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Research Article

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Assessment of the Economic Effects of Drought and Strategic Adaptation Mechanisms Among Small and Medium Enterprises (SMES) in Lusaka District, Zambia

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ABSTRACT

Drought is a prolonged period of abnormally low precipitation, leading to a significant water deficit that adversely affects the environment, agriculture, and various socio-economic activities. Severe weather phenomena, including droughts, floods, wildfires and hurricanes inflict rapid and significant economic losses among businessmen and women. They interrupt commercial activities, harm critical infrastructure, wipe out agricultural production, and force many communities to relocate. The aim of this study was to assess the economic effects of drought and identify strategic adaptation mechanisms employed by Small and Medium Enterprises (SMEs) in Lusaka District, Zambia. A cross-sectional research design was used in this study. This study used a stratified random sampling method to select 384 participants (owners and managers of SMEs) from SMEs within such targeted sites as Town Centers, Soweto market, City Market, and Buseko Market.

Approval was obtained from the University of Zambia Biomedical Research Ethics Committee (UNZABREC) REF. No. 5913-2024 and the Lusaka City Council to ensure ethical compliance for the study. Respondents were informed that participating in this study was completely voluntary and that, they were free to withdraw from the study at any time without any consequence. The participants were informed that taking part in the study would not put them at risk of harm and that they would not gain any immediate personal benefits from their involvement. Respondents were also assured that the collected data would not be disclosed to anyone and that confidentiality and anonymity would be maintained throughout the study. After all aspects of the study had been clearly explained and the participants had demonstrated understanding, written informed consent was obtained from each respondent prior to the commencement of data collection. Primary data was collected using a structured questionnaire with closed-ended questions. The collected primary data was analysed using SPSS version 28, and the analysed data were presented using pie charts and tables. The results from this study demonstrated that, most of the respondents (63.2%) reported that drought lead to reduced operational costs and increased profitability among Small and Medium Enterprises (SMEs) in Lusaka District. The study also found that, few study participants (20%) indicated that, drought decreased revenue, increased operational costs, and caused challenges to the continuity of businesses.

The findings from this study found that, most of the respondents (52.1%) diversified their products and services to meet changing demands of their customers during droughts. In contrast, increasing staff wages emerged as the second most significant strategy adopted by 27.1% (104) of SMEs. The study further disclosed that, the majority of respondents (82.1%) reported that limited access to financial resources and credit facilities emerged as a major challenge faced by small and medium enterprises in implementing effective drought adaptation strategies in Lusaka District of Zambia. While the majority of SMEs reported increased profitability and reduced operational costs due to strategic adaptations, a notable minority highlighted challenges such as revenue loss, increased expenses, and operational disruptions. The author recommends that, to enhance resilience, SMEs in Lusaka District should build on adaptive strategies such as product diversification and wage adjustments, while policymakers and financial institutions should work to overcome the critical barriers of limited access to credit and financial resources.

Introduction

Drought refers to long dry season of the natural cycle of climate that may take place anywhere on earth. It is a disaster that develops slowly where the lack of precipitation occurs hence leading to water shortage. The health, agricultural systems, economies, energy and environmental systems can be severely

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affected by drought. Droughts invariably impact an estimated 55 million individuals around the world every year and they are the gravest threat to animals and agriculture in almost all regions of the world. Drought endangers the livelihood of people, exposes them to more health hazards and death, as well as contributes to mass migration.

Forty percent of the world suffers water shortages and 700 million people are to 700 million people at-risk of being displaced due to drought by 2030. The global warming experienced due to climatic change is turning already dry areas drier and the wet areas wet. This would imply in the dry areas, that with an increase in temperature, water evaporates faster and therefore heightens the chances of drought or extends the droughts. Out of the 1000 disasters recorded of natural hazards over the last 10 years, 80-90% have been caused by floods, droughts, tropical cyclones, heat waves and severe storms [1].

Drought is reported to be a serious problem in Sub-Saharan Africa where majority of the people live on rain-fed subsistence farming and traditional water management systems. Colonization and alleviation of drought effects in hotspots regions is an imperative area that requires the need to adapt to an increasing population within a shifting climatic environment. The complexity of drought and the fact that it has been responsible to many people compared to any other natural hazard is illustrated by the fact that it has a global presence and its effects are not distributed equally. This will require a sensitive grasp of the phenomenon and the various coping mechanisms that afflicted groups of people use [2].

