Education (BUSE) is located in Mashonaland Central Province in Zimbabwe; it is the study area for this research project. BUSE is approximately 88 km northeast of Harare. The university provides a typical setting for exploring students' perceptions and consumption patterns of traditional grains. BUSE is one of the fourteen state universities in Zimbabwe, and it was opened in 1996, so it has been operating for 29 years. The study area comprises approximately 8000 students, predominantly aged 19–30 years, from diverse cultural backgrounds and socioeconomic statuses. This student diversity enables a comprehensive analysis of how social, cultural, and economic factors shape students' perceptions and consumption behaviours regarding traditional grains.

Bindura is located in a region with both mining and agriculture, making it a key site for assessing the role of traditional grains in student diets. Bindura has fertile soils that support the production of maize, sorghum, millet, potatoes, cotton, and tobacco, among other crops. Students at BUSE come from urban and rural areas; those from rural areas may have been exposed to traditional grains like millet, sorghum, and rapoko, whereas students from urban areas are more exposed to modern and processed foods. The university offers meals through dining halls and campus tuck shops, where students may encounter both traditional and processed food.

Student residence, on-campus accommodation facilities provide students with opportunities to purchase cooked food, but they do not prepare their own meals. This affects the frequency of traditional grain consumption. The lack of cooking facilities at the hostel affects the consumption of these grains.

3.3 Research Design

Qualitative and quantitative data collection and analysis methods were used, combining mixed-methods research design (Creswell et al., 2017). The study used a survey questionnaire to collect quantitative data on students' consumption patterns, factors influencing consumption, and perceptions and attitudes towards traditional grains. Also, focus group discussions and in-depth interviews were used to gather qualitative factors affecting consumption of traditional grains. SWOT analysis was used to gather secondary data from past case studies and journals. Quantitative data was analysed using descriptive and inferential statistical methods to analyse information such as students' consumption patterns, factors influencing consumption patterns and perceptions towards traditional grains. Then qualitative data was analysed using thematic analysis to identify factors affecting consumption of traditional grains. A SWOT analysis was also used to review secondary data on strategies for promoting traditional grains.

3.4 Sample Selection

The research was for students from Bindura University in Bindura. A sample of 100 students was selected using a stratified random sampling method. The method was used to ensure that students from all four faculties were selected. The research participants were enrolled through social media and announcements in lecture rooms. The sample includes all faculties, both undergraduate and postgraduate students, and both males and females from 18 to 35 years old.

100 students were randomly selected from the four faculties and participated in the survey by responding to questionnaires. 40 students participated in focus group discussions, which were divided into four groups of 10 students representing four faculties.

Figure 3.2 Confidence interval at 95%

Raosoft online calculator was used to calculate the sample size. 95% confidence intervals suggest that the true population value lies within the range defined by the margin of error. Survey margin of error (9.55%), this means that the survey results provide a relatively reliable estimate of the characteristics of the student population at Bindura University.

3.5 Data collection methods and tools

Quantitative data was collected using structured survey questionnaires to gather information such as students' consumption patterns, factors influencing consumption patterns and perceptions towards traditional grains. The questionnaire includes questions on demographic characteristics, consumption frequency, attitudes towards traditional grains, and factors influencing consumption. Data was collected using Kobo Collect. Focus group discussions and in-depth interviews were conducted using semi-structured questions to gather qualitative data on factors affecting consumption of traditional grains. Secondary data was analysed using past case studies and journals for qualitative data on ways to promote consumption and marketing of traditional grains.

Table 3.1 Data collection methods and tools

Objectives	Data collected	Data collection method	Reference
1. To assess the attitudes and perceptions of university students towards traditional grains.	Attitudes and perceptions towards taste, texture and aroma of traditional grains.	Primary data collection method (Survey questionnaire).	(Rahmat et al., 2021) (Chopera et al., 2022) (Flick, 2018)
	Attitudes toward traditional grains preparation time.		
2. To analyse the consumption patterns, habits and preferences of students towards traditional grains.	Traditional grains consumption patterns among students.	Survey questionnaire.	(Manwa, 2013) (Moyo et al., 2023) (Delta Corporation, 2025) **(Vutete et al., 2016)**
	Types of traditional grains preferred by university students.		
	Price preference for traditional grains-based products.		
	Factors influencing preferences for traditional grains-based diets.		
3. To identify factors influencing the consumption of traditional grains among university students.	Factors influencing willingness to consume traditional grains.	Survey questionnaire.	(Rugwete, 2023) (Chopera et al., 2022) (Pietrangelo, 2022)
	Students' encountering with traditional grains in local markets.		
	Factors affecting the consumption of traditional grains-based products.	Focus groups discussion.	
4. To develop effective strategies for promoting and marketing traditional grains to university students.	Strategies for promoting and marketing traditional grains to university students.	Secondary data collection method.	(Kutyauripo, 2018) (Bharucha, 2016)

3.6 Data Analysis

Quantitative data was analysed using descriptive statistics and inferential statistics to identify patterns and relationships between variables. Quantitative data was analysed using SPSS software. Qualitative data was analysed using thematic analysis to identify themes and patterns in students' attitudes, perceptions, and experiences with traditional grains. Also, a SWOT analysis for analysing secondary data. The data was triangulated to ensure validity and reliability of findings.

Table 3.2 Data analysis methods and tools

Objectives	Data Concepts	Data variables	Data analysis method	References
1. To assess the attitudes and perceptions of university students towards traditional grains.	Students' perceptions towards taste, texture and aroma.	Dependent variable (perceptions towards Taste, texture and aroma). Independent variable (Somewhat positive, Neutral, Very positive, Somewhat negative and Very negative).	Descriptive statistics. Percentage graph.	(Fowler, 2014) (Chopera et al., 2022)
	Perceptions of preparation time.	Dependent variable perceptions of preparation time(Yes/No).	Pie chart	
2. To analyse the consumption patterns, habits and preferences of students towards traditional grains.	University students' consumption patterns.	Frequency of consumption (rarely, occasionally, frequently, never, almost always).	(Descriptive statistics) Frequency table	(Vutete et al., 2016)
	Types of traditional grains preferred by students.	Dependent variable (preference rate). Independent (beverage, bread, porridge and snacks).	Percentage graph	
	Price preferences for traditional grains-based products.	Dependent variable (Price range). Independent variable (Age groups)	Measures of central tendency table	
	Factors influencing preference for traditional grains based diets.	Dependent variable (preferences for traditional grains) Independent variable (price, nutrition, taste and availability)	Pie chart	
3. To identify factors influencing students consumption of traditional grains.	Willingness to consume traditional grains.	Dependent variable is categorical (Very willing, Neutral and not willing) Independent variables (Family background, Cultural heritage, Health benefits, Environmental concern and Media).	(Inferential statistics) Multinomial regression	(Chopera et al., 2022) (Pietrangelo, 2022)
	Students' encountering with traditional grains in local markets.	Dependent variables (never, rarely, often and sometimes) Independent variables (rural, urban).	(Descriptive statistics) Cross tabulation table	
	Willingness to pay a premium for traditional grains.	Dependent variables are categorical (price premiums). Independent variables (Age, Monthly allowance, Gender, Geographical location, Level of study).	(Inferential statistics) Ordinal logistic regression analysis	
	Factors affecting the consumption of traditional grains-based products.	Dependent variable (Factors affecting consumption). Independent variable(cultural heritage, economic constraint and fast food influence).	Thermic analysis method	
4. To develop strategies for promoting and marketing traditional grains to students.	Strategies for promoting and marketing traditional grains to university students.	Strengths, weaknesses, opportunities, and threats associated with the promotion of traditional grains.	SWOT analysis method	(Kutyauripo, 2018) (Bharucha, 2016)

Multinomial logistic regression

Multinomial logistic regression model was used to analyse the factors influencing students' willingness to consume traditional grains.

$$\log (P(Y=k) / P (Y=\text{Somewhat willing})) = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4$$

Where Y is Willingness to consume, k represents (willing, neutral, not willing)

Independent variables: Health benefits, Family background, Cultural heritage, and Environmental concern.

Ordinal logistic regression

Ordinal logistic regression was used to show the relationship between the monthly allowance, geographical location, age, gender, field of study and level of study, and willingness to pay premiums for traditional grains.

$$\text{logit} (P (Y \leq j)) = \alpha j - (\beta 1+ \beta 2 + \beta 3 + \beta 4+ \beta 5)$$

Y = willingness to pay premiums for traditional grains (ordinal variable)

αj = intercepts for each category j

$\beta 1, \beta 2, \beta 3, \beta 4, \beta 5$ = coefficients for the independent variables

Y= (small, high and very high)

Table 3.3

Independent variables	Variable type	Unit of measurement	Expected sign
Gender	**Dummy**	**1= Female, 0= Male**	+/-
Age	**Continuous**	**Years**	+
Monthly allowance	**Continuous**	**Dollar ($)**	+/-
Geographical location	**Dummy**	**1= Urban, 0 = Rural**	+/-
Level of study	**Continuous**	**Years**	+

Description of independent variables

3.7 Ethical Considerations

The study was conducted according to the ethical principle of respect for everyone. Participants were informed about the purpose and procedures and the benefits of the study, and their permission was obtained before data collection. Privacy, anonymity and dignity were respected throughout the study. Participation was voluntary, and the participants were free to withdraw at any time without being blamed.

