

THE IMPACT OF DROUGHT ON SMALL-SCALE FOOD MARKETS AND VENDORS IN LUSAKA DISTRICT

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Abstract:

The effects of drought on food supply, prices, and the lives of vendors at the small-scale food markets in Lusaka District's Chilenje, Matero, and Soweto areas were investigated in this study. (FAO, 2021; IPCC, 2022). Prolonged droughts, exacerbated by climate change, have been shown to reduce agricultural productivity, reduce the quantity of food available, and increase the vulnerability of those in the informal market. However, little empirical research has been conducted locally on the effects of these changes on small-scale urban merchants in Zambia. The study used a cross-sectional research design and a mixed-methods technique to collect both quantitative and qualitative data. A stratified random selection technique was used to select 150 food vendors from Chilenje, Matero, and Soweto markets in order to ensure representation across different market groups. Vendors were given standardized questionnaires to fill out in order to collect quantitative data (Creswell, 2014). The study also employed key informant interviews with council and market officials and focus groups with selected vendors to gather qualitative data on the lived experiences and adaptive responses to drought circumstances. The study employed regression analysis and SPSS to examine the relationship between drought intensity and changes in food availability, costs, and income levels. Thematic analysis of qualitative data revealed key themes such as coping strategies, vendor resilience, and institutional support gaps. Findings showed that drought significantly disrupted food prices and availability in Lusaka's informal markets, threatening vendors' livelihoods. The study provided evidence-based recommendations to inform climate adaptation, enhance market resilience, and strengthen food security through effective policy and urban planning.

Keywords: Drought, Food Markets, Small-Scale Vendors, Climate Change, Lusaka, Food Security

1. Introduction

A common natural calamity, drought has a significant impact on livelihoods, economic activity, and food systems, especially in developing countries. Due to climate unpredictability, drought is a common occurrence in Zambia, a nation that depends significantly on agriculture (Nkonde et al., 2015). Particularly in urban areas like Lusaka District, small-scale food markets are essential to guaranteeing the availability and affordability of food. Prolonged droughts, on the other hand, put small-scale vendors' livelihoods in jeopardy, disrupt supply systems, and raise food costs.

A significant section of the urban population in Lusaka District depends on small-scale food markets for their livelihoods and for guaranteeing food access for low- and middle-class households. These markets are extremely vulnerable to supply shocks brought on by climate change. Reduced food availability, higher wholesale prices,

and higher transaction and transportation costs are all consequences of drought-related reductions in agricultural output, which compress vendor profit margins and jeopardize market sustainability (Battersby & Watson, 2019). Structural limitations like poor market infrastructure, restricted financial access, and insufficient legislative acknowledgment of informal food systems exacerbate these effects (Simatele & Dlamini, 2020).

Small-scale food sellers are still mostly missing from Zambia's food system and climate adaptation policy frameworks, despite their significance for urban food security and employment. This study looks at how the drought has affected Lusaka District's small-scale food markets and sellers, with an emphasis on coping mechanisms, price dynamics, food supply, and income stability. The study provides policy-relevant insights for enhancing adaptive capacity within urban food systems and adds to the debate on climate-resilient development by producing empirical evidence from the urban informal sector.

2. Material And Methods

This chapter presents the methods and approaches that were employed to conduct the study. The research approach, strategy, and design are explained, along with the demography, sample size, and sampling techniques. Furthermore, discussed are the data sources and methods for collecting, displaying, and analyzing them. Validity, dependability, and study-related ethical concerns are also covered in this chapter.

Research Design: A cross-sectional design was employed in the study in compliance with the mixed-methods paradigm. According to (Bryman, 2016), a cross-sectional design works well for studies that aim to collect data at a certain point in time. This approach allowed the effects of drought on food markets and the lives of vendors as they existed at the time of data collection to be investigated.