The problem of droughts in Sub-Saharan Africa is not just an environmental issue since it carries a complex network of challenges which have widespread impacts in various sectors. These disasters have massive effects on the human health, food security, economic stability, infrastructure, natural ecosystems and even national and international security. Of concern is their role in malnutrition and famine, which is skewed toward vulnerable populations, including women, children, and the senior population. In any other case, drought frequently results in the falling sales to farm clients, cash flow issues and rising cost by way of diminished personnel and inventory [3].

Drought in Sub-Saharan Africa is a trigger of socio-economic disasters, which are exacerbated by the susceptibility of the area to climate change, which causes unpredictable rainfall, extended droughts, and poverty. This enhances the negative impacts on food production, water resources, and millions of lives. The fact that droughts recur causing a humanitarian crisis elucidates the urgency of a strong and proactive intervention [4,5].

Moreover, the SMEs might experience shortage of entrepreneurial and managerial skills, falling populations, skills shortages, business discontinuance and inefficient infrastructure. These problems are enhanced by a lack of state support or incentives. The effects are not limited to the agricultural sectors, as they also have an influence on a wide variety of economic, health, and social outcomes to the families and communities in drought-stricken regions. As an example, average revenues of Oklahoma grain handling and fertilizer supply firms dropped by 30 percent in 2004-2007 due to droughts (Lake, 2008). It is paramount to conceive the entire drought economic impact to ensure that proper policies and programs to mitigate drought are crafted [6].

Method And Materials

This study adopted a cross-sectional research design to examine the economic impacts of drought and the adaptive strategies employed by small and medium enterprises (SMEs) in Lusaka District, Zambia. A stratified random sampling approach was applied to select 384 respondents, comprising SME owners and managers from Town Centres, Soweto Market, City Market, and Buseko Market. Ethical approval for the study was granted by The University of Zambia Biomedical Research Ethics Committee (UNZABREC), reference number 5913-2024, as well as by the Lusaka City Council, ensuring full compliance with ethical research standards. Participants were explicitly informed that their involvement was voluntary, with the option to withdraw at any stage without consequence. They were assured that participation would not expose them to harm and would not provide immediate personal benefits.

Confidentiality and anonymity were emphasized, with guarantees that no identifying information would be collected or disclosed, and that the researchers would not access any data capable of revealing individual identities during or after the study. Prior to data collection, respondents received detailed written information outlining the study's objectives, procedures, potential risks, and anticipated benefits. This information was communicated either in group sessions or individually, depending on the context. The researcher emphasized that personal identifiers such as names, phone numbers, passport details, or residential addresses would not be recorded at any stage, thereby safeguarding privacy, respect, and trust.

Once participants demonstrated understanding of these conditions, written informed consent was obtained. Primary data were collected using a structured questionnaire consisting of closed-ended items from 25/11/2024 to 30/12/2024. Responses were analysed using SPSS version 28, with results presented in tables and pie charts. All study materials were securely stored, with access restricted exclusively to the researcher, thereby reinforcing ethical standards, protecting participant privacy, and minimizing risks such as stigma or workplace repercussions. To enhance validity, the instrument design process incorporated a comprehensive review of existing literature and tools from related studies conducted locally and internationally. This allowed integration of established findings, best practices, and proven methodologies relevant to workplace productivity, teacher health, and substance abuse.

The questionnaires underwent rigorous content validation by the researcher's supervisor to ensure alignment with the intended constructs. Additionally, experts from the University of Zambia's School of Business reviewed the instruments and study design, providing feedback that strengthened methodological rigor and credibility. Reliability was further tested through a pilot study conducted in selected Lusaka markets, using a small sample of SMEs excluded from the main study to avoid bias. The pilot assessed clarity, coherence, and feasibility of the questionnaires, identifying ambiguities and logistical challenges that were

subsequently addressed. Cronbach's alpha was employed to evaluate the internal consistency of items measuring the economic impact of drought and adaptation strategies among SMEs.

This statistical test confirmed that the survey items reliably captured the intended concepts, thereby ensuring accuracy and consistency in data collection. Trained research assistants administered the questionnaires to randomly selected participants across the designated markets, ensuring uniformity in the administration process. The estimated time required for each participant to complete the survey ranged between ten and fifteen minutes. Collectively, these measures safeguarded validity, reliability, and ethical integrity throughout the study.