3.8 Expected results

The primary expected data results: consumption patterns among university students to see the trends in consumption patterns of traditional grains. Positive and negative attitudes and perceptions toward traditional grains. Also, the types of traditional grains consumed as well influence consumption, such as culture and health benefits.

Furthermore, factors affecting the consumption of traditional grains, like affordability and cultural heritage, from focus group discussions. constraints, the fast food industry and cultural significance. Furthermore, the study will examine the cultural significance of traditional grains. Expected results from the SWOT analysis of secondary sources: the researcher expects to identify the strengths, weaknesses, opportunities, and threats associated with traditional grain consumption and strategies for promoting and marketing traditional grains to university students.

CHAPTER 4: RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results and discussion of the perceptions and consumption patterns of traditional grains among university students. Statistical analyses, supported by descriptive and inferential methods, identify relationships between variables, while qualitative data was analysed using thematic analysis to identify the main themes of factors affecting consumption of traditional grains. SWOT analysis was used on secondary data assessing the strengths, weaknesses, opportunities, and threats of strategies for the promotion and marketing of traditional grains to university students.

4.2 Demographic information

Table 4.1 Demographic information table

Demographic variable	Category	N=100
Age	18-21 years	49
	22-24 years	37
	25-28 years	10
	29-35 years	4
Gender	Female	59
	Male	41
Nationality	Zimbabwean	83
	Zambian	8
	Malawian	5
	Namibian	4
Geographical location	Urban	45
	Rural	55
Level of study	Part 1	15
	Part 2	23

	Part 3	**17**
	Part 4	**34**
	Part 5	**11**
Field of study	**Faculty of Commerce**	**20**
	Faculty of Science Education and Engineering	**29**
	Faculty of Agriculture and Environmental Science	**24**
	Faculty of Social Sciences and Humanities	**27**
Monthly allowance	**$30-$90**	**34**
	$91-$120	**24**
	$121-$150	**20**
	$151-$200	**22**

Age plays a role in shaping traditional grain consumption, as younger individuals may be more open to dietary trends, while older individuals may prioritise health benefits associated with traditional grains. The table presented reflects data from 100 participants in this study. The dominant age group is 18–21 years, with 49% of the total respondents; this age group has first- and second-year students. The second age group, 22–24 years (37%), this age group consists of second, third, and fourth-year students. The 25–28-year group (10%) are final-year and postgraduate students, and the 29–35-year category (4%) of respondents are postgraduate students.

In terms of gender, female students dominate this study with (59%), while males 41%. Gender roles influence food choices and consumption habits. The females are responsible for food preparation and cooking; this increases their experience and knowledge, shaping their perceptions and consumption patterns. Female students are healthier than male students, who may prefer convenience and taste when selecting their meals. Studies indicate that women are likely to consume more traditional grains since they are the ones who prepare and serve food in most families.

Nationality is another major factor influencing food choices and preferences and traditional grain consumption patterns. The majority of the students were from Zimbabwe (83%); these students have more knowledge of traditional grain products like millet and sorghum sadza and porridge since they are most grown in Zimbabwe. A smaller percentage of students are from Zambia (8%), followed by Malawi (5%), with only 4% from Namibia. Overall, the nationality distribution suggests that Bindura University of Science Education has a large number of students from Zimbabwe with limited international students. Traditional grains are

deeply rooted in the country's cultural identity; if a country's staple food is traditional grains, the students are likely to consume them as staple food as well (Phiri and Nyika, 2025).

On Geographic location, the data shows that (55%) of the students are from rural areas, (45%) from urban areas. Rural populations consume more traditional grains because many small-scale farmers in rural areas produce sorghum and millet, whereas urban students may prefer processed modern grains like rice and wheat (Tavuyanago et al., 2010).

In terms of level of study, there are (15) first-year students, (23) second-year students, (17) third-year students, (34) fourth-year students, and (11) fifth-year students. Students with higher academic levels may be aware of the nutritional benefits of traditional grains, influencing consumption patterns (Rugwete et al., 2023).

Field of study: The Faculty of Science Education has the highest respondents (29%), reflecting interest in traditional grains. This passion may come from their knowledge of the nutritional benefits of traditional grains, food science concepts, and principles related to grain cultivation and development. The Faculty of Social Sciences and Humanities ranks second, with (27%) of respondents. Students in this faculty may be influenced by cultural and social values, such as traditional food practices, which shape their perspective on traditional grains. They are likely aware of the cultural significance of these grains and support their consumption as a way to preserve heritage.

The Faculty of Agriculture and Environmental Science has (24%) of respondents. These students study crop management and the importance of crop variety, including traditional grains, in promoting food security and promoting sustainable agriculture. Their academic knowledge helps them to understand the role of traditional grains in sustainable food production. Faculty of Commerce with (20%) of respondents. These students may want to consume traditional grains, but they will be affected by market trends and economic factors. When traditional. When traditional grains are cheaper than the processed foods, they are likely to consume them, but if they are expensive, they will prefer cheaper alternatives.

The monthly allowance received by students significantly influences their consumption patterns, including their choice of traditional grains. Individuals with lower allowances, such as those in the ($30-$90) range, may prefer cost-effective and locally available grains like rice, maize and wheat, which are often more affordable than sorghum, rapoko and millet. As allowances increase, individuals in the ($91-$200) range may have greater purchasing power; they are likely to purchase traditional grains, which are healthy and nutritious. Higher

monthly allowances can lead to increased consumption of traditional grains. Additionally, economic constraints can affect students from purchasing traditional grains because they are expensive.

4.3 ATTITUDES AND PERCEPTIONS OF UNIVERSITY STUDENTS TOWARDS TRADITIONAL GRAINS

4.3.1 Students perceptions towards traditional grains taste, texture and aroma affect their consumption

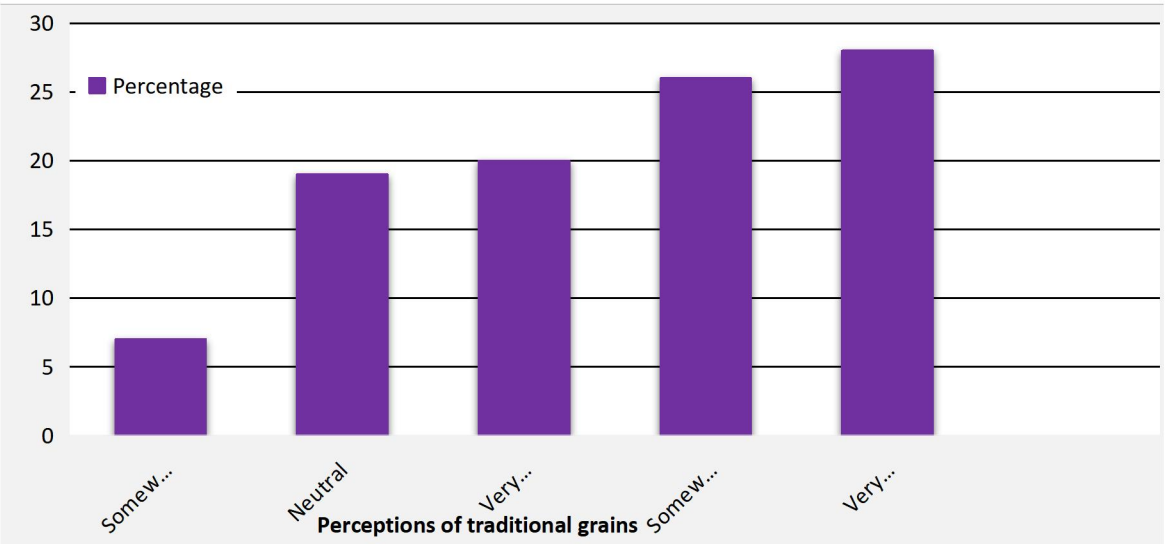

Figure 4.1 Perceptions of traditional grains

The figure above illustrates students' perceptions of traditional grains, with (7%) having somewhat positive perceptions of traditional grains' taste, texture and aroma. These students may consume traditional grains occasionally but not regularly. 20% of students have a positive perception of traditional grains' taste, texture, and aroma. These students are likely

influenced by cultural significance, health benefits, and sensory appeal. These students may have been raised consuming traditional grains, making them consume them regularly in their diets.

Some students have neutral perceptions (19%) toward traditional grains' taste, texture, and aroma. This indicates that they either do not have a strong opinion or may not have tried traditional grains before. Students with a somewhat negative (26%) perception towards traditional grains. These students have negative perceptions regarding taste, texture, and aroma.

The majority of students (28%) have a very negative perception of traditional grains, showing no interest in consuming them. They may have consumed traditional grains before, and they were not pleased with the flavours and coarse texture of these grains. Traditional grains have stronger tastes and gritty textures compared to processed grains. Students who have grown up eating soft-textured foods like pasta may find sorghum or millet less tasty. This preference for processed grains reduces their willingness to consume traditional grains in their diet (Rahmat et al., 2021).