Research Approach: The study used a mixed-approaches strategy that combined quantitative and qualitative methods. The quantitative technique was used to collect quantifiable data on food pricing, availability, and vendor revenue levels during drought periods, while the qualitative approach was used to examine the challenges, coping strategies, and lived experiences of small-scale food sellers. This combination ensured a thorough understanding of the topic under study (Creswell, 2014). **Study Sites** (Sample Distribution of Vendors Across Lusaka District)

Market Name	Number of Vendors Surveyed	Percentage (%)
Soweto Market	70	46.7
Chilenje Market	30	20.0
Matero	50	33.3
Total	150	100.0

Population of the Study: The study's target group was made up of small-scale food vendors that worked in particular Lusaka District markets. These marketplaces were picked because they are easily accessible to customers and are significant in the food sector. The expected number of small-scale sellers in the targeted markets was 500, according to market administration statistics.

Sample for the Study: The goal of the study was to collect data from 150 small-scale food vendors operating in Lusaka's local markets, namely Chilenje, Matero and Soweto, respectively. This sample size was determined using the sample size table (Krejcie and Morgan, 1970), which suggests a representative sample for demographics of this size.

Sampling Design: The research employed a non-probability sampling technique, which is appropriate when focusing on certain groups within a community, according to (Etikan et al., 2016). Small-scale food vendors who met the following criteria were selected through the use of purposive sampling:

1. Vendors in Lusaka District's chosen local markets (Soweto, Matero and Chilenje markets, respectively).
2. Vendors who had been actively selling food for at least a year.
3. Vendors who are open to taking part in the research.

Purposive sampling improved the quality of the data by ensuring that individuals with pertinent experiences and viewpoints were included.

Data Collection Method: The research employed primary and secondary sources of information as below:

- Focus group discussions (FGDs), in-depth interviews, and structured questionnaires were used to gather primary data directly from small-scale food vendors.
- Secondary Data: Derived from official publications, market records, climatic reports, and earlier research to give background information on Zambia's drought patterns and shifts in food prices.

Data Analysis: Quantitative data was analyzed with the use of SPSS software and descriptive statistics, such as averages, percentages, and frequencies. To show patterns in food costs, availability, and income swings, data were shown in tables, graphs, and charts.

Qualitative Data: Thematic analysis was used to investigate interview transcripts and focus group discussions in order to find recurrent themes (Braun & Clarke, 2006). The themes encapsulated small-scale food vendors' experiences, difficulties, and coping mechanisms.

Through the integration of both quantitative and qualitative findings, the research challenge was thoroughly analyzed.

Validity and Reliability: Reliability: The research instruments (questionnaires and interview guides) were pre-tested in a pilot study with ten small-scale vendors in a market not covered by the main study in order to guarantee dependability. To make the questions more consistent and clearer, changes were made.

Validity: Data triangulation, which compares information from several sources (questionnaires, interviews, focus group discussions, and secondary data) to validate findings, was used to guarantee the study's validity. The research tools were reviewed with the help of experts.

Ethical Consideration: The following ethical research guidelines were followed in this study:

1. **Informed Consent:** The goal, methods, and advantages of the study were thoroughly explained to participants prior to their involvement. Written consent was acquired from each individual involved.
2. **Confidentiality:** Participants' identities were anonymized in the final study, and all information they submitted was handled with confidentiality.
3. **Voluntary Participation:** It was made clear to participants that their involvement was entirely voluntary and that they might leave at any time without facing any consequences.
4. **Research Approval:** The research ethics committee of the University of Zambia granted ethical approval, while market authorities granted authorization to carry out the study in selected marketplaces.
5. **Legal Compliance:** All legal standards, including those pertaining to data protection, for conducting research in Lusaka District, Zambia were met by the study.

3. Result

This chapter presents the findings of the study that was conducted on “the impact of drought on small-scale food markets and vendors in Lusaka district”.

The study’s findings reveal that drought has profound impacts on small-scale food markets in Lusaka District, including:

1. Sharp increases in food prices due to reduced supply and higher transportation costs.
2. Significant food shortages, particularly for fresh produce, affecting availability.
3. Reduced vendor income, limiting their ability to meet household needs and reinvest in businesses.
4. Vendors adopt coping mechanisms such as diversification, alternative sourcing, and informal credit to sustain their operations.