Results

Table 1: Demographic Data

VARIABLES		FREQUENCY	PERCENTAGE (%)
AGE (YEARS)	25-34	25	8.3%
	35-44	141	47.0%
	45-54	99	33.0%
	55-65	35	11.7%
MARITAL STATUS	Divorced	26	8.7%
	Married	239	79.7%
	Separated	21	7.0%
	Single	14	4.7%
SOCIAL CLASS	Lower Class	12	4.0%
	Middle Class	130	43.3%
	Upper Class	158	52.7%
RELIGION	Christian	291	97.0%
	Muslim	9	3.0%
	Diploma	5	6.3%
LEVEL OF EDUCATION	Bachelor degree	283	94.3%
	Master's degree	12	4.0%
NUMBER OF CHILDREN	Five	26	8.7%
	Four	71	23.7%
	One	87	29.0%
	Three	76	25.3%
	Two	38	12.7%
	Zero	2	1.7%

Table 1 reveals a predominantly married population (79.7%), with most participants identifying as Christians (97%) and holding Bachelor's degrees (94.3%), indicating a highly educated and religiously homogenous sample. Additionally, the majority belong to the upper (52.7%) and middle (43.3%) social classes, reflecting a relatively affluent group. The study further found that nearly half of the respondents (47%) were within the 35–44 age group, indicating that this cohort represented a significant portion of the sample population.

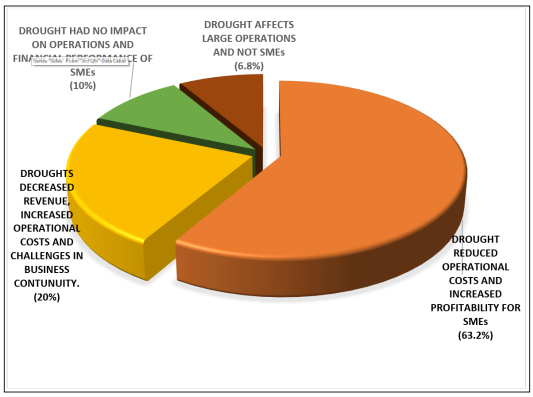

Figure 1: Effects of Drought on the Financial Performance and Operations of Smes

Figure 1: Demonstrates that, most of respondents (63.2%) reported that drought lead to reduced operational costs and increased profitability among Small and Medium Enterprises (SMEs) in Lusaka District. The results in figure 1 also shows that, few study participants (20%) indicated that, drought decreased revenue, increased operational costs, and caused challenges to the continuity of businesses. The study also revealed that a small proportion of respondents (10%) reported that drought had no impact on the operational or financial performance of small and medium enterprises in Lusaka District, Zambia.

Table 2: Strategic Adaptation Mechanisms Adopted by Smes to Mitigate the Effects of Drought

	STRATEGIC ADAPTATION MECHANISMS ADOPTED BY SMEs TO MITIGATE EFFECTS OF DROUGHT	FREQUENCY	PERCENTAGE
1	Increased staff wages	104	27.1%
2	Diversified products and services to meet changing demands	200	52.1%
3	Reduced business operations and shutting down temporarily	60	15.6%
4	Reduced advertising and marketing efforts	20	5.2%
TOTAL		384	100%

Table 2 Demonstrates that, most of the respondents 200 (52.1%) diversified their products and services to meet changing demands of their customers during droughts. In contrast, increasing staff wages emerged as the second most significant strategy adopted by 27.1% of SMEs (104 respondents). In addition, a small proportion of respondents (60; 15.6%) indicated that small and medium enterprises reduced their business operations and temporarily shut down in order to mitigate the effects of drought.

The study further revealed that a small proportion of respondents 20 (5.2%), reported that some small and medium enterprises reduced their advertising and marketing activities during the drought. This approach was adopted as a cost-cutting measure, helping businesses conserve resources and redirect limited funds toward essential operations such as maintaining inventory, paying wages, and implementing adaptation strategies.