The findings indicate that students' perceptions of traditional grains are very different. The majority of students have negative and somewhat negative perceptions. They are more concerned with the taste, texture, and aroma, limiting their willingness to include traditional grains in their diets. Students' negative perceptions towards traditional grains are due to sensory preferences, convenience, and social influences. Many students are exposed to the mild flavours and soft textures of processed grains rather than to the coarse textures of traditional.

The study aligns with Heiniö et al. (2016), the study points out that bran particle size, surface area, and water binding promote texture formation. and that phenolic peptides, reaction products, and lipids contribute to their different flavours. While these compounds can enhance the taste, they may lead to unpleasant textures, making traditional grains less preferred by the students.

4.3.2University students' attitudes towards traditional grains preparation time

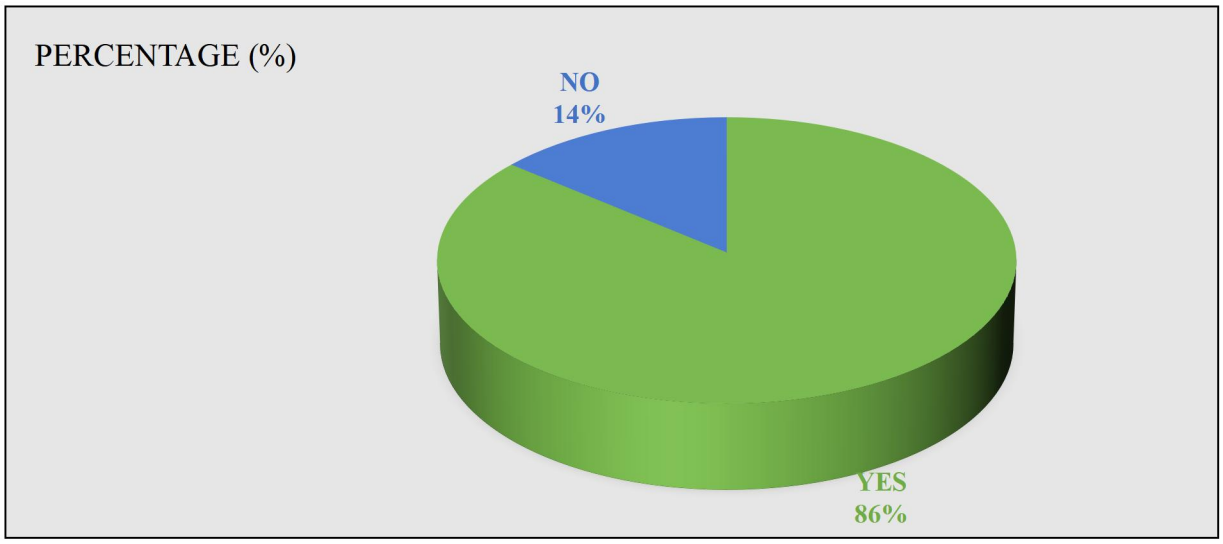

Figure 4.2 Attitudes towards traditional grains preparation time

The pie chart indicates that the majority of the students (86%) perceive traditional grains as requiring too much time to prepare. This perception may be influencing their purchasing decisions, with some students preferring modern grains, which take little time to prepare, over traditional grains. Students in their early 20s may consider traditional grains as requiring too much time to prepare as compared to the older students. Also, students with busy lifestyles, for instance, those working part-time and those that participate in additional activities, are more likely to perceive traditional grains as requiring too much time to prepare. Students who have less knowledge on preparing and cooking traditional grains have a belief that traditional grains are time-consuming, as compared to those who have knowledge on the cooking skill of these grains. According to Chopera et al. (2022), only 9.3% of respondents consumed traditional foods on a daily basis. The barriers to low consumption of traditional grains were long hours in preparing these grains (33.2%) and competitive marketing of processed foods (47.8%); these barriers have resulted in low consumption of traditional grains in Zimbabwe.

Less than a quarter of the university students (14%) perceive traditional grains as requiring less time to prepare. Students with more experience in traditional cooking skills perceive traditional grains require less time to prepare.

The researcher concluded that the majority of the students (86%) perceive traditional grains as requiring too much preparation time, influencing their consumption decisions. The findings were similar to a study carried out in Ethiopia by Minten et al. (2018), the authors mentioned that traditional grains require multiple preparation procedures, including sorting,

where debris and stones are removed from the grains; washing to remove dust and dirt; and grinding the grains into flour. Traditional grains have extended cooking times, which can discourage urban consumers from using them regularly. Compared to processed grains that are readily available in modern markets, traditional grains demand more effort and time before they become edible.

4.4 CONSUMPTION PATTERNS, HABITS AND PREFERENCES OF STUDENTS TOWARDS TRADITIONAL GRAINS

4.4.1 Traditional grains consumption patterns among university students

Table 4:2 Consumption patterns of traditional grains among university students'

Category	Frequency	Percentage (%)
Rarely (less than once a month)	19	19
Occasionally (about once a month)	32	32
Frequently (about once a week)	18	18
Almost always (daily or several times a week)	30	30

Never	1	1

The frequency table shows that (19%) of university students consume traditional grain-based products rarely, less than once a month. This means that traditional grains are not staple foods for these students. Similar findings were reported by Manwa (2013); the study found that university students lack knowledge about the health and nutritious benefits of traditional grains, resulting in low consumption of these grains.

A large number of the students (32%) consume traditional grains occasionally, about once a month, indicating awareness and interest in traditional grains. These students may be influenced by cultural factors and social events to consume traditional grains.

A smaller percentage of the students (18%) consume the traditional grain-based products frequently, about once a week. This shows a great interest in traditional grain-based products. The students in this category may be influenced by the health and nutritional benefits of these grains, such as high fibre content. About (30%) of the students consume traditional grains almost always, daily or several times a week. This shows that these students are committed to traditional-based grains. These students may be influenced by their family tradition and health benefits to eat these traditional grain-based products.

Only (1%) of the students has never consumed traditional grains-based products. This indicates that only one student has never consumed traditional grain-based products in his or her lifetime. Students who are raised in families where traditional grains are not consumed have a greater probability of not consuming these grains in their lifespan.

The study shows various consumption patterns of traditional grains among university students, with some students (48%) consuming traditional grains almost every day and (51%)

consuming them only occasionally or rarely. Only (1%) avoid them totally, indicating barriers such as culture, family background taste, affordability and accessibility. These findings suggest that traditional grains are part of student diets, even if their consumption patterns are inconsistent. The study findings were similar to the study carried out in Zimbabwe, which reports that traditional food consumption among adults in Zimbabwe is commonly low, with 9.3% consuming these foods daily. The factors towards low consumption are cultural heritage, family support, and food safety, while barriers such as inconvenient availability and aggressive marketing of processed foods discourage consumption (Chopera et al., 2022).

4.4.2 Types of traditional grains- based products preferred by students

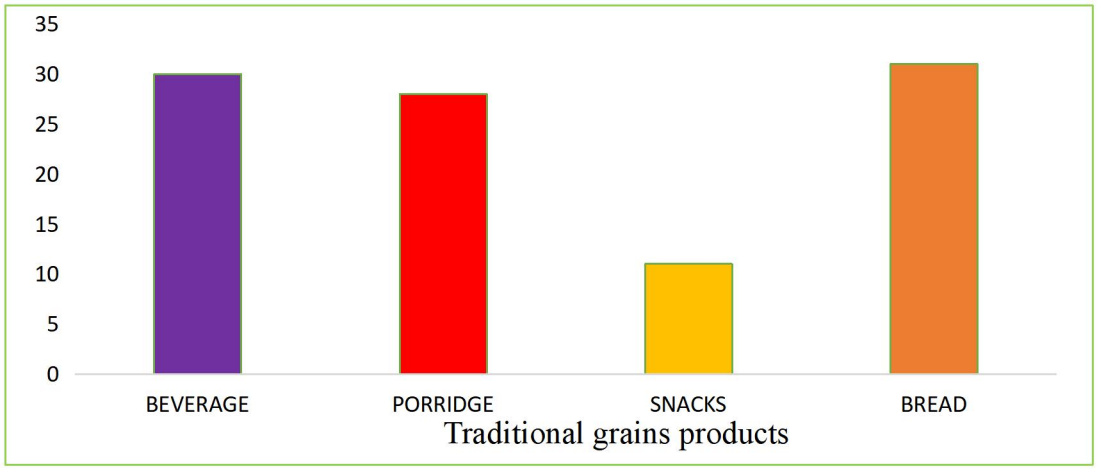

Figure 4.3 Traditional grains-based products preferred by students'

The graph above shows the percentage of traditional grain-based products university students prefer to consu in various forms, for instance, as sandwiches, buns toast, and even consumed as side dishes. In Zimbabwe, we have commercial brands that produce flour and bread made from traditional grains like Gloria and Silo food industries (Moyo et al., 2023). Also, rural people make homemade bread (chimodho) and flatbread made from finger millet, promoting the cultural heritage of traditional grains.