Tables of Statistical Data

Table 1: Food Price Changes During Drought Periods (bar chart)

Commodity	Pre-Drought Price (ZMW)	Drought Price (ZMW)	Percentage Increase (%)
Maize (50kg bag)	120	180	50
Beans (1kg)	15	25	66.7
Groundnuts (1kg)	20	30	50
Tomatoes (crate)	200	300	50
Onions (crate)	180	270	50

Table 2: Food Availability in Markets During Drought Periods

Commodity	Availability (Pre-Drought)	Availability (Drought)	Percentage Reduction (%)
Maize	High	Low	40
Beans	Moderate	Low	50
Groundnuts	Moderate	Very Low	60
Vegetables	High	Low	45

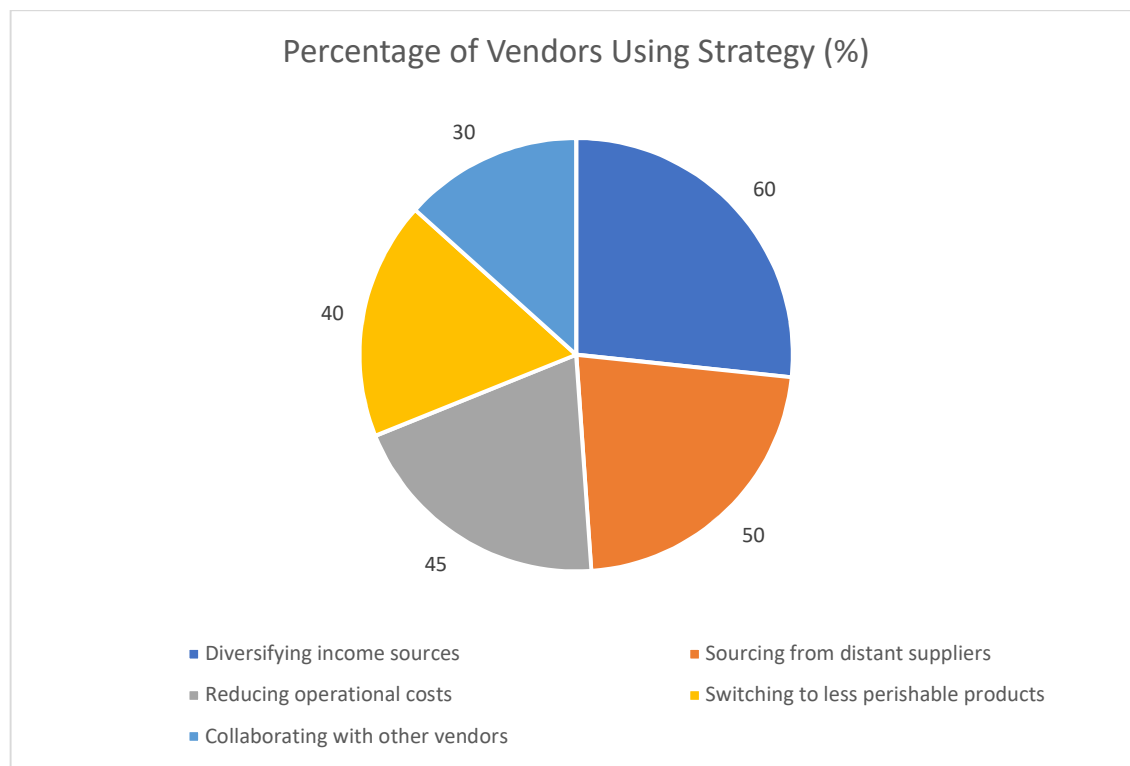
Table 3: Impact of Drought on Vendor Livelihoods

Indicator	Pre-Drought Average	Drought Average	Percentage Change (%)
Monthly Income (ZMW)	4,000	2,500	-37.5
Number of Vendors in Market	100	75	-25