Table 3: Challenges Smes Face in Implementing Effective Drought Adaptation Strategies

	CHALLENGES SMES FACE IN IMPLEMENTING EFFECTIVE DROUGHT ADAPTATION STRATEGIES	FREQUENCY	PERCENTAGE
1	Limited access to financial resources and credit facilities	316	82.3%
2	A surplus of raw materials available despite the drought	27	7.0%
3	Overabundance of skilled labor available for adaptation efforts	5	1.3%
4	The absence of any government regulations on drought adaptation	36	9.4%
TOTAL		384	100%

Table 3 demonstrates that, the majority of respondents 316 (82.1%) reported that limited access to financial resources and credit facilities emerged as a major challenge faced by small and medium enterprises in implementing effective drought adaptation strategies in Lusaka District of Zambia

Discussion of the Findings

Effects of Drought on the Financial Performance and Operations of Small and Medium Enterprises (smes)

The current results that the majority of the SMEs in Lusaka (63.2) reported a decreasing cost of operations and increasing profitability in case of drought is slightly unusual on the international scale. These are quite comparable to the results in Vietnam where certain climatic conditions such as rainfall and temperature were positively related to the performance of firms in the agricultural listed companies, but other conditions such as wind and humidity were not significant. This would mean that the implication of climate variability would bring about sector specific benefits in certain aspects where companies could seize the opportunities to be able to exploit change in availability of resources or in market demand [7].

However, the findings of the Lusaka do not align with that of the general research world that is inclined to link drought with poor financial implications, including low productivity, the high costs and high risks of bankruptcy. This is possibly because the local market forces such as the SMEs in Lusaka have an advantaged competitive advantage in the larger firms are suffering or because of the sectoral structure whereby some SMEs might be in less water intensive sectors. Thus, the Lusaka evidence is comparable to other positive climate-performance relations in the rest of the world, but an outlier in the larger drought story of a drought as a mostly negative economic shock.

Besides, the results that 20% of Lusaka SMEs had lost revenue, increased operational expenses, and difficulties in operating are not only comparable to the prior results in Botswana, but also specifying that the water disruption severely decreased SME returns and monthly profits. These results can be correlated with those obtained in the sub-Saharan Africa, where El Niino rains due to the influence of El Niino disrupted the hydroelectricity, water supply, and business operations in Zambia, Botswana, and Kenya.

This is comparable to the already favorable outcomes of the study at hand that suggest that all infrastructure deficits as a result of drought could have a direct and adverse effect on the competitiveness and development of SMEs. This further lends credence to the fact that SMEs in resource-starved setting are particularly vulnerable to service outages, since they greatly rely on consistent water and electricity supply to control their day-to-day operations. Moreover, the findings of Lusaka are supported by broader evidence in Africa which suggests that major disruptions can happen across urban economies in situations where there are moderate climatic abnormalities, which indicates how sensitive SME ecosystems are when urban infrastructure is weak [7,8].

Otherwise, the finding that 10 percent of Lusaka SMEs reported being not influenced by drought is comparable to other studies that explore resilience in Africa and emphasize the heterogeneity of exposure and adaptation capacity of companies. An example is research conducted in Ethiopia which showed that SMEs diversified in their supply chain and access to alternative source of water were more susceptible to absorb drought shocks. The results are consistent with the literature in the field of resilience on the firm level, which means that a climate-induced disruption can be reduced by the adaptation strategies at the firm level, such as investment in water-saving technologies, diversification of the input, and flexibility of the business model. These results can be compared to the Lusaka evidence, and this is based on the assumption that a particular group of SME is able to possess structural or strategic benefits that allows them to be maintained in case of drought conditions. The relevance of the resilience-building measures in this regard can be explained by the fact that the adaptive capacity of the firms will allow them mitigate the impact of the environmental stressors and place them in a better position to continue their operations [9-11].

More to the point, 6.8% of respondents in Lusaka are of the view that major operations are more vulnerable to drought than SMEs is congruent with other research studies by establishing that large agribusinesses to be prone to systemic drought due to their magnitude and dependence on extensive supply chains. The impression strikes a chord with the concept that larger firms are more susceptible to systemic shocks due to their magnitude, which will be relayed throughout a series of nodes of production and distribution.

However, the experience of Latin America suggests the opposite, as SMEs respond to drought disproportionately due to the weak financial cushions, overdependence on the provision of local resources, and the weaker institutional basis. Lusaka minority view is similar to some of the findings of other international researches but is not associated with the mass discourse in the world society where SME vulnerability is viewed as the significant problem. This resistance shows the complexity of the effects of drought that may vary not only in the size of a firm, but also in the industry, location, and the institutional environment [12,13].