Beverage is the second consumed product by the students, with (30%) of the total consumption. This shows that beverages made from traditional grains like millet or sorghum-based drinks are preferred because of their health benefits and a variety of flavours. Zimbabwe has beverage brands such as Delta Corporation, a leading producer and seller of traditional grain-based beer in Africa, including chibuku (Delta Corporation, 2025). Also, we

have beverage products like maheu. Maheu brands like Pfuko and Shumba Maheu are preferred by the consumers for their health benefits, and these products are now available in supermarkets like OK and N Richards and in local grocery stores (Chopera and Mugariri, 2022).

Porridge is also a relatively preferred traditional grain-based product, accounting for 25%. Porridge is mostly consumed due to its warmth, comfort and nostalgia, making it preferred. Porridge is also rich in minerals, fibre and vitamins, making it more preferred by students who are health conscious. In Zimbabwe were several brands for porridge Hutano brand and the Sunny brand, which specialise in sorghum-based instant porridge (Chopera and Mugariri, 2022). Types of porridges and cereals available in Zimbabwe include sorghum instant porridge, Milo sorghum flakes, Holle organic millet cereal, and puffed millet cereal.

Snacks are consumed by few students (11%), suggesting that traditional grain-based snacks are less preferred by university students for many reasons, like availability and affordability. The low preference for snacks indicates a need for promoting these snacks through innovation and diversification. In Bindura, there is limited availability of these snacks because most people are not aware of traditional grain snacks like sorghum puffs, crackers and granola.

Overall, beverage is the most preferred due to its growing demand for health beverages and innovative products. Bread and porridge are also preferred because they have several types, and they are always available in local markets. Only a few students prefer snacks because many students are not aware of these snack products in Zimbabwe. The findings are similar to the study carried out in Zimbabwe by Tongai and Vutete (2016); maheu, a traditional fermented beverage made from small grains like sorghum, millet, and rapoko, has dominated the beverage market in Zimbabwe.

4.4.3 Price range preference for traditional grains- based products

Table 4.3 Willingness to pay for traditional grains-based meals

AGE GROUPS (YEARS)	MEAN	MODE	STANDARD DEVIATION
18-21	**1.69**	**$1-$2**	**0.83**

22-24	**1.97**	**$1-$2**	**1.03**
25-28	**2.70**	**$1-$2**	**1.25**
29-35	**4.75**	**$5**	**1.50**

18-21 years

This age group has a mean price range of 1.69, which is relatively low. The mode price range ($1-$2), the most frequent price range, and the standard deviation 0.83 are relatively low variability. This age group tends to have lower prices, with most individuals falling within the ($1-$2) price range. The low standard deviation suggests that prices are relatively consistent within this age group. This group has a relatively low mean price range and a low standard deviation, indicating a strong preference for lower prices.

22-24 years

Mean price range of 1.97, slightly higher than the (18-21) age group. Mode price range ($1-$2), most frequent price range and standard deviation 1.03, moderate variability. This age group shows a slight increase in mean price. The mode price range remains the same, but the standard deviation is slightly higher, indicating more variability in prices. This group shows a slight increase in mean price range 1.97 compared to the 18-21 age group but still tends towards lower prices.

25-28 years

Mean price range 2.70 higher than previous age groups. Mode price range of ($1-$2), the most frequent price range, but less dominant. The standard deviation of 1.25 higher variability. This age group shows a more significant increase in mean price range, indicating a shift towards higher prices. Although the mode price range remains ($1-$2), the higher standard deviation suggests more variability in prices. This group shows a moderate to high mean price range and a higher standard deviation, indicating some variability in price preferences.

29-35 years

The mean price range 4.75 is the highest among all age groups, and the mode price range (>$5) is the most frequent price range. Standard deviation of 1.50, suggesting high variability. This age group has the highest mean price range and a distinct mode price range (>$5). The high standard deviation indicates significant variability in prices, suggesting that individuals in this age group have diverse pricing preferences. This group has the highest mean price and a distinct mode price range, indicating a strong preference for higher prices.

The overall conclusion from the study is that age influences price preference for traditional grain-based meals among university students. Price preferences tend to increase with age, with older age groups showing higher mean prices and greater variability. Younger students 18-21 years are highly price-sensitive due to financial constraints, preferring meals priced between (less than $1 and $2). Conversely, older students 29-35 years are willing to pay higher prices, driven by greater financial stability and appreciation of the cultural and nutritional value of traditional grains. The research aligns with the research conducted by Hanus (2020). The study explores how young consumers balance traditional food and modern food choices, highlighting that price and availability are key factors influencing their purchasing decisions.

4.4.4 Factors influencing preference for traditional grains-based diets

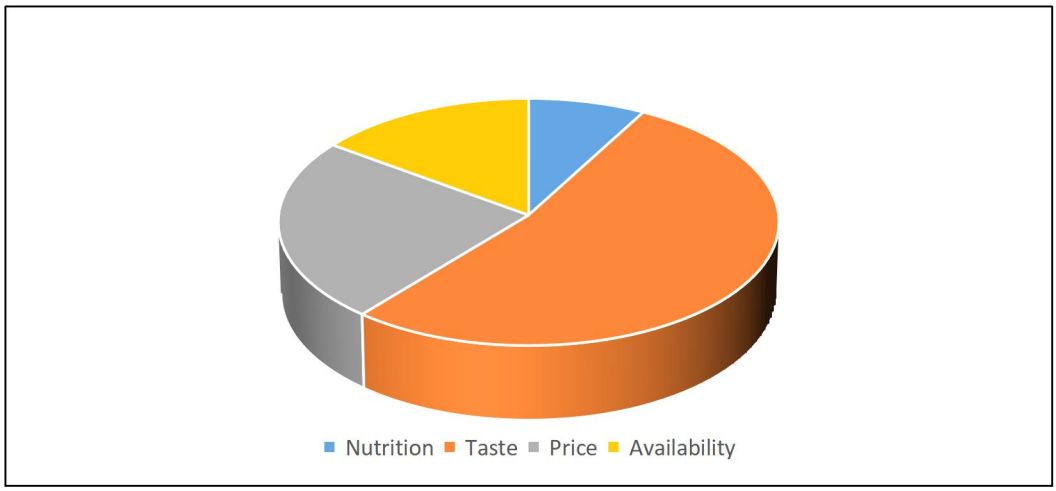

Figure 4.4 Factors influencing preference for traditional grains-based diets

The pie chart shows factors that influence individual preferences for traditional grain-based diets. Most students are influenced by the taste (53%) of traditional grains. This suggests that the students are more concerned with the texture and flavour of traditional grains.

The second factor is the price (24%). Due to economic hardships, cost is an important factor influencing individual preferences for traditional grain-based products. This factor is more influenced by the law of demand; as the price of a good or service increases, the quantity demanded decreases, and vice versa. Price is important in purchasing food; it influences the decision to purchase certain products over other products, especially for low-income consumers, who are more price sensitive than higher-income groups (Steenhuis et al., 2011). The study indicates that discounting healthy food and lowering VAT on nutritious products are effective strategies to encourage healthier eating habits among low-income consumers.

Availability (15%) is the third factor influencing preferences for traditional diets, suggesting that it is an important factor but not really a primary factor in influencing individuals' preferences for traditional grains. When consumers are aware of the benefits of these grains, they might seek out these grains even if they are not readily available.

Nutrition is the least influential factor, with a percentage of 8% indicating that students are not influenced much by the nutrition of the traditional grains-based products. The data indicate that Bindura students are not aware of the health benefits of these traditional grains. This calls for an opportunity for education campaigns to raise the knowledge and awareness of the benefits of traditional grains among the students.

Overall, taste (53%) has the largest proportion of respondents, followed by price (24%), availability (15%) and nutrition (8%), which has the least influence on individual preference for traditional grains. This indicates potential areas for marketing strategies, product development and education campaigns aimed at promoting traditional grains-based diets. According to Tongai and Vutete (2016), the study examines the differences in preference between traditional sadza meals made from small grains (millet, rapoko, and sorghum) and white maize sadza in Harare's fast-food and restaurant market. Taste was the most influential factor, followed by price and availability, while nutrition had the least impact on consumer choices.

4.5 FACTORS INFLUENCING STUDENTS' CONSUMPTION OF TRADITIONAL GRAINS

4.5.1 Factors influencing willingness to consume traditional grains

The consumption of traditional grains has declined in recent years due to the rise of modern grains. Multinomial regression model was used to analyse the effect of family background, cultural heritage, health benefits, and environmental concerns on a student's willingness to consume traditional grains. Multinomial regression was used because the dependent variables are categorical.

	Category 1: Very willing			Category 2: Not willing			Category 3: Neutral		
Variables	B	Exp (B)	Sig	B	Exp (B)	Sig	B	Exp (B)	Sig
Constant	12.35	14,02	0.002	9.35	10.30	0.079	9,99	12.75	0.033
Health benefits	19.71	21.04	0.001	0.01	8.77	0.78	5.87	7.94	0.989
Family background	14.67	14.79	0.021	0.09	4.99	0.094	-5.88	6.12	0.093
Cultural heritage	13.21	13.77	0.002	-3.11	1.99	0.095	0.07	4.99	0.451
Environmental concern	-7.03	0.87	0.096	2.55	5.88	0.064	9.08	9.88	0.023
Media	-	-	-	-	-	-	-	-	-

Table 4.4 Factors influencing students' willingness to consume traditional grains

The table above shows that health benefits is the most influencing factor for students' willingness to consume traditional grains-based products, indicated by a positive coefficient of (19.71), suggesting that as health benefits increase, willingness to consume also tends to increase. The odds ratio of (21.04) means for every unit increase in health benefits, the odds of being more willing to consume traditional grain-based products increase by (21.04) units. A p-value (0.001) indicates a strong statistically significant relationship between health benefits and willingness to consume traditional. Traditional grain diets are recommended to consume over refined grains because they have high carbohydrates and high fibre content. People who consume traditional grains have a lower risk of chronic diseases such as heart disease and diabetes; also, they are less likely to be overweight than those who consume modern diets (Seal and Thielecke, 2018).