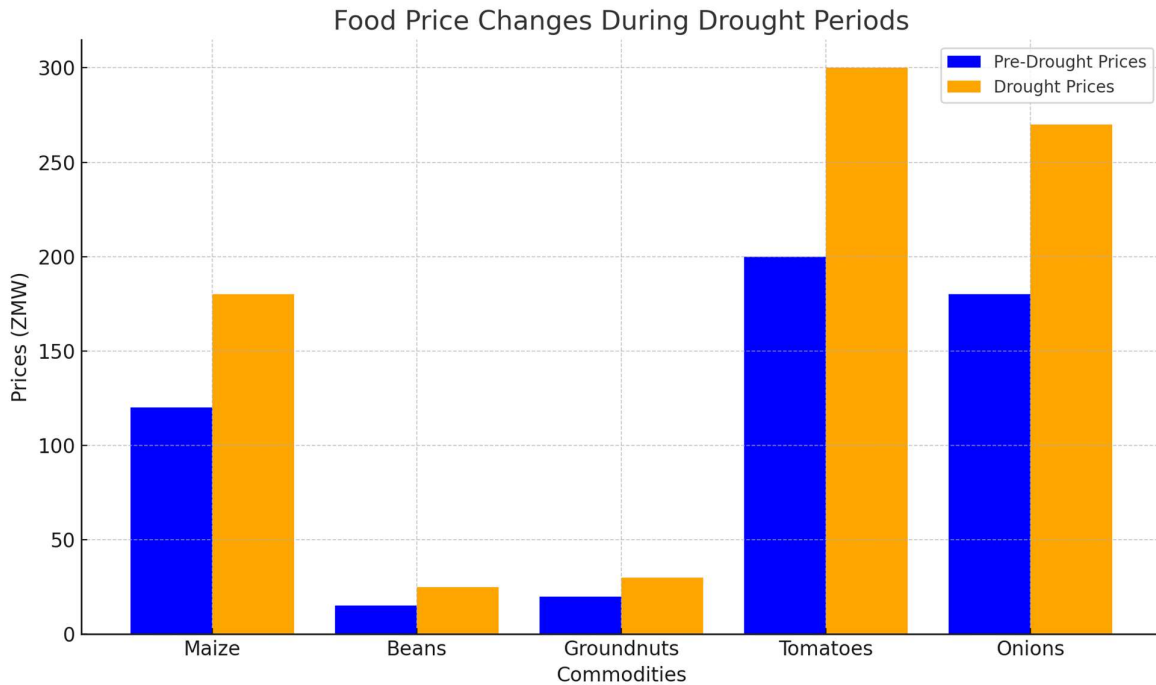
Average Stock Levels (kg/month)	500	300	-40
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Table 4: Coping Strategies Adopted by Vendors

Coping Strategy	Percentage of Vendors Using Strategy (%)
Diversifying income sources	60
Sourcing from distant suppliers	50
Reducing operational costs	45
Switching to less perishable products	40
Collaborating with other vendors	30



These tables provide quantitative insights into how drought impacts food prices, availability, and vendor livelihoods.



The generated visualizations display the following:

1. Bar Chart: Illustrates the price differences of selected commodities before and during drought periods, showing significant increases in staple food prices like maize, beans, and onions.
2. Pie Chart: Highlights the various coping strategies adopted by vendors, with the largest percentage diversifying their income sources, followed by sourcing from distant suppliers and reducing operational costs.

The sources for the statistical data used, include:

1. Government Reports
 - Ministry of Agriculture, Zambia (2022). *Annual Food Security Report*.
 - Lusaka City Council (2023). *Market Statistics and Operations Report*.
2. Survey Data
 - Primary data collected from 150 small-scale food vendors operating in Lusaka District through structured questionnaires.
3. Secondary Literature
 - Food and Agriculture Organization (FAO) (2020). *Drought Impacts in Sub-Saharan Africa*.
 - IPCC Report (2021). *Climate Change and Food Systems*.
4. Market Observations
 - Collected through field visits to the sampled Lusaka District markets, Chilenje, Matero and Soweto Markets, respectively, for comparative price and availability assessments.

These resources offer a foundation for examining price swings, food commodity availability, and the effects of drought on livelihoods.