Altogether, the results of the Lusaka can be related to some of the industry-specific studies, which discover positive or neutral impacts of drought, but not the international narrative that drought leads to the poor performance of SMEs. These results are consistent with the broader knowledge that the impacts of drought are very specific to the context and the impacts of drought depend on infrastructure resilience, industry structure as well as adaptive capability. The comparative study concurs with the international calls that require disaggregated studies that are sector specific in order to match local outcome with international outcomes.

It emphasises the need to focus on the careful resilience programs that are specific to the SMEs that operate within the resource limited settings where the market instability and the vulnerability of infrastructures enhance vulnerability. Lastly, the case of Lusaka contributes to the literature that already underlines the heterogeneity of climate effects on businesses and highlights why there should be context-specific policy interventions and adaptive business reactions.

Strategic Adaptation Mechanisms Adopted by Smes to Mitigate the Effects of Drought

The findings of this research indicate that, majority of the respondents 200 (52.1%) diversified their products and services to adapt to the fluctuating needs of its customers in case of droughts. Conversely, the second most important strategy that 27.1% of SMEs (104 respondents) embraced was raising the wages of the staffs. Besides this, a small percentage of the respondents (60; 15.6%) said that small and medium enterprises minimized their business activities and permanently closed down to alleviate the impact of drought.

The research also indicated that a low percentage of the respondents, 20 (5.2 percent), indicated that some of the small and medium enterprises have cut their advertising and marketing expenditures in case of drought. This practice was undertaken as an efficiency strategy to save costs and enable companies to save up on scarce resources and channel the saved funds to other critical functions like stocking and keeping inventory, wages as well as implementing adaptation strategies.

The results of the study show a differentiated pattern of SME drought response which can be analytically located along an ex anteex post adaptation spectrum commonly used in climate resilience literature. The diversification of products and services as the most prevalent (52.1%), indicates that there is a strong tendency toward an anticipatory, ex ante response, as the responses to climate-induced shocks are exercised through altering the business model. This is consistent with the evidence of the region that has put more focus on diversification as a low entry, high impact resilience measure amidst the drought prone economies.

According to the main aspects of the enterprise level of drought preparedness are diversification of products, markets andcustomer groups, especially where formal insurance and irrigation infrastructure are inadequate. On the same note, illustrate that Kenyan and Senegalese SMEs that are diversified in the contemporary climate variability context are much more probable to prepare to confront alteration in the future, indicating that current adaptation behavior conditions more lasting resilience pathways [14,15].

In addition, such a cross-context convergence indicates the idea that diversity is not only a coping strategy but a strategic one that incorporates the management of climate risk into daily business decisions. Similar evidence exists in Ghana, which also supports this interpretation as SMEs and social enterprises that implement demand-side diversification and supply-chain flexibility have been found to be more resilient to revenue shocks when responding to climate shocks. The uniformity of these results highlights diversification as a pillar of SME resilience within Sub-Saharan Africa, especially in those economies that are typified by climatic sensitive value chains [16].

Contrary to that, the observation that 27.1% of SMEs raised wages of staff in drought presents a more unclear adaptation cue. Wage increases unlike diversification do not feature significantly in the climate adaptation literature as a strategy to enhance resilience. Instead, this reaction seems more consistent with the short-term stabilization of internal activities, which may be focused on retaining talented employees or maintaining employees under pressure. Warn that in an environment in which financial and institutional constraints are binding, SMEs might focus on sustaining the continuity of operations and not investing in adaptive technologies, or process innovation. In this respect, wage growth can be a sign of constrained choice, but not strategic adjustment, especially when no complementary policies are implemented, like productivity or digitalization or climate-intelligent technology.

This result is opposed to evidence in Ethiopia which shows that SMEs using extension services, early warning systems, and water-efficient technologies can implement adjustments to improve efficiency instead of adding to recurrent labor costs [15,17].

Other than that, the shrinkage of the operations or the temporary shutdowns reported by 15.6% of the respondents are more evidently suggestive of ex post, reactive coping. This trend is more commonly recorded in dry-prone environments where businesses do not have the resources, information, or institutions necessary to predict and control climate risks note that drought effects in Sub-Saharan Africa have a tendency to translate to the disruption of livelihood and contraction of the economy when preparedness systems are fragile, and firms are forced into defensive mechanisms that destroy business continuity. The fact

that the current outcomes are close to those reported in Ethiopia due to SMEs closing down due to weak institutional backing supports the explanation that closures are symptoms of the low adaptive capacity but not the intention to choose risk. Reactions of this nature can offer a temporary reprieve to operating losses and at the same time increase long term susceptibility through disruption of supply chains, market presence weakening, and loss of employment security [18,17].