Family background, a positive coefficient of (14.67), indicates that an individual's family background has a significant influence on students' willingness to consume traditional grains. This could be influenced by cultural and social factors passed from generation to generation. The table shows the odds ratio means that a one-unit increase in family background influence towards traditional grains increases the willingness to consume by (14.79) units. The p-value of (0.021) shows that the relationship between family background and willingness to consume is statistically significant.

Cultural heritage (13.21), suggesting a positive effect, but it is below family background and health benefits. The odds ratio suggests that a one-unit increase in cultural heritage increases the willingness to consume by (13.77) units, and it indicates a neutral effect on willingness to consume. A large p-value of (0.126) suggests weak evidence that cultural heritage influences the consumption of traditional grain-based products. According to Tavuyanago et al. (2010), beer from the malt of traditional grains tastes better than maize beer. Beer drinking was usually a social event that brought many people together and thereby acted as a vehicle for the further extension of relations among the people. The commemoration of the dead, which was a major social event among the Shona people, this was done in accompaniment to beer drinking, song, and dance.

Environmental concern, with a coefficient of (-7.03), indicates that environmental concern lacks significance on individual willingness to consume traditional grains compared to the reference category. The odds ratio means that a one-unit increase in environmental concerns increases willingness to consume by (0.87) units, which almost shows no effect on willingness to consume. The p-value (0.096) determines that there is a weak relationship between the willingness to consume and environmental concern.

Overall, the results indicate that health benefits, family background and cultural heritage have a greater influence on consumption of traditional grains. However, environmental concern does not appear to have an influence on the willingness to consume. The findings were similar with a study carried out in Asia; the findings emphasise that traditional foods are valued for their health benefits, particularly in preventing lifestyle-related diseases, but environmental concerns were not a primary driver (Harmayani et al., 2019).

4.5.2 Students' encountering with traditional grains in local markets

Table 4.5 Encountering traditional grains in local markets

BACKGROUND	NEVER	RARELY	SOMETIMES	OFTEN	TOTAL
RURAL	3	24	13	15	55
URBAN	5	13	7	20	45
TOTAL	8	37	20	35	100

Rural Students

Only (3%) of students reported that they never see traditional grains in the local market. (24%) of the students reported rarely encountering traditional grains, which may indicate a reliance on local markets for these products, but these traditional grains are hardly seen in the rural markets. The rural students revealed that they are exposed to traditional grains, sometimes yielding (13%) of the total population. (15%) of the rural students encounter traditional grains very often in the market.

The rural background suggests that a large number of students reported they rarely meet with traditional grains in the local market, indicating that these grains are not available in the market all the time. These findings align with Rugwete (2023), who concluded that rural areas in Zimbabwe face challenges in accessing traditional grains because markets for traditional grains are few in the rural areas since more rural farmers rely on subsistence farming.

Urban Students

(5%) of the urban students' report that they have never seen traditional grains in the local market, with (13%) encountering these grains on a rare basis. Only (7%) of the students sometimes encounter with traditional grains in the local market, and a large number of (20%) of the students encounter traditional grains often in the market, which means that the traditional grains are available in urban markets. Urban students encounter with traditional

grains more often because of high demand in urban areas due to growing interest for nutrient-rich traditional grains, such as millet and sorghum. This encourages traders to sell more grains in urban markets, making them more accessible to students (Phiri, 2023).

Overall, Rural students report rare encounters (24%), while urban students (20%) of the students encounters with traditional grains often. Rural students have rare encounter with traditional grains because of decline in traditional grain farming in rural areas. Many farmers in Zimbabwe have shifted from growing traditional grains like sorghum and millet to maize, which is now the staple diet. This shift has reduced the availability of traditional grains in rural markets (Tavuyanago et al*.,* 2010).

The findings indicate a higher exposure to traditional grains within urban markets, while rural markets experience relatively low encounters with such products. This suggest that urban markets are saturated with traditional grain-based products, leading to greater awareness. According to Phiri (2023), urban areas good food markets where traders can easily sell traditional grains. In contrast, rural markets, they lack proper storage facilities, poor road system, lack of electricity making it hard for students to access traditional grains in the market. Moreover, the lack of value addition activities has led to declines in millet and sorghum production, processing, marketing, and consumption, reducing their presence in markets (Musara et al., 2019).

4.5.3 Willingness to pay a premium for traditional grains-based products

Socioeconomic factors affect willingness to pay price premiums for traditional grains. Ordinal logistic regression was used to determine the effect of demographic factors and willingness to pay premiums for traditional grains. This method was used since the dependent variable is ordinal. Premium refers to a higher price or additional cost that the students are willing to pay for traditional grain-based products

Table 4.6 Willingness to pay premiums for traditional grains-based products

	SMALL PREMIUM			HIGH PREMIUM			VERY HIGH PREMIUM		
Variables	B	Odds ratio	Sig	B	Odds ratio	Sig	B	Odds ratio	Sig
Constant	12.35	13,24	0.67	13.45	13.33	0.02	12,99	13.75	0.04
Age	-19.71	10.94	0.89	16.75	21.77	0.78	-18.87	0.94	0.98
Gender (female)	14.67	15.79	0.01	12.88	14.99	0.04	13.88	14.12	0.03
Male	-	-	-	-	-	-	-	-	-
Geographic (Urban)	13.21	13.77	0.12	16.09	17.99	0.05	13.07	14.99	0.45
Rural	-	-	-	-	-	-	-	-	-
Monthly allowance(high)	14.03	16.87	0.03	15.11	17.88	0.01	18.08	19.88	0.02
Low	-	-	-	-	-	-	-	-	-
Level of study	-8.09	0.99	0.97	-2.55	0.79	0.64	3.7	4.88	0.76

The regression table above shows that age does not influence willingness to pay premiums for traditional grain products. The coefficients for age in all premiums categories are not statistically significant, with p-values, with negative odds ratio on small and very high premiums.

Gender has positive effects on willingness to pay premiums for traditional grains, all the categories have the odds ratio greater that their constants and the effects is statistically significant. Females are more likely to choose small premiums reflected by the coefficient of (14.67) with a p- value of (0.01) which is statistically significant. Female students are willing to pay small premiums while male students prefer higher premiums for traditional grains.

Monthly allowance has a positive effect on willingness to pay premiums for traditional grains. Students with a high monthly allowance are more likely to select high premiums for traditional grains than low income students. The effect is statistically significant in all premium categories. This suggests that individuals with higher disposable income are much more likely to prefer very high premiums with the coefficient of (18.08), and the significance of (0.02).

Geographic location plays a role in willingness to pay; urban students are more likely to choose a very high premium, with a coefficient of (16.09) and an odds ratio of (17.99), which is statistically significant at a p-value of (0.05), than rural students. This suggests that students from urban areas are more willing to pay the highest premium for traditional grain products, possibly due to greater exposure to health trends (Kumar et al., 2019).

Level of study has a negative effect on willingness to pay premium for traditional grains. They both have p- value greater than (0.05), which means the effects does not have a statistical significance.

Model fit the likelihood A ratio chi-square of (45.67, $p<0.001$), indicates that the model is statistically significant; all the predictors collectively contribute to explaining the outcome variable. A pseudo R-squared of (0.35) suggests a moderate level of explanatory power for the model. There are other factors which influence the willingness to pay premiums which are not included in the model.

Overall, age, and level of study are not significant predictors of premium selection, showing no influence across premium categories. Gender plays an important role in determining premium choice, with females being more likely to select small and high premiums, but not very high premiums. Monthly allowance is strongly associated with very high premiums, suggesting that consumers with higher disposable income prefer these options. geographic location only matter at the very high premium level, where urban consumers show higher willingness to pay than their rural students. These findings were consistent with the previous research carried out in the United States. The study findings concluded that lower-income households tend to prefer less nutritious, lower-cost foods, prioritising affordability over health benefits. In contrast, higher-income households invest in premium grains, organic products, and a greater variety of nutrient-dense foods, reflecting their ability to prioritise quality over price (French et al., 2019).

4.5.4 Factors affecting consumption of traditional grains-based products

Thermic analysis method was used by the researcher to analyze data from focus groups on factors affecting consumption of traditional grains-based products. Thermic analysis is a qualitative data analysis method that involves identifying, coding and categorising themes that emerge from the data.