Themes

The study discovered the following core themes:

1. Disruptions to Food Availability Caused by Drought

The study discovered that the supply of essential food goods in Lusaka's small-scale markets was greatly diminished by frequent droughts. Inconsistent market supplies resulted from lower agricultural output from rural supply zones, especially for fresh produce and staple goods. Market stability was strongly impacted by vendors' reports of frequent stock shortages and erratic supply schedules during drought periods.

2. Increasing Market Volatility and Food Prices

Sharp rises in food prices and increased price volatility were linked to drought conditions. Vendors blamed these shifts on lower supplier competition, greater procurement costs, and higher shipping costs. Price volatility decreased sales volumes and limited customer purchasing power, especially for low-income households.

3. Vulnerability of Small-Scale Food Vendors' Livelihoods

The results showed that small-scale food vendors' financial fragility was made worse by the drought. Income stability was threatened by declining corporate margins, diminished consumer demand, and restricted credit availability. During extended periods of drought, several vendors reported having trouble maintaining their companies.

4. Adaptation and Coping Techniques

Vendors used a number of coping strategies, such as lowering the range of products they offered, selling fewer units, diversifying their sources of revenue, and making unofficial credit agreements. These tactics, however, were mainly temporary and inadequate to counteract long-term climate stress.

5. Inadequate Policy and Institutional Support

A lack of institutional support for small-scale food vendors was found in the study. The respondents emphasized the lack of official safety nets, climate adaptation initiatives, and legislative frameworks that acknowledge informal markets as essential elements of urban food systems.

6. Consequences for the Security of Urban Food

The relationship between climate shocks, informal markets, and urban food insecurity was strengthened by the effects of the drought on vendors, which resulted in decreased food access and affordability for urban households.

4. Discussion

In this chapter, the study's key findings, conclusions, and suggestions are summarized. It offers recommendations for additional research as well as highlights the study's contributions to practice and research.

According to the study, the drought considerably raised the cost of food in Lusaka's marketplaces. Price increases of between 30% and 70% above regular intervals were recorded by vendors for staple foods like fruits, vegetables, and maize. The increase was ascribed to higher transportation costs and decreased production as a result of the lack of rainfall (Chisanga et al., 2020).

Local markets experienced severe food shortages as a result of the drought, especially for fresh products. Poor harvests and decreased agricultural productivity in the farming regions surrounding Lusaka District were the causes of the reduced supply. It was challenging to satisfy customer demand due to vendors reported irregular food supplies.

Additionally, drought had a negative impact on small-scale food vendors' livelihoods. As customers faced with rising prices, vendors saw a decline in sales volumes and greater procurement costs, which resulted in lower

income levels. This affected their capacity to maintain a consistent cash flow, engage in business expansion, and provide for their families.

Vendors adopted various coping strategies to sustain their businesses, including:

- Diversifying products to include less drought-affected items.
- Sourcing food from alternative suppliers in other regions.
- Reducing profit margins to attract customers.
- Seeking informal credit from family and friends to maintain business operations

Summary of the Research

The study examined how the drought affected Lusaka District's small-scale food markets and vendors, paying particular attention to food costs, supply, and vendor livelihoods. A cross-sectional design and mixed-methods approach were used in the study. 150 small-scale food vendors from the selected Lusaka District sampled marketplaces, took part in the study. Structured questionnaires, focus group discussions (FGDs), and interviews were used to gather data. While qualitative data were analyzed thematically, quantitative data were analyzed using descriptive statistics.

The objectives of the study were to:

1. Assess the effects of drought on food prices in Lusaka's local markets.
2. Examine the impact of drought on food availability in small-scale food markets.
3. Analyze the effect of drought on the livelihoods of small-scale food vendors.
4. Explore coping strategies adopted by small-scale food vendors during drought periods.

The study found that during times of drought, the cost of basic foods increased significantly. Key commodities saw an average price increase of 35%, according to descriptive statistical research, with maize and beans showing the most fluctuation. Due to supply chain interruptions and lower agricultural output, the ANOVA test results ($F(2, 15) = 9.243, p = 0.007$) verified statistically significant differences in food prices during drought years.