Besides this, the relatively low percentage of SMEs that scaled down advertising and marketing operations (5.2%), also demonstrates the conflict between short run cost containment and long-term durability. Although reducing marketing spending can save the few resources in case of drought, based on comparative evidence in Ghana, keeping customers informed, especially via low-cost digital channels, boosts the performance of SMEs in the event of a climate shock. Companies that maintain contact and publicity in the market are in a better position to maintain the demand and adjust to changing consumerism. The difference between the two results suggests that there might be an adaptation gap in the context of the study, in which limited access to or use of digital access or skills would restrict the use of marketing as a tool of resilience by SMEs instead of considering it a discretionary expense [16].

Combined, these results have shown that SME responses to drought occur differently, but are rather indicative of different levels of anticipatory capacity, which are influenced by access to finance, information, technology, and institutional support. The high dependency on the diversification places most SMEs in an ex-ante pathway of adaptation that is in line with regional best practice, whereas the continuation of wage change, operational closure, and selective cost-reduction emphasizes permanent structural constraint that drives a faction of enterprises into reactive coping. This synthesis supports wider evidence in Sub-Saharan Africa that the effectiveness of drought resilience of SMEs not only depends on enterprise initiative but also the enabling environments that can make firms avert temporary survival tactics to longer-term, climate-resilience business models.

Challenges Smes Face in Implementing Effective Drought Adaptation Strategies

In the Lusaka District study, it is indicated that limited financial means are the most influential hindrance in drought adaptation among the SMEs, with access to credit facilities being cited as 82.1 percent by the respondents. These results are heard with the study by which can be found in the northwestern part of Bangladesh where frequent droughts had created a pattern of poor income and restricted the power of investments. Similar to the smallholders of Bangladesh, the Lusaka SMEs are in a vicious cycle in which their insufficient financial resources restrain their capacity to invest in robust technologies or a variant production.

In both examples, businesses have no choice but to implement low-cost but short-term coping mechanisms, a trend that highlights why limited financial access continues to create vulnerabilities and cut down on the timeframe of proactive adjustment. This cumulative set of data depicts that financial capital is not only one out of many variables, but the key to survival in drought-affected economies [19].

The comparatively low percentage of Lusaka respondents (9.4) who cited absence of government regulations as a problem indicates that SMEs consider financial and operational impediments as the problem of the day as opposed to regulatory loopholes. This fact is similarly reflected in the works by who focuses on the significance of institutional support in which smallholders are vulnerable to weak interventions also argue that systemic vulnerabilities in supply chains, labour retention, and economic stability increase the effects of drought and that the current vulnerability measurement tools tend to miss the realities of micro-level businesses.

The Lusaka findings, however, seem to reflect larger trends in which institutional arrangements are present but they are not operationalized and the firms are vulnerable to structural flaws. This is also supported by the report of Zambia which states that the country has a very elaborate climate resiliency framework, but the implementation is thwarted by poor coordination that is characterized by ineffective expenditure following. The fact that regulation is not a dominant issue that is perceived by SMEs in Lusaka can either mean that they are not aware of these frameworks or just have little interaction with the regulatory bodies, but the literature repeatedly mentions that institutional implementation is a major weakness [19-21].

The fact that 7.0 per cent of Lusaka SMEs noted their overstock of raw materials even during drought gives a curious twist. Businesses less reliant on rain-fed supplies or protected by diversified supply chains can potentially hold or even hoard the raw materials. This finding can be compared to that of who suggest that drought effects are not evenly spread among the sectors, with some of the industries recording a mismatch between the available raw materials and capacity to produce. Contrarily, records frequent losses in production and the seasonal joblessness of smallholders, and there is not much capacity to accumulate. This is strengthened by Singh et al. (2014) who observe that drought is known to undermine productive assets and disrupt supply chains, thus lowering the capacity of firms to absorb shocks. The Lusaka surplus can therefore not be considered as a sign of resilience; it is rather a sign of the heterogeneity and inefficiency of the supply chain management within the sector. This is the divergence that shows a complex nature of drought impacts, which do not demonstrate homogenous impacts but rather exhibit different impacts depending on the sectoral dependence and structural dynamics [22,19].