Table 4.7 Factors affecting consumption of traditional grains

GROUPS	RESPONSES
1 FACULTY OF AGRIC AND ENVIRONMENTAL SCIENCE	GENDER, NATIONALITY AND HOME BACKGROUND
2 FACULTY OF COMMERCE	FAMILY BACKGROUND, COST AND AVAILABILITY
3 FACULTY OF SOCIAL SCIENCES AND HUMANITIES	HIGH COST, FAST FOODS, AND ACCESSIBILITY
4 FACULTY OF SCIENCE EDUCATION	INFLUENCE OF FAST FOOD INDUSTRY

Themes

Cultural heritage

Cultural heritage serves as a link connecting people to their traditional food. Consuming traditional grains can serve as a means of expressing cultural identity. Many individuals feel a sense of belonging and connection to their cultural heritage when they consume traditional grains that are part of their cultural background. Some individuals in focus groups cited that "In my family, we use traditional grains like sorghum and millet to brew beer on festivals like the rain-making ceremony, a ritual performed in November to ask for rain from the ancestors."

The findings indicate that cultural practices are important in promoting the consumption of traditional grains, especially during ceremonies and festivals. Traditional grain plays a role in

preserving and allowing for the passing down of intergenerational knowledge and promoting sustainable agricultural practices. Family tradition influences students from cultures where traditional grains are staple foods, leading to a positive perspective on these grains (Manwa et al., 2018).

Economic constraint

Economic constraint refers to a lack of financial resources, like income, which affects the ability to purchase and consume traditional grain-based products. This theme explains how economic factors like food prices and affordability affect the consumption patterns. The price of traditional grain-based products can fluctuate due to changes in the supply of these products. If the production of traditional grains is low, it means that the prices of these grains are likely to be very high due to limited supply. Also, if there is an excess supply of traditional grains, their prices will go down, which means they will be affordable. High prices cause low consumption of traditional grains. According to focus group participants, "A 2kg bag of sorghum costs $4.50, while 2kg of millet costs $6." Availability: in some areas, traditional grains may not be readily available due to lack of local markets.

Economic barriers significantly affect the availability of traditional grains. Many students expressed that they are willing to consume more traditional grain products if they are affordable, highlighting the need for initiatives to reduce the prices and enhance the availability of traditional grains in markets. If traditional grains are perceived as more expensive or if cheaper alternatives are readily available, students may choose the latter for more economic reasons (Mchiza et al., 2020). Financial constraints often lead students to prioritise cost-effective options, further limiting their intake of traditional grains.

Fast food influence

Fast food refers to mass-produced food that is prepared and served quickly; it is inexpensive and convenient. The influence of fast food refers to the impact that fast food culture has on dietary choices and eating habits in relation to traditional grain-based products. According to Murandu and Vutete (2016), they found that people in Harare prefer fast food because of convenience and lower cost than traditional grains. This theme examines how the prevalence of fast food affects the consumption of traditional grains among university students. The theme is therefore to examine the influence of fast food and the consumption of traditional grains. According to Chopera et al. (2022), aggressive marketing of processed foods significantly reduces traditional food consumption in Zimbabwe.

The convenience and affordability of fast foods have led to a great decline in traditional grain consumption. Participants noted that busy lifestyles often prioritise quick meal solutions over healthy, traditional grain-based products. These indicate that students are not aware of the health consequences of these fast foods. Fast food is a common meal option, but it has high levels of calories and low nutrients; eating too much of these foods every day has great effects on the body (Pietrangelo, 2022). The study is similar to the study carried out at Trakta University Kesan Yusuf Capraz School of Applied Science; (97.4%) of the students consume fast foods, while (2.6%) do not consume fast foods.

Overall, the findings from focus groups suggest that cultural heritage, economic constraint and growth in the fast food industry influence the consumption of traditional grain-based products. Cultural heritage has a greater influence on the consumption of traditional grains, but economic constraints and the fast food industry cause challenges in consumption. According to Hanus (2020), the findings indicated that cultural heritage is important in shaping consumer behaviours in food markets. However, economic constraints influence food choices, leading many young consumers to prefer affordable fast food rather than traditional grain-based products. The increasing growth of fast-food value chains and aggressive marketing of fast foods have contributed to changes in food habits.

4.6 STRATEGIES FOR PROMOTING AND MARKETING TRADITIONAL GRAINS TO STUDENTS

Table 4.8 Strategies for promoting and marketing traditional grains to students

STRENGTHS	WEAKNESSES
1.Increase in demand for health diets: there is growing trend towards health foods and wellness among university students. This raises the demand for traditional grains-based products, creating an opportunity to promote traditional grains.	1.Lack of awareness and knowledge among some university students: Many university students are not aware of the health and nutritional benefits of traditional grains, making it very challenging to promote them.
2.Cultural significance: Various types of traditional grains are tied up to the country's cultural heritage. Promoting traditional grains helps in preserving our cultural identity.	2. Loss of traditional knowledge: the increase of urbanization and modernization leads to erosion of cultural heritage among students. Traditional knowledge and traditional food practice are lost, for instance rainmaking ceremonies.
3.Diverse uses: traditional grains are marketed in various form like beverages, snacks, flour, bread and cereals.	3. Higher cost: Traditional grains are more costly than modern grains which is a deterrent for budget- conscious students.
4. Availability of local varieties: In Zimbabwe we have many local varieties like millet rapoko sorghum barley	4. Limited availability on campus: Traditional grains are not readily available in school cafeterias and tuck shops, making it inconvenient for students to access them.
5.Sustainability and eco-friendly: Traditional grains are sustainable and have little environmental footprints than modern grains. They are adaptable to erratic conditions and they can be stored for long periods without significant loss of their quality.	5.Perceived convenience: Traditional grains require longer cooking hours, specific preparation methods which deter busy students.
OPPORTUNITIES	THREATS
1. Education and awareness campaigns: Workshops, food taste and cooking classes increase awareness and knowledge among university students.	1. Limited funding: education and awareness campaigns requires financial recourses to develop and implement effective programs like workshop, which might be a burden to the university if finance is limited.
2. Incorporating traditional grains into menus. Traditional grains may be included to the university menu as side dishes.	Limited budget and resources: Bindura university may have limited budget and resources to provide traditional grains
3. Government support: The government of Zimbabwe has launched initiatives to promote the production of traditional grains. For example subsidising traditional grains farmers giving them seeds and other inputs.	3. Lack of regulatory policy: the program does not have a clear policy for procuring traditional grains for university food services. The is no assurance that these grains will be readily available to university students.
4. Development of new products and recipes: introduction of new products and new recipes using traditional grains can help to increase their appeal to students.	4. Changes in consumer preferences: students' food preferences can change quickly, leading to a decrease in demand for traditional grains.

The SWOT analysis provides the factors influencing the promotion of traditional grains among university students. It identifies weaknesses and threats that need to be addressed for the effective promotion and marketing of traditional grains (Kutyauripo, 2018). It also provides opportunities and threats to traditional grains consumption. This analysis enables universities to develop strategies to increase students' consumption of traditional grains, educating students on the health benefits of these grains and promoting consumption and cultural identity (Bharucha, 2016).

The universities can implement traditional grain meals on their menus at affordable prices so that the students can purchase them for consumption. Additionally, research suggests that marketing strategies should focus on affordability and accessibility, as students often prefer more affordable and available products over nutritional benefits (Hanus, 2020).

Studies indicate that sorghum has the highest zinc levels (24.23 mg/kg), while finger millet contains the highest calcium content (344 mg/kg), making them excellent choices for improving dietary diversity (Musidzaramba et al., 2025). The development of new products and recipes made from traditional grains encourages student consumption, as they may be interested in the taste, texture and aroma of the products.

The Zimbabwean government distributed seeds to smallholder farmers under the Presidential Input Support Programme to promote the production, processing, marketing, and consumption of traditional grains. This association aims to increase awareness and support for traditional grain farming in Zimbabwe. Lupane University carried out a project focused on promoting traditional grains among university students. The university produced juice from sweet sorghum (infe), promoting the value addition of the traditional grains so that they look appealing for consumption (Nyoni et al., 2022). Additionally, Great Zimbabwe University joins contacts with small-scale farmers in Masvingo, providing them with inputs of traditional grains as a way to increase traditional grain production in semi-arid regions where the annual rainfall is always low (Rugwete, 2023).

CHAPTER 5: CONCLUSIONS AND RECCOMENDATIONS

5.1 Summary of the key findings

University students' perceptions towards traditional grains' taste, texture and aroma affect their consumption

The study found that university students' opinions about traditional grains' taste, texture, and smell affect their consumption habits. Some students are neutral (27%) about traditional grains. On the other hand, (20%) of students really like traditional grains and eat them because of their cultural significance and health benefits. However, most students, (54%), do not like traditional grains due to issues with taste, texture, and preparation. The findings show that knowledge about traditional grains, being exposed to them and having cultural heritage that values them can make students more willing to eat these grains. To encourage students to eat traditional grains, we need to teach them about the benefits of the small grains and to make them available in the school dining and tuck shops.

University students' attitudes towards traditional grains preparation time

The researcher concluded that most students (86%) think traditional grains take too long to prepare, affecting their purchasing decisions. Traditional grains require many steps to prepare them, such as sorting, cleaning, grinding and long cooking hours. This makes people eat them irregularly.

University students' consumption patterns of traditional grains

The study found out that students eat traditional grains in different ways. About half of the students (48%) eat them often, while (51%) consume them only occasionally or rarely. Few students (1%) have never eaten traditional grains, indicating that they do not like the taste, or they have no knowledge about cooking and preparing traditional grains. The findings suggest that while students consume traditional grains, their consumption patterns are uneven.

Traditional grains-based products preferred by students

Students like bread made from traditional grains because it's easy to access and versatile, which means bread can be found everywhere in grocery stores, supermarkets and tuck shops, and bread is used in many different ways, for example, making sandwiches, toasting and grilling. Students have a high preference for traditional beverages because they are better for their health than sugary modern drinks. They also prefer porridge for its nutritional value. However, if students show that they do not like traditional grain snacks, the reasons could be a lack of innovation and limited variety of these products. Traditional grain snacks need improvement to compete with modern snacks.

Factors influencing preferences for traditional grain-based diets

The research reveals that taste is the most important factor in students' preference for traditional grains, with (53%) of students citing it as a key factor. Students want food with sweet flavours rather than earthy flavours of traditional grains. Price is also important, with (24%) of students indicating that affordability influences purchasing decisions, especially for students with limited income. Availability matters too, with (15%) of students mentioning it; traditional grain products should be available in stores. Nutrition is less important, with only (8%) of students eating traditional grains for nutrition purposes.

Price range preference for traditional grain products

Age affects how much university students are willing to pay for traditional grain meals. Younger students (18-24 years) want cheaper meals below $2. Due to limited budgets, most of these students depend on parental help. Older students (29-35 years) show a greater willingness to pay higher prices due to more financial stability and an appreciation for traditional grains' value. This shows that age influences price preference for traditional grain-based meals.

Factors influencing students' willingness to consume traditional grains

The research indicates three main factors influencing students' willingness to consume traditional grains: health benefits, family background, and cultural heritage. Students who care about nutrition and well-being are more likely to eat traditional grains because they know they are rich in fibre, vitamins, and minerals. Family traditions and exposure also help students keep eating traditional grains. Students from families that eat traditional grains are more likely to eat them. Cultural heritage also influences consumption, as students from

cultures that value traditional grains are more likely to eat them daily. However, environmental concerns do not seem to affect students' food choices. This means environmental sustainability has less influence on students' decisions to eat traditional grains.

Students' encounters with traditional grains in the local market

The findings suggest that (37%) of total students rarely see traditional grains in local markets, while (35%) see these grains often. Rural students report rare encounters while urban students see them more often. Rural students are limited to traditional grains, while urban students see them frequently in their local markets. To improve this, the government should encourage the production of these grains through subsidies so that they can be available in the markets, especially in rural areas of Zimbabwe.

Willingness to pay a premium for traditional grain-based products

Age does not influence willingness to pay a premium for traditional grains. Gender influences premium choice, females are more likely to pay small and high premiums for traditional grains. Monthly allowance has greater influence on price premiums; higher-income students prefer higher premiums, while lower-income students prefer smaller premiums because of a limited budget. Students with more income are willing to spend their money on high-quality traditional grains. These students have the freedom to make choices based on what they value. Urban students are willing to pay very high prices for traditional grains than their rural students because urban students have more disposable income, allowing them to afford premium prices.

Factors affecting consumption of traditional grain-based products

Students' food habits are affected by limited budgets, cultural heritage, and the rise of fast food. The biggest challenges affecting students' consumption of traditional grain-based products are economic constraints, as students prefer cheaper processed foods, and the rise of fast food, which is always available. Many students choose fast food over traditional grains because they are cheaper and easy to get, even if traditional grains are important to their cultural heritage.

Strategies for promoting and marketing traditional grains to university students

The study found that there's increasing demand for traditional grains because of climate change and health problems like diabetes and cancer caused by eating processed foods and

GMOs. Traditional grains are preferred because of their nutritional benefits and climate resilience. Traditional grains like finger millet are rich in calcium, iron, and magnesium, and sorghum has high zinc levels. Despite these advantages of grains, many students prefer fast food instead of traditional grains because of affordability, accessibility, and convenience.

Food scientists should develop new products and recipes to promote consumption among the students. The policy makers should put price controls on the traditional grain products. They should charge an affordable price so that the university students can afford to buy these grains. The grains should be available in the local markets, especially in rural areas.

The government of Zimbabwe is promoting the production of traditional grains in various ways. For example, the government promotes the production of traditional grains by adding 20% premiums on producer prices for millet and sorghum, distributing seeds to smallholder farmers under the Presidential Input Support Programme and supporting irrigation development in areas where annual rainfall is limited. Also, the Great Zimbabwe University Traditional Grains Contract Farming Programme in Masvingo aims to promote the production, processing, marketing and consumption of traditional grains. The university offers farmers seeds and inputs of traditional grains, and it also provides the market for the farmers.

5.2 Conclusion

University students eat traditional grains because of their health benefits. Many students do not consume traditional grains because they are expensive, they are always unavailable in the markets, and they require more time to prepare them. The traditional grains are more available in urban markets, and they are scarce in rural markets because many small-scale farmers produce maize and other cash crops like cotton and tobacco. Another reason why students dislike traditional grains is their taste and texture.

University students with more income are willing to pay higher premiums for traditional grain-based products than lower-income students, who often prefer cheap products which are not good for their health. The university can promote traditional grains by providing cheap, versatile traditional meals in the school dining and tuck shops.

Food manufacturers in Zimbabwe should develop new products and ingredients, making traditional products look more appealing to promote consumption among the students. The policy makers should control the price of traditional grain products. They should charge an

affordable price so that the university students can afford to buy these grains. The grains should be available in the local markets, especially in rural areas. The government should continue to support the production of traditional grains by offering farmers inputs and the extension services to educate farmers on sustainable practices and value addition of traditional grains.

5.3 Recommendations

Recommendations to the University

Bindura University should introduce traditional grains as main dishes in the dining halls, and they should be served every day to promote the health of the students. These meals should be cheaper than the modern grains like maize sadza, rice and pasta. Also, the university should introduce compulsory courses about traditional grains' health benefits, cooking skills and practical training in growing different types of traditional grains. The school should collaborate with the local farmers to get cheap grains.

Recommendations to the Government

The government should promote traditional grain production to increase our country's food security. Also, it should promote the consumption of traditional grains by making them a staple food of the country. Traditional grains should be the staple diet so as to maintain the cultural heritage of our country and to prevent health-related issues like malnutrition and chronic diseases like heart disease and cancers. The government should offer inputs and equipment to all vulnerable farmers, especially in the marginal areas. The country should invest in infrastructure like storage facilities and maintaining roads and bridges for transportation of products from the farm to the market and also invest in technologies to increase the production, processing and value addition of these grains. There is a need for research and development to improve traditional seed varieties.

Recommendations to Policy Makers

Policymakers should advocate for legislation that supports traditional grain consumption through strategic food policies. One approach could be subsidising small grain production and implementing price controls to keep them affordable for students and lower-income consumers. Integrating traditional grains into school feeding programmes and university menus would create early exposure and foster diet habits that support long-term consumption.

Investing in technology is also important; it will help in the processing of these grains, allowing traditional grains to be in the form of ready-to-eat formats like energy bars, snacks, crackers, instant porridge and traditional grain juices from sweet sorghum.

5.4 Study limitations

The study was conducted at Bindura University among university students only, ignoring other groups like the lecturers, local people, primary and secondary students and other universities. The study also relies on self-reported data, which may be subject to bias, as students might overestimate or underestimate their consumption behaviours. Also, the students were only asked about their attitudes and perceptions about traditional grains without practical tests and experiments like a food taste test to see how they react to different types of traditional grains.

5.5 Suggestions for future research

Future studies should include several universities and different groups of people, like urban and rural communities. This helps to get more accurate information about traditional grains. It helps to understand the consumption patterns of traditional grains. Also, the research should focus on how different people eat traditional grains, considering factors like income, culture and availability of these grains. This helps to determine how these factors affect the consumption of traditional grains and develop targeted intervention and marketing strategies.

Future research should examine how easy it is to find traditional grains in different areas like rural markets and urban markets. This helps to understand how location affects access and availability of traditional grains. More so, it helps to identify areas where traditional grains are scarce and develop strategies for improving market accessibility and availability of these grains in different areas.

The future research should use more effective data collection methods like observations to reduce bias and increase accuracy. This also helps the policy makers because they can develop policies based on evidence. Furthermore, future research should use test interventions to investigate the impact of awareness campaigns and new recipes of traditional grains. This helps to evaluate the impact of awareness campaigns and new recipes, and it helps policy makers to identify the best practices for increasing the consumption of

traditional grains.to include multiple universities or diverse population groups, such as working professionals and rural communities, to enhance the generalisability of findings. Research should also explore broader societal consumption patterns, considering factors like financial constraints, cultural background, and exposure to traditional grains across different demographics. Additionally, market accessibility and availability should be examined at a regional level to better understand how location influences perceptions and consumption. To minimise bias, future research could incorporate observational methods or experimental studies rather than relying solely on self-reported data. Investigating the impact of targeted interventions, such as awareness campaigns and culinary innovations, would provide insights into strategies for increasing the adoption of traditional grain.

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APPENDICES

APPENDIX 1: STUDENTS SURVEY QUESTIONNAIRE

INTRODUCTION

My name is Jesciline Shayamano, a student at Bindura University of Science Education. I am conducting a research project titled "Exploring University Students' Perceptions and Consumption Patterns of Traditional Grains". As part of this study, I will be conducting interviews with 100 students at Bindura University of Science Education. This questionnaire is designed to gather information about your perceptions, attitudes and consumption patterns of traditional grains. Your responses will be kept confidential and anonymous. Please answer the questions honestly and to the best of your ability.

SECTION 1: DEMOGRAPHIC INFORMATION

1. Age: ----------

2. Gender (1 = female and 2 = male) ----------

3. Nationality ----------

4. Level of study

1= Part 1

2 = Part 2

3 = Part 3

4 = Part 4

99 = Part 5

5. Background

1= Rural

2 = Urban

6. Field of study

1 = Faculty of Agriculture and Environmental Science

2 = Faculty of Science education and Engineering

3 = Faculty of Social Sciences and Humanities

4 = Faculty of Commerce

99 = Other, specify

7. Monthly Allowance ……...

SECTION 2: TRADITIONAL GRAINS KNOWLEDGE AND AWARENESS

1. Are you familiar with the following traditional grains (millet, sorghum, rapoko?)

1 = Yes

0 = No

2. Have you ever consumed traditional grain-based products?

1 = Yes

0 = No

3. How often do you consume traditional grain-based products?

1 = Never

2 = Rarely (less than once a month)

3 = Occasionally (about once a month)

4 = Frequently (about once a week)

5 = Almost always (daily or several times a week)

4. How do you usually prepare traditional grains?

1 = Milling

2 = Roasted

3 = Fermenting

4 = Grinding

5 = Other (please specify) …….

SECTION 3: PREFERENCES FOR TRADITIONAL GRAIN-BASED DIETS

1. How important is it for you to include traditional grains in your diet?

1 = Not important at all

2 = Somewhat unimportant

3 = Neutral

4 = Somewhat important

5 = Very important

2. Which of the following traditional grains-based products do you prefer to consume?

1 = Bread

2 = Porridge

3 = Snacks

4 = Beverage

5 = Other (please specify) ……...

3. What factors influence your preference for traditional grain-based diets?

1 = Nutrition

2 = Taste

3 = Price

4 = Availability

5 =Other (please specify) ……

4. How willing are you to try new traditional grains-based products?

1 = Very willing

2 = Somewhat willing

3 = Not willing at all

4 = Not very willing

5 = Neutral

5. What motivates you to consume traditional grains-based products?

1 = Health benefits

2 = Cultural significance

3 = Environmental concerns

4 = Economic benefits

99 = Other (please specify) …….

SECTION 4: PERCEPTION OF TRADITIONAL GRAINS

1. What are the benefits of consuming traditional grains?

1 = Rich in nutrients

2 = Good for the digestive system

3 = Environmentally friendly

4 = All the above

5 = Other (please specify) …….

2. What are the drawbacks of traditional grain consumption?

1 = Accessibility and availability

2 = Texture

3 = Taste

4 = Price

5 = Other (please specify) ……

3. How influenced are you by media and advertising when it comes to trying new traditional grains?

1 = Very influenced

2 = Not influenced

3 = Not very influenced

4 = Somewhat influenced

5 = Neutral

4. How willing are you to pay a premium for traditional grain-based products?

1 = I am only willing to pay a small premium (0-10%).

2 = I am willing to pay a moderate premium (11-20%).

3 = I am willing to pay a higher premium (21-30)

4 = I am willing to pay a very high premium (above 30%).

5. Would you recommend traditional grains to your friends and family?

1 = Not at all likely

2 = Not very likely

3 = Undecided

4 = Very likely

5 = Extremely likely

SECTION 5: FACTORS AFFECTING CONSUMPTION PATTERNS OF TRADITIONAL GRAINS

1. What factors influence your decision to consume traditional grains?

1 = Family background

2 = Cultural heritage

3 = Health benefits

4 = Environmental concerns

5 = Media

99 = Other (please specify)

2. Do your consumption patterns of traditional grains vary based on your lifestyle factors?

1 = Yes

0 = No

3. How easily can you find traditional grain-based products in your local market or school tuck shop?

1 = Very easy

2 = Somewhat easy

3 = Neutral

4 = Somewhat difficult

5 = Very difficult

4. Where do you typically purchase or have access to traditional grains or grain-based foods?

1 = Local market

2 = Supermarket

3 = Online store

4 = Direct from farmers

5. How affordable are traditional grain-based products for you?

1 = Very affordable

2 = Neutral

3 = Somewhat unaffordable

4 = Very affordable

5 = Somewhat affordable

6. What price range are you willing to pay for a lunch plate of a traditional grains-based diet with relish?

1 = less than $1

2 = $1 - $2

3 = $2-$3

4 = $3-$4

5 = more than $599 = other (please specify) …….

7. What price range are you willing to pay for wheat bread blended with traditional grains?

1 = Same as the price of wheat bread

2 = Less than the price of wheat bread

3 = More than the price of wheat bread

8. What price range are you willing to pay for a traditional grains-based beverage?

1 = US$0.50

2 = US$1

3. Above $

19. What factors influence your decision to purchase traditional grains?

1 = Price

2 = Quality

3 = Availability

4 = Brand reputation

99 = Other (please specify) ……

SECTION 6: BARRIERS TO TRADITIONAL GRAINS

1. What are the barriers that prevent you from consuming traditional grains?

1 = High cost

2 = Lack of availability

3 = Limited knowledge

4 = Unfamiliar with preparation methods

5 = Limited access

99 = Other (please specify) ----------

2. Do you perceive traditional grains as being less convenient or less accessible than modern grains?

1 = Yes

0 = No

3. How do university students' perceptions of traditional grains' taste, texture and aroma affect their consumption?

1 = Very positive

2 = Very negative

3 = Neutral

4 = Somewhat positive

5 = Somewhat negative

4. How often do you encounter traditional grain-based products in your local market?

1 = Often

2 = Rarely

3 = Never

4 = Sometimes

5. Do you perceive traditional grain-based products as requiring too much preparation time?

1 = True

2 = False

SECTION 7: STRATEGIES TO OVERCOME BARRIERS TO CONSUMPTION

1. Does increasing the availability of traditional grain-based products in supermarkets and school tuck shops encourage you to consume more?

1 = Yes

0 = No

2. How important is government support or subsidies for traditional grain farmers in influencing your consumption decision?

1 = Very important

2 = Somewhat important

3 = Not very important

4 = Not important at all

3. How can the university promote the consumption of traditional grains?

1 = Offering cooking classes

2 = Incorporating traditional grains into cafeteria menus

3 = Education and campaign awareness

4 = Food taste test

5 = Cultural revival and promotion

99 = Other (please specify)

What suggestion do you have for increasing the consumption of traditional grains among university students? (Open-ended question)

APPENDIX 2: STUDENT FOCUS GROUP DISCUSSION CHECKLIST

Group 1: Faculty of Agriculture and Environmental Science

Group 2 Faculty of Commerce

Group 3: Faculty of Social Sciences and Humanities

Group 4: Faculty of Science Education

SECTION 1: TRADITIONAL GRAIN CONSUMPTION

1. Mention the types of traditional grain-based products you consumed and how often?

2. What are the methods you use in preparing and cooking traditional grains?

3. What are some common traditional dishes in your culture or community?

4. How do your consumption patterns vary across different meal occasions (for example, breakfast, lunch, and dinner)?

SECTION 2: PERCEPTIONS OF TRADITIONAL GRAINS

1. What are the benefits of traditional grains?

2. Discuss the drawbacks of consumption of traditional grains among students?

3. Do university students' perceptions of traditional grains vary based on their demographic characteristics (age, gender and nationality)?

SECTION 3: FACTORS AFFECTING TRADITIONAL GRAIN CONSUMPTION

1. What factors affect the consumption of traditional grain-based products?

2. Do university students' consumption patterns of traditional grains vary based on their lifestyle factors (e.g., busy schedules, limited cooking skills)?

3. How important is cultural heritage in shaping your consumption patterns of traditional grain-based products?

4. Would you be willing to pay more for certified organic traditional grains-based products?

SECTION 4: BARRIERS TO CONSUMPTION OF TRADITIONAL GRAINS-BASED PRODUCTS

1. How do university students perceive the texture, taste and aroma of traditional grain-based products?

2. What barriers prevent you from consuming traditional grains-based products?

3. Are traditional grains available in your university tuck shops or nearby restaurants?

4. Would you try traditional grain-based products if recommended by friends or family members?

SECTION 5: STRATEGIES TO OVERCOME BARRIERS

1. What strategies can be employed to overcome the barriers to the consumption of traditional grains among university students?

2. What role do social media and online platforms play in promoting the consumption of traditional grains?

3. How can Bindura University promote the consumption of traditional grain-based products among students?

4. How can traditional grain-based foods be made more appealing to you?

Thank you for taking the time to complete this questionnaire. Your responses are greatly appreciated and will contribute significantly to the success of this research. Please be assured that all the responses will be kept confidential and anonymous.