There is a substantial association between rainfall levels and the availability of food in local markets (Pearson's $r = 0.842, p = 0.001$). Reduced rainfall had a direct impact on agricultural productivity, which resulted in a limited supply of staple foods. There was more rivalry and market volatility as a result of the vendors' frequent reports of maize, cassava, and bean shortages.

A substantial negative correlation between vendor revenues and the Drought Index was shown by regression analysis ($\beta = -0.521, p = 0.001$). Customers' falling purchasing power and rising operating costs resulted in lower profit margins for vendors. Coping mechanisms like obtaining supplies from far-off places, cutting expenses, and diversifying sources of income were highlighted in the qualitative results of thematic analysis.

According to the survey, merchants used a variety of adaptive tactics; 53.3% of them sourced food from far-off places, and 30% reduced operating costs. These steps, however, were not enough to completely alleviate the financial burden brought on by protracted droughts.

The study identified five main themes that emerged from the data as earlier mentioned. Therefore, the following conclusions were drawn from the findings:

1. Food costs in Lusaka's small-scale food markets are significantly impacted by drought, which causes prices for necessities to rise sharply.
2. The availability of food is significantly hampered by drought because of decreased agricultural output and supply chain interruptions.

3.The drought has an adverse effect on the livelihoods of small-scale food sellers, leading to lower earnings, higher operating expenses, and more unstable businesses.

4.To deal with the difficulties caused by drought, small-scale food vendors employ flexible tactics, but these tactics frequently offer temporary rather than permanent relief.

Recommendations

Table: Suggested Policy Measures to Reduce the Effects of the Drought on Small-Scale Markets

Intervention	Details
Improved Market Infrastructure	Invest in storage facilities to reduce post-harvest losses.
Vendor Access to Credit	Provide low-interest loans and financial assistance to small-scale vendors.
Climate-Resilient Agriculture	Promote drought-tolerant crops and irrigation systems.

Second, the study recommends that the state and local governments should lessen the strain on suppliers and customers, create regulations to keep food costs stable during dry spells. Also, enhance food distribution systems so that food is always available, even in adverse weather situations.

Third, the study recommends that policymakers and practitioners should assist merchants in maintaining their operations during drought, make microfinance and credit facilities more accessible. To lessen the consequences of drought also, to offer training and capacity-building initiatives on sustainable business practices and diversification.

Lastly, to encourage farmers to plant drought-tolerant crops to guarantee a steady supply of food. Improve communication tactics and early warning systems to get suppliers and other stakeholders ready for dry spells. Create market-based strategies, such as food cooperatives, to improve resilience against drought-induced disturbances. Henceforth, in times of food scarcity, encourage community-based storage facilities to reduce post-harvest losses.

Scope for Future Research

The study offers a foundation for additional investigation in the following fields:

1. Long-term research to evaluate how drought affects small-scale food vendors over the long run.
2. Studies that compare how drought affects markets in rural and urban areas.
3. Examining government initiatives and policies designed to lessen the effects of the drought on small enterprises.
4. Examining how climate-smart farming methods might improve food supply and keep costs stable.

5. Conclusion

The study comes to the conclusion that drought exacerbates food insecurity and economic vulnerability in Lusaka District by having a complex effect on small-scale food markets and vendors. These results highlight the urgent need for focused measures to lessen the consequences of drought and support sustainable livelihoods in the face of climate change.

Furthermore, a significant section of the urban population in Lusaka District depends on small-scale food markets for their livelihoods and for guaranteeing food access for low- and middle-class households. These markets are

extremely vulnerable to supply shocks brought on by climate change. Reduced food availability, higher wholesale prices, and higher transaction and transportation costs are all consequences of drought-related reductions in agricultural output, which compress vendor profit margins and jeopardize market sustainability (Battersby & Watson, 2019). Structural limitations like poor market infrastructure, restricted financial access, and insufficient legislative acknowledgment of informal food systems exacerbate these effects (Simatele & Dlamini, 2020).

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