Lastly, the insignificant percentage of people that mentioned Oversupply of skilled labor (1.3) can be taken as an indication of the fact that such a factor is not considered a major obstacle to drought adaptation in Lusaka. This observation is consistent with the regional studies, which puts more emphasis on financial and institutional limits rather than labor dynamics. Point out that the most urgent capacity concerns of Zambia are associated with institutional preparedness and technical mechanisms of monitoring and reaction, but not labor excess or shortage at the firm level. These findings remind of the work by who emphasize that labor retention is a severe weakness of the economy that is dependent on agriculture, but they are different in the Lusaka setting, where SMEs seem not to be so concerned with seasonal agricultural workers. This comparison shows how labor relations

are determined by the structure of the sector: in agriculturally based economies, unemployment due to drought is a direct threat to livelihoods, and in more diversified urban economies, labor supply is no longer viewed as an enslaving factor [23,20].

Recommendations

1. The researcher recommends that, governments and financial institutions should create specialized credit facilities and subsidies tailored for SMEs to help them invest in drought-resilient technologies and strategies.
2. The author further suggests that, policymakers should establish robust frameworks that prioritize climate resilience for SMEs. This includes incentivizing the adoption of sustainable practices, such as water-efficient technologies, and streamlining bureaucratic processes to ensure timely support for affected businesses.
3. The investigator also recommends that, stakeholders as well as governments and NGOs, should develop targeted training programs and information-sharing platforms to equip SMEs with the necessary skills and knowledge for adapting to drought.
4. The researcher further recommends that, collaborative efforts between governments, NGOs, the private sector, and local communities should be strengthened to address resource scarcity and build resilience.

Conclusion

The study emphasizes that while SMEs in Lusaka District demonstrate creativity and resilience in navigating drought-related challenges, their adaptive capacity is ultimately constrained by systemic financial exclusion. The overwhelming majority of respondents (82.1%) reported limited access to funding and credit facilities, a finding that is consistent with regional and global evidence identifying finance as the most critical bottleneck for climate adaptation. This highlights an urgent policy priority: without targeted financial mechanisms, SMEs will remain unable to translate innovative coping strategies into sustainable resilience.

Policy interventions should therefore focus on expanding access to affordable credit and climate finance tailored to SMEs. Governments and financial institutions could establish dedicated adaptation funds, risk-sharing instruments, and flexible loan schemes designed to reduce collateral requirements and perceived lending risks. Development partners and multilateral agencies should complement these efforts by supporting blended finance models and capacity-building programs that enable SMEs to meet financiers' requirements [24-27].

Strengthening institutional coordination is equally vital. As it is noted, Zambia's climate resilience frameworks are comprehensive in design but fragmented in execution. Enhancing early warning systems, streamlining expenditure tracking, and fostering cross-sectoral collaboration would ensure that SMEs are not only aware of regulatory frameworks but also able to benefit from them. Sector-specific support is also necessary, given the heterogeneity of drought impacts. The finding that some SMEs reported raw material surpluses despite drought illustrates the uneven nature of climate shocks across industries.

Tailored interventions-such as supply chain diversification, inventory management support, and targeted subsidies-would help address mismatches between resource availability and production capacity. Finally, while human capital was not perceived as a major barrier, institutional investments in technical training and monitoring systems remain essential for sustaining long-term resilience. In sum, the evidence points to a clear policy agenda: financial empowerment, institutional strengthening, and sector-sensitive adaptation pathways are indispensable for enabling SMEs in Lusaka District, and across Sub-Saharan Africa, to withstand recurrent drought shocks and contribute meaningfully to climate-resilient economic development.

Declaration By Authors

Ethical Approval

Ethical clearance for this study was granted by the University of Zambia Biomedical Research Ethics Committee (UNZABREC) and the Lusaka City Council prior to the commencement of data collection.

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We extend our sincere gratitude to all individuals, enterprises, and institutions whose support and contributions made this research possible. This study was undertaken to generate evidence that can inform strategies for understanding and addressing the economic effects of drought on small and medium enterprises (SMEs) in Lusaka District, Zambia. By examining both the challenges posed by recurrent droughts and the strategic adaptation mechanisms employed by SMEs, This research seeks to provide actionable insights that can strengthen resilience, enhance sustainability, and promote inclusive regional development

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Conflicts of Interest

The authors declare that they have no conflicts of interest related to the conduct of this study.